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Entrepreneurship: The role of gender, perceptions, and institutions

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DISSERTATION

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Table of Contents

List of Tables.....	V
List of Figures	VIII
List of Abbreviations.....	IX
Summary	X
Zusammenfassung.....	XIII
1 Motivation, research questions and structure	1
1.1 Motivation.....	1
1.2 Theoretical framework for the dissertation	4
1.3 Research questions	6
1.4 Dissertation structure	11
2 Role models and entrepreneurship	14
2.1 Introduction.....	14
2.2 Methodology	15
2.3 Results of the literature review	16
2.3.1 Distribution of published articles.....	16
2.3.2 Entrepreneurial role model research areas.....	19
2.4 Summary, open research questions, and limitations	39
2.5 Limitations of the literature review	43
2.6 Conclusion of the literature review	43
3 Gender differences in entrepreneurial propensity: Replication study	46
3.1 Introduction.....	46
3.2 Background of the replication study	47
3.3 Method	48

3.3.1	Data, sample and inclusion criteria	48
3.3.2	Measures	49
3.4	Results	50
3.4.1	Key descriptive findings	50
3.4.2	Start-up decisions and perceptual variables	54
3.5	Discussion	60
3.5.1	Explaining the gender gap in entrepreneurial propensity	60
3.5.2	Implications.....	64
3.5.3	Research directions	66
3.6	Conclusion	67
4	Gender differences in entrepreneurial propensity: Extension analysis	68
4.1	Introduction to women's entrepreneurial propensity.....	68
4.2	Background of the extension.....	70
4.3	Women's entrepreneurship and institutions	70
4.4	Method	72
4.4.1	Data, sample and inclusion criteria	72
4.4.2	Measures	72
4.5	Results of extensions 1 and 2	74
4.5.1	Main descriptive findings of the extension analysis	74
4.5.2	Women's entrepreneurial propensity and perceptual factors	84
4.6	Discussion	98
4.6.1	Explaining the gender gap in entrepreneurial propensity	98
4.6.2	Implications.....	106
4.6.3	Limitations and future directions	108
4.7	Conclusion	109
5	Women's innovative entrepreneurship and institutions	111
5.1	Introduction	111
5.2	Literature and hypotheses	113
5.2.1	Innovative entrepreneurship and women's perceptions	113
5.2.2	Institutions and innovative entrepreneurship	114
5.3	Data, measures, and method.....	116

5.3.1	Data	116
5.3.2	Measures	116
5.4	Results	117
5.4.1	Descriptive findings	117
5.4.2	Gender and innovative entrepreneurship	119
5.5	Discussion and conclusion	126
5.5.1	Discussion of main results	126
5.5.2	Contributions and implications	127
5.5.3	Limitations	129
6	Conclusion	131
6.1	Summary of main findings.....	131
6.2	Implications for theory and practice	135
6.2.1	Theoretical implications.....	135
6.2.2	Practical implications.....	138
6.3	Limitations and future research avenues.....	141
	References	144
	Appendix	174

List of Tables

Table 2-1. Distribution of articles by journal	17
Table 2-2. Main focuses and number of studies in each category	21
Table 2-3. Environment and culture	23
Table 2-4. Entrepreneurship programs	25
Table 2-5. Social context and stereotyping	26
Table 2-6. Family	28
Table 2-7. Similar models and peers	32
Table 2-8. Educators and mentors	34
Table 2-9. Successful versus unsuccessful models	35
Table 2-10. Unrelated models	36
Table 2-11. Early role models	38
Table 2-12. Comparison of life cycle stages	39
Table 3-1. Perceptual disparities between men and women in both studies	52
Table 3-2. Perceptual disparities between women and men	54
Table 3-3. Probit estimates on nascent entrepreneurship	56
Table 3-4. Probit estimates on perceptual variables, all observations.....	58
Table 3-5. Probit estimates for perceptual variables of nascent entrepreneurs	59
Table 3-6. Recursive simultaneous bivariate probit model: exact replication	62
Table 3-7. Country-specific gender effects	63
Table 4-1. Variable descriptions	73
Table 4-2. Distribution of included countries	74
Table 4-3. Ratio of men to women by type of economy	79
Table 4-4. Perceptual disparities across genders in all studies	82

Table 4-5. Economy related specificity of perceptual disparities, extension 2.....	82
Table 4-6. Perceptual disparities across genders, all studies.....	84
Table 4-7. Probit estimates on nascent entrepreneurship, all studies.....	86
Table 4-8. Economy-specific probit estimates on nascent entrepreneurship, extension 2.....	86
Table 4-9. Probit estimates on perceptual variables, KMS and extension 1.....	88
Table 4-10. Probit estimates on perceptual variables, KMS and extension 2.....	89
Table 4-11. Economy-specific gender effects of all observations, extension 2.....	90
Table 4-12. Economy-specific gender effects of nascent entrepreneurs, extension 2.....	90
Table 4-13. Probit estimates of nascent entrepreneurs, KMS and extension 1.....	92
Table 4-14. Probit estimates of nascent entrepreneurs, exact replication and extension 2....	93
Table 4-15. Economy-specific probit estimates for suskill, extension 2.....	94
Table 4-16. Economy-specific probit estimates for fear of failure, extension 2.....	95
Table 4-17. Economy-specific probit estimates for opportunity evaluation, extension 2.....	96
Table 4-18. Economy-specific probit estimates for entrepreneurial network, extension 2....	97
Table 4-19. Recursive simultaneous bivariate probit model, all studies.....	101
Table 4-20. Economy-specific recursive simultaneous bivariate model, extension 2.....	102
Table 4-21. Economy-specific gender effects, extension 2.....	103
Table 4-22. Country-specific gender effects, extension 2.....	104
Table 5-1. Distribution of the included countries by level of economic development.....	118
Table 5-2. Perceptual disparities across genders in innovative entrepreneurs.....	119
Table 5-3. Perceptual disparities across genders at the different levels of economies.....	119
Table 5-4. Probit estimates on innovative entrepreneurship.....	120
Table 5-5. Economy-specific probit estimates on innovative entrepreneurship.....	121
Table 5-6. Economy-specific marginal effects of robust ordered probit model.....	122
Table 5-7. Economy-specific probit estimates of innovative entrepreneurs.....	123
Table 5-8. Recursive simultaneous bivariate probit model.....	124
Table 5-9. Economy-specific recursive simultaneous bivariate probit model.....	125
Table 6-1. Overview of dissertation findings.....	132
Table A-1. Variable definition and unweighted descriptive statistics.....	174
Table A-2. Global Entrepreneurship Monitor survey participants, Replication study.....	175

Table A-3. Variable definition and un-weighted descriptive statistics	175
Table A-4. Global Entrepreneurship Monitor survey participants, extension 1	175
Table A-5. Global Entrepreneurship Monitor survey participants, extension 2	176
Table A-6. Variable definition and unweighted descriptive statistics, 2011-2016	178
Table A-7. Global Entrepreneurship Monitor, Innovative entrepreneurs	178
Table A-8. Sectorial distribution of innovative entrepreneurs, 2011-2016.....	179

List of Figures

Figure 1-1. Theoretical framework	5
Figure 1-2. Structure of the dissertation.....	13
Figure 2-1. Distribution of articles by year of publication.....	17
Figure 2-2. Dependent variables	19
Figure 2-3. Framework of the review.....	20
Figure 3-1. Nascent entrepreneurs as a percentage of the adult population.....	50
Figure 3-2. Ratios of nascent entrepreneurs to established business owners.....	51
Figure 3-3. Wage-earners as a percentage of the adult population	51
Figure 3-4. Perceived entrepreneurial skill across countries by gender.....	52
Figure 4-1. Nascent entrepreneurs as a percentage of the adult population, extension 1	75
Figure 4-2. Nascent entrepreneurs as a percentage of the adult population, extension 2	76
Figure 4-3. Ratios of nascent entrepreneurs to established business owners, extension 1	77
Figure 4-4. Ratios of nascent entrepreneurs to established business owners, extension 2	78
Figure 4-5. Wage-earners as a percentage of the adult population, extension 1	80
Figure 4-6. Wage-earners as a percentage of the adult population, extension 2.....	81
Figure 5-1. Innovative entrepreneurs as a percentage of the adult population.....	118

List of Abbreviations

e.g.	Exempla gratia (for example)
EI	Entrepreneurial Intention
ERM	Entrepreneurial Role Model
et al.	Et alii (and others)
etc.	Et cetera (and so on)
Fearfail	Fear of entrepreneurial failure
GEM	Global Entrepreneurship Monitor
i.e.	Id est (that is)
Knowent	Knowing an entrepreneur
KMS	Koellinger, Minniti, & Schade, 2013
N	Sample size
no.	Number
Opport	Perceived entrepreneurial opportunity
p./pp.	Page/pages
PhD	Doctor of Philosophy
RQ	Research Question
SSRN	Social Science Research Network
Suskill	Perceived entrepreneurial skill
UK	United Kingdom
US	United States
Vol.	Volume
WEF	World Economic Forum

Summary

While women's evolving contribution to entrepreneurship is irrefutable, in almost all nations, gender disparity is an existing reality of entrepreneurship. Social and economic outcomes make women entrepreneurship an important area for scholars and governments. In attempts to find reasons for this gender disparity, academic scholars evaluated various factors and recognised perceptual variables as having outstanding explanatory value in understanding women's entrepreneurship. To advance our knowledge of gender disparity in entrepreneurship, the present study explores the influence of entrepreneurial perceptual variables on women's entrepreneurship and considers the critical role of country-level institutional contexts on the women's entrepreneurial propensity. Therefore, this study examines the impact of perceptual variables in different nations. It also offers connections between entrepreneurial perceptions, women entrepreneurship, and institutional contexts as a critical topic for future studies.

Drawing on the importance of perceptual factors, this dissertation investigates whether and how their perception of entrepreneurial networks influences the individuals' decision to initiate a new venture. Prior scholars considered exposure to entrepreneurial role models as one of the most influential factors on the women's inclination towards entrepreneurship; thus, a systemized analysis makes it possible to identify existing research gaps related to this perception. Hence, to draw a clear picture of the relationship between entrepreneurial role models and entrepreneurship, this dissertation provides a systemized overview of prior studies. Subsequently, Chapter 2 structures the existing literature on entrepreneurial role models and reveals that past literature has focused on the different types of role models, the stage of life at which the exposure to role models occurs, and the context of the exposure. Current discourse argues that the women's lower access to entrepreneurial role models negatively influences their inclination towards entrepreneurship.

Additionally, although the research on women entrepreneurship has proliferated in recent years, little is known about how entrepreneurial perceptual variables form women's propensity towards entrepreneurship in various institutional contexts. The work of Koellinger et al. (2013), hereafter KMS, is one of the most influential papers that investigated the

influence of perceptual variables, and it showed that a lower rate of women entrepreneurship is associated with a lower level of their entrepreneurial network, perceived entrepreneurial capability, and opportunity evaluation and with a higher fear of entrepreneurial failure. Thus, this dissertation replicates the work of KMS. Chapter 3 explicitly investigates the influence of the above perceptions on women's entrepreneurial propensity. This research has drawn data from the Global Entrepreneurship Monitor, a cross-national individual-level data set (2001-2006) covering 236,556 individuals across 17 countries. The results of this chapter suggest that gender disparities in entrepreneurial propensity are conditioned by differences in entrepreneurial perceptual variables. Women's lower levels of perceived entrepreneurial capability, entrepreneurial role models and opportunity evaluation and their higher fear of failure lead to lower entrepreneurial propensity.

To extend and generalise the relationship between perceptions and women's entrepreneurial propensity, in Chapter 4, two studies are conducted based on replicated research. Extension 1 generalises the results of KMS by using the same analysis on more recent data. Accordingly, this research implemented the same analysis on 372,069 individuals across the same countries (2011-2016). The recent data show that although gender disparity became significantly weaker, the gender gap is still in men's favour. However, similarly to the replicated study, this research revealed that perceptual factors explain a larger part of the gender disparity. To strengthen prior empirical evidence, in extension 2, utilising a sample of 1,029,863 individuals from 71 countries (2011-2016), the study conducted the same measures and analysis in a more global setting. By including developing countries, gender disparity in entrepreneurial propensity decreased significantly. The study revealed that the relative significance of the influences of perceptions' differs significantly across nations; however, perceptions have a worldwide effect. Moreover, this research found that the ratio of nascent women entrepreneurs in less developed countries to those in more developed nations is 2. More precisely, a higher level of economic development negatively influences the impact of perceptions on women's entrepreneurial propensity.

Whereas prior scholars increasingly underlined the importance of perceptions in explaining a large part of gender disparities in entrepreneurship, most of the prior investigations focused on nascent (early-stage) entrepreneurship, and evidence on the relationship between perceptions and other types of self-employment, such as innovative entrepreneurship, is scant. Innovation is a confirmed key driver of a firm's sustainability, higher competitive capability, and growth. Therefore, Chapter 5 investigates the influence of perceptions on women's innovative entrepreneurship. The chapter points out that

entrepreneurial perceptions are the main determinants of the women's decision to offer a new product or service. This chapter also finds that women's innovative entrepreneurship is associated with the country's specific economic setting.

Overall, by underlining the critical role of institutional contexts, this dissertation provides considerable insights into the interaction between perceptions and women entrepreneurship, and its results have implications for policymakers and practitioners, who may find it helpful to consider women entrepreneurship in systemized challenges. Formal and informal barriers affect women's entrepreneurial perceptions and can differ from one country to the other. In this sense, it is crucial to design operational plans to mitigate formal and stereotypical challenges, and thus, more women will be able to start a business, particularly in developing countries in which women significantly comprise a smaller portion of the labour markets. This type of policy could write the "rules of the game" such that these rules enhance the women's propensity towards entrepreneurship.

Zusammenfassung

Während der sich ständig entwickelnde Beitrag von Frauen zum Unternehmertum unwiderlegbar ist, stellt die Geschlechterungleichheit in fast allen Ländern eine Realität des Unternehmertums dar. Soziale und wirtschaftliche Resultate rücken das Frauenunternehmertum immer stärker ins Blickfeld von Wissenschaft und Politik. Bei dem Versuch, mögliche Gründe für diese geschlechtsspezifische Ungleichheit im Unternehmertum zu finden, bewerteten Forscher verschiedene Faktoren und erkannten Wahrnehmungsvariablen als besondere Erklärungsfaktoren für das Frauenunternehmertum. Um unser Wissen über geschlechtsspezifische Unterschiede im Unternehmertum zu erweitern, untersucht die vorliegende Studie den Einfluss unternehmerischer Wahrnehmungsvariablen auf das Frauenunternehmertum. Ein besonderer Fokus liegt dabei auf länderspezifischen Faktoren und deren Einfluss auf unternehmerische Aktivität sowie Wahrnehmungsvariablen. Des Weiteren stellt die Studie eine Verbindung her zwischen den für zukünftige Studien wichtigen Themenkomplexen wie beispielsweise Wahrnehmungen unternehmerischer Natur, Frauenunternehmertum und institutionelle Kontexte.

Ausgehend von der Bedeutung verschiedener Wahrnehmungsfaktoren untersucht die Dissertation, ob und wie die Wahrnehmung unternehmerischer Netzwerke die individuelle Entscheidung zur Unternehmensgründung bei Frauen beeinflusst. Die bisherige Forschung betrachtet die Auseinandersetzung mit unternehmerischen Vorbildern als einen der einflussreichsten Faktoren für die Neigung zum Unternehmertum bei Frauen. Eine systematische Analyse ermöglicht es somit, bestehende Forschungslücken im Zusammenhang mit dieser Wahrnehmung zu identifizieren. Um die Beziehung zwischen unternehmerischen Vorbildern und Unternehmertum aufzuzeigen, erstellt diese Dissertation zuerst einen systematischen Überblick früherer Studien zu diesem Thema. Anschließend strukturiert Kapitel 2 die vorhandene Literatur zu unternehmerischen Vorbildern. Das Kapitel verdeutlicht, dass sich die bisherige Forschung auf drei Aspekte konzentriert, nämlich auf verschiedene Arten von Vorbildern sowie den Zeitraum und den Kontext, in welchem der Kontakt mit den Vorbildern erfolgt. Der aktuelle Forschungsstand argumentiert, dass der

geringere Zugang von Frauen zu unternehmerischen Vorbildern ihre Neigung zum Unternehmertum negativ beeinflusst.

Obwohl die Forschung zum Frauenunternehmertum in den letzten Jahren stark zugenommen hat, ist nur wenig darüber bekannt, wie unternehmerische Wahrnehmungsvariablen die Neigung von Frauen zum Unternehmertum in unterschiedlichen institutionellen Kontexten beeinflussen. Die Studie von Koellinger et al. (2013) ist sowohl eine Pionierarbeit als auch eine der einflussreichsten Studien auf diesem Gebiet. Sie zeigt, dass der vergleichsweise geringe Anteil von Unternehmensgründungen durch Frauen mit einem meist kleineren unternehmerischen Netzwerk, das Frauen zur Verfügung steht, zusammenhängt. Desweiteren hängt die geringere Bereitschaft zur Unternehmensgründung bei Frauen mit einer schwächeren Wahrnehmung der eigenen unternehmerischen Fähigkeiten, der unternehmerischen Möglichkeiten in ihrem Umfeld sowie einer größeren Angst vor unternehmerischem Misserfolg zusammen.

Aufbauend auf diesen Erkenntnissen repliziert das dritte Kapitel dieser Dissertation die Studie von Koellinger et al. (2013). Hierzu wird zunächst der Einfluss der oben genannten Wahrnehmungen auf die unternehmerische Neigung von Frauen untersucht. Die Daten zu dieser Studie wurden aus dem *Global Entrepreneurship Monitor* gewonnen, einem länderübergreifenden Datensatz auf individueller Ebene (2001-2006), der Daten von 236.556 Personen aus 17 Ländern umfasst. Die Ergebnisse des Kapitels zeigen, dass die Geschlechterunterschiede in Unternehmensgründungen mit Unterschieden in unternehmerischen Wahrnehmungsvariablen zusammenhängen. Die geringere Anzahl von Unternehmensgründungen durch Frauen hängt dabei mit einer geringeren Zahl an unternehmerischen Vorbildern, einer geringeren Wahrnehmung der eigenen unternehmerischen Fähigkeiten, einer geringeren Wahrnehmung unternehmerischer Möglichkeiten sowie einer größeren Angst vor unternehmerischem Misserfolg zusammen.

Mit dem Ziel, die Beziehung zwischen Wahrnehmungen und unternehmerischer Neigung von Frauen auf der Grundlage replizierter Forschung zu erweitern und zu verallgemeinern, führt Kapitel 4 schließlich zwei weitere Studien durch. In Erweiterung 1 werden die Ergebnisse der Studie von Koellinger et al. (2013) unter Verwendung derselben Analysetechnik, aber anhand neuer Daten untersucht. Dabei führte diese Studie die gleiche Analyse an neuen Daten von 372.069 Personen in denselben Ländern wie in der Originalstudie im Zeitraum von 2011 bis 2016 durch. Die Ergebnisse zeigen, dass die geschlechtsspezifischen Unterschiede erheblich geringer ausfallen, jedoch Männer auch weiterhin im

Vorteil gegenüber Frauen sind. Ähnlich wie in der replizierten Studie erklären Wahrnehmungsfaktoren einen erheblichen Teil der geschlechtsspezifischen Unterschiede. Um frühere empirische Beweise zu verfestigen, führte die aktuelle Studie in Erweiterung 2 die gleichen Maßnahmen und Analysen in einem globaleren Umfeld durch, das auf einer Stichprobe von 1.029.863 Personen aus 71 Ländern im Zeitraum von 2011 bis 2016 fußte. Dabei stellte sich heraus, dass sich die geschlechtsspezifische Ungleichheit in Bezug auf die unternehmerische Neigung bei einer zusätzlichen Betrachtung von Daten aus Entwicklungsländern deutlich verringerte. Die relative Bedeutung der Einflüsse von Wahrnehmungen variiert demnach je nach Land sehr stark; jedoch ist ihr Effekt weltweit messbar. Zudem zeigt die Studie, dass das Verhältnis von aufkommenden Unternehmerinnen in weniger entwickelten Ländern zu jenen in weiterentwickelten Staaten 2:1 beträgt. Dies bedeutet, dass ein höheres wirtschaftliches Entwicklungsniveau sich negativ auf die Auswirkungen von Wahrnehmungen auf die unternehmerische Neigung von Frauen.

Die bisherige Forschung legt zwar die Bedeutung der Wahrnehmungen als Hauptklärungsfaktor der Geschlechterungleichheit im Unternehmertum dar. Jedoch konzentrieren sich die meisten dieser Untersuchungen auf das aufkommende Unternehmertum (im Frühstadium), wo kaum Belege für die Beziehung zwischen Wahrnehmungen und anderen Arten der Selbstständigkeit, wie beispielsweise innovativem Unternehmertum, existieren. Innovation ist ein Schlüsselfaktor für die Zukunftsfähigkeit von Unternehmen. Deshalb untersucht Kapitel 5 den Einfluss von Wahrnehmungen auf die weibliche Innovationskraft. Die Ergebnisse der Analyse unterstreichen, dass unternehmerische Wahrnehmungen die entscheidenden Faktoren für Frauen sind, neue Produkte oder Dienstleistungen anzubieten. Die Analyse zeigt zudem auch, dass ein innovatives Frauenunternehmertum in enger Beziehung zum spezifischen wirtschaftlichen Rahmen des Herkunftslandes stehen.

Indem die vorliegende Dissertation die entscheidende Rolle institutioneller Kontexte unterstreicht, liefert sie beträchtliche Einblicke in die Wechselwirkung zwischen Wahrnehmungen und Frauenunternehmertum. Die Ergebnisse der Dissertation liefern politischen Entscheidungsträgern und Fachleuten die Möglichkeit, sich mit Geschlechterunterschieden im Unternehmertum auf eine systematisierte Weise auseinanderzusetzen. Formelle und informelle Barrieren wirken sich negativ auf die unternehmerischen Wahrnehmungen von Frauen aus und können je nach Land variieren. Daher ist es entscheidend, operative Pläne zu entwerfen, um systematische Hürden und Vorurteile zu verringern. Nur so kann es mehr Frauen ermöglicht werden, ein Unternehmen zu gründen. Dies gilt vor allem für

Entwicklungsländer, in denen Frauen einen wesentlich geringeren Zugang zum Arbeitsmarkt haben. Die Politik könnte „Spielregeln“ entwickeln, die die Neigung zum Unternehmertum bei Frauen erhöhen.

1 Motivation, research questions and structure

1.1 Motivation

Women's progressing contribution to entrepreneurship in recent years is indisputable (Kickul et al., 2008; Bjerke, 2013; Ramadani et al., 2013). This worldwide progress is the outcome of the women's entrepreneurial activities' social and economic importance (Langowitz and Minniti, 2007, Ramadani et al., 2013; Camelo-Ordaz et al., 2016); however, gender disparity is an ongoing verity of entrepreneurship (Díaz-García and Jiménez-Moreno, 2010; Gupta et al., 2014; Guzman and Kacperczyk, 2019). The importance of identifying explanations for this imbalance led to scientific examinations of women's entrepreneurship (Jennings and Brush, 2013; De Vita et al., 2014; Camelo-Ordaz et al., 2016; Neumeier et al., 2019). In seeking to pinpoint the possible justifications for gender disparity, feminist scientists argued that a woman's lower entrepreneurial activity results from systemized disparities in approaching resources such as finance (Fischer et al., 1993). Indeed, it has been confirmed that women have higher constraints in access to financing (Marlow and Patton, 2005; Gatewood et al., 2009; Guzman and Kacperczyk, 2019), which has had a detrimental impact on their perception of obstacles (Mehtap et al., 2017; Balachandra et al., 2019).

Some scholars highlighted the importance of socialisation and labelled entrepreneurship as a stereotypically male domain (Ahl, 2006; Sweida and Reichard, 2013; Jennings and Brush, 2013), the perception of which can negatively influence women's propensity towards entrepreneurship (Shinnar et al., 2012), whereas it creates an advantage for men (Gupta et al., 2014). In fact, these stereotypes picture entrepreneurship as a masculine occupation (Jennings and Brush, 2013; Gupta et al., 2014) and assume men to be better competitors, while women are considered better at supporting roles (Giménez and Calabrò, 2018). Consequently, these stereotypes can affect the women's perceptions of their entrepreneurial skills and discourage them from creating ventures (Krueger, 2007). Because of the expected roles of women, women's networks are not only affected by family obligations but are also less powerful than men's networks (Aidis et al., 2007); thus, women simultaneously face challenges regarding family and entrepreneurship (Javadian and Singh, 2012). Additionally, the description of successful entrepreneurs for potential investors, such as venture capitalists, has more masculine characteristics, and the image of a successful entrepreneur has been masculinised

(Nelson et al., 2009). This creates another drawback for women entrepreneurship (Wu and Zhang, 2019).

In an effort to recognise the causes of gender imbalance in entrepreneurship, previous scholars analysed the impact of different variables. Some authors investigated the influence of sociodemographic factors, such as age, educational level, and work status (e.g., Klyver et al., 2013; Block et al., 2013; McGowan et al., 2015; Maden, 2015). However, other scholars found that in the individuals' propensity towards entrepreneurship, sociodemographic factors have a less explicative role than perceptual variables (Noguera et al., 2013; Koellinger et al., 2013; Welsh et al., 2017; Brush et al., 2017). Thus, the literature stressed that perceptual variables significantly influence the individual's engagement probability in entrepreneurship (Arenius and Minniti, 2005; Koellinger et al., 2007; Camelo-Ordaz et al., 2016). However, perceptions are fenced by formal and informal social norms (McGowan et al., 2015; Giménez and Calabrò, 2018). In that sense, advancing the understanding of individual perceptual factors connected to entrepreneurship is crucial (Schlaegel and Koenig, 2014).

The study of KMS explored the effect of entrepreneurial perceptions on women's entrepreneurial activities and found that the women's lower share of business ownership is relevant to their lower level of entrepreneurial contacts, opportunity evaluation, and perceived entrepreneurial skill and to their higher fear of entrepreneurial failure. This gender imbalance varies considerably between the countries; however, the impact was measurable in all 17 examined nations. Moreover, they identified that a small percentage of gender disparity in entrepreneurial propensity is clarified by socioeconomic factors (age, work status, household income, and educational level), while perceptual factors could unfold a substantial part of gender disparity.

Academic studies have shown the significant impact of entrepreneurial perceptual factors on the individuals' likelihood of engaging in venture creation (Arenius and Minniti, 2005; Koellinger et al., 2007, 2013; Capelleras et al., 2013; Camelo-Ordaz et al., 2016). Indeed, prior scholars recognised entrepreneurial role models, fear of failure, entrepreneurial knowledge and skill as the most influential predictors of entrepreneurship (Koellinger et al., 2013; Camelo-Ordaz et al., 2016). Nevertheless, the empirical findings on the perceptual variables' effects are inconclusive (Camelo-Ordaz et al., 2016; Shinnar et al., 2012). Consequently, further investigations of the relationship between perceptions and women entrepreneurship are crucial.

Whereas prior scholars increasingly underlined the importance of perceptions in explaining a large part of the gender disparity in entrepreneurship (Noguera et al., 2013; Dileo and Pereiro, 2019), most of the prior investigations focused on nascent (early-stage) entrepreneurship (e.g., Minniti, 2010; Koellinger et al., 2013), and evidence on the relationship between perceptions and other types of ventures, such as innovative entrepreneurship, is scant. Innovative entrepreneurship is essential for higher competitive capability, enhanced revenues, and a balanced growth (Wang et al., 2019). Innovation is one of the most significant drivers of economic development (Wong et al., 2005; Roig-Tierno et al., 2015; Aparicio et al., 2016b; Block et al., 2017). However, prior investigations largely overlooked analysing the innovative entrepreneurship determinants across genders (Autio et al., 2014; Malerba and McKelvey, 2020; Wang and Zhou, 2020). Consequently, our understanding of gender differences toward innovative entrepreneurship is limited (Carrasco, 2014; Strohmeier et al., 2017). As mentioned above, the critical role of perceptions in explaining gender disparity in entrepreneurship (Koellinger et al., 2013; Noguera et al., 2013; Dileo and Pereiro, 2019) is clear; however, evidence on the relationship between perceptions and women's innovative entrepreneurship is sparse.

Considering the recent progress of women's entrepreneurial activities, different rates of women entrepreneurship across nations, and a rate of women's entrepreneurial activities that in some countries is higher than that of their male counterparts (Singer et al., 2015), the importance of examining the perceptions' impact on women's propensity toward entrepreneurship in various institutional contexts is irrefutable. Contextual variables can specify, generate, promote or reduce entrepreneurial motivations, opportunities and activities (Lüthje and Franke, 2003). Prior studies acknowledged that disparities in entrepreneurial perceptual factors result from women's interactions with the institutional context in which they live (Shahriar, 2018). Thus, the institutional context is crucial (Wu et al., 2019), particularly when women's decisions towards entrepreneurship appear inside institutions with systemized gender roles and perceptions (Giménez and Calabrò, 2018). For example, using the institutional standpoint, Klyver et al. (2013) argued that women's employment decisions stem from their responsive communication with their social institutions. Through perceptions, institutional contexts can affect the individuals' likelihood of engaging in entrepreneurship (Fishbein and Ajzen, 2011). However, little attention has been given to the fact that the individuals' perceptions might vary in different contexts (Shane and Venkatarman, 2000; Fuentelsaz et al., 2018), and prior understandings of how institutions shape women's entrepreneurial behaviour are dispersed (Brush et al., 2009; Giménez and Calabrò, 2018).

The past studies on perceptual variables (Shinnar et al. 2012; Koellinger et al., 2013) contributed significantly to women entrepreneurship research; however, their main focus was restricted to developed countries (De Vita et al., 2014; Karimi et al., 2017). Compared to developed countries, developing countries vary significantly in social, cultural and political institutions (Welter and Smallbone, 2011; Karimi et al., 2017). In addition, only a few scholars have simultaneously examined the effects of perceptual and socioeconomic factors (Karimi et al., 2017). Thus, this study answers prior academic calls and in different institutional contexts, investigates the influence of entrepreneurial perceptual variables and socioeconomic status on women's entrepreneurial propensity (Brush et al., 2017; Boudreaux et al., 2019).

In addition to the above concerns, the previous investigations on the relationships between perceptions and women's entrepreneurship disregard the type of entrepreneurship. While the influence of various types of entrepreneurial activities on economic development varies (Amorós et al., 2019), the majority of prior examinations focused on nascent (early-stage) entrepreneurship (e.g., Minniti, 2010; Koellinger et al., 2013). Therefore, our understanding of the relationship between perceptual factors and other types of entrepreneurship, such as innovative entrepreneurship, is deficient. The critical role of women's business ownership and innovative entrepreneurship in economic development (Autio, 2007; Acs et al., 2008), on the one hand, and the existing gender imbalance in innovative entrepreneurship (Koellinger, 2008), on the other, show the importance of investigating the determinants of women's innovative entrepreneurship.

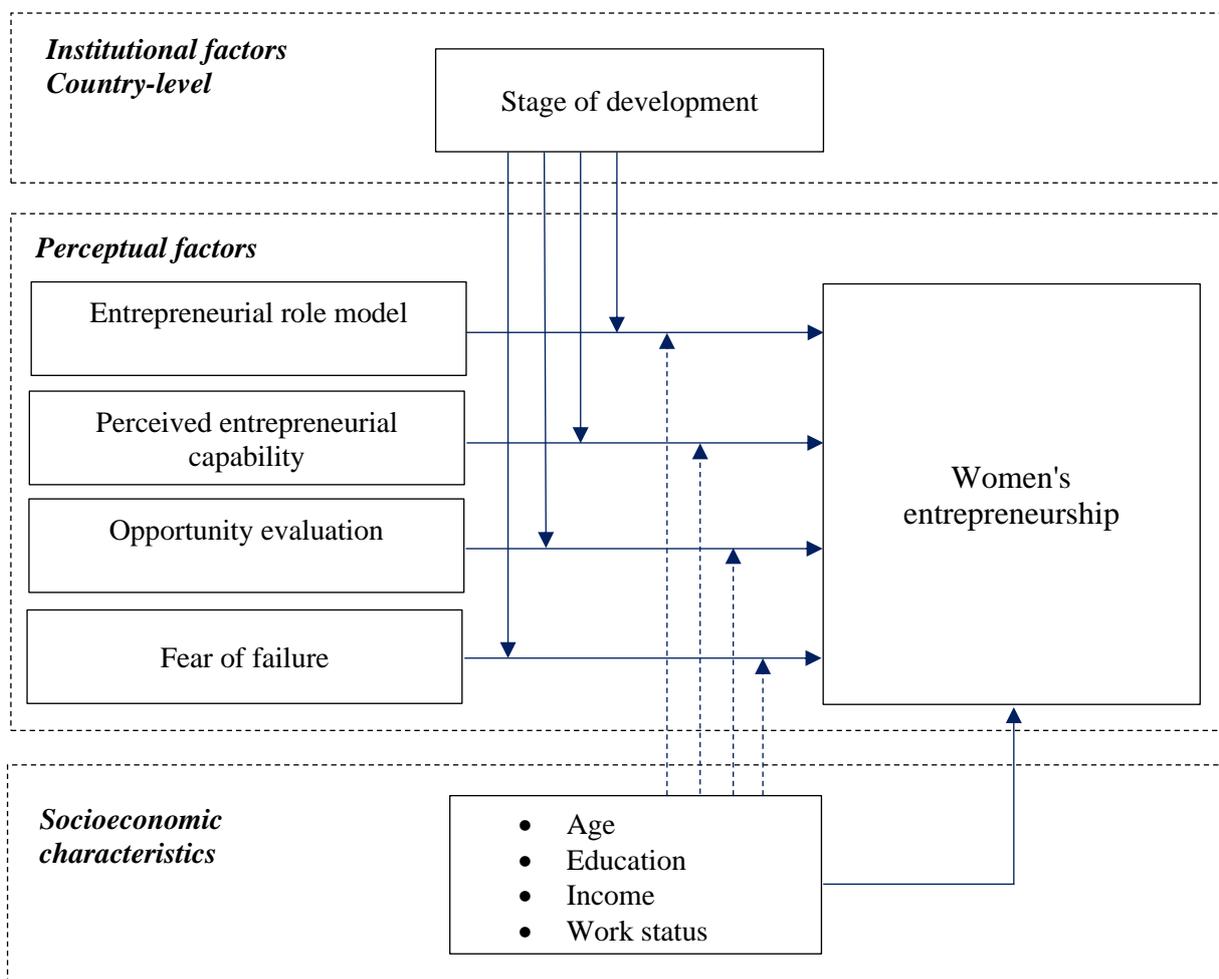
To increase the understanding of the drivers of women's entrepreneurship, this dissertation first simultaneously analyses the influence of two groups of individual factors (perceptual and socioeconomic variables) and a country-level factor (development stage) on women's entrepreneurial propensity. Second, it investigates the influence of the same factors on women's innovative entrepreneurship. Third, to align the inconclusive results, this study investigates how the predictor variables' influence differs in various institutional contexts (Fuentelsaz et al., 2018). This dissertation contributes to the literature by advancing our knowledge concerning the interactions between women's entrepreneurship, perceptions, and institutional contexts (Schlaegel and Koenig, 2014; Urban and Kujinga, 2017).

1.2 Theoretical framework for the dissertation

Figure 1-1 shows three levels of possible key drivers of women's entrepreneurship. In line with prior investigations (e.g., Arenius and Minniti, 2005; Noguera et al., 2013; Welsh et

al., 2017), this study suggests that perceptual factors (entrepreneurial role models, perceived capability, opportunity evaluation, and fear of failure) can explain a large portion of the gender disparity in entrepreneurship. Moreover, this research examines the influence of socioeconomic factors (age, education, income, work status) on women's entrepreneurship. However, prior investigations found that the weight of these effects is conditioned by the individuals' environment (Boudreaux et al., 2019). Thus, the examination of perceptual and socioeconomic factors is not enough to understand the existing gender disparity in entrepreneurship. Therefore, this study draws upon institutional theory (North, 1990), which provides insights concerning entrepreneurial advancement in various institutional environments. The theory suggests that institutional "constraints" influence entrepreneurial outcomes (North, 1991, p. 97). This dissertation investigates the moderating role of a country's development stage (Klyver et al., 2013) on the relationship between perceptual factors and women's entrepreneurship. In doing so, the relationships between factors were examined in a cross-country context. Thus, this model provides a conceptual framework for this dissertation.

Figure 1-1. Theoretical framework



1.3 Research questions

This dissertation aims to empirically address the gaps in the available literature concerning the impact of entrepreneurial perceptions on women's entrepreneurship in different institutional contexts. The research questions were created to develop the subject and to theoretically generate empirical implications. This dissertation provides an overview of the research questions below.

Impact of perceptual variables on women's entrepreneurship

Previous attempts to find reasons for the gender imbalance in entrepreneurship analysed the impact of different individual factors, such as education, age, and work status (Cetindamar et al., 2012; Solesvik, 2013; Millan et al., 2014; Sharm and Madan, 2014), or of perceptual variables (Shinnar et al., 2012; Koellinger et al., 2007, 2013). Indeed, different levels of women entrepreneurship could be due to divergences in the individuals' socioeconomic or demographic status (Fuentelsaz et al., 2018), or as Minniti (2010) showed, a significant portion of the different levels of women entrepreneurship could be explained by subjective perceptions. Empirical studies investigating the effects of perceptual and sociodemographic factors have shown that perceptual variables have more explanatory value (Koellinger et al., 2013; Camelo-Ordaz et al., 2016; Brush et al., 2017). However, only a few studies have concurrently investigated the influence of demographics and perceptions in various contexts (e.g., Koellinger et al., 2013; Brush et al., 2017). To answer these gaps, we specifically focus on perceived capability (Noguera et al., 2013; Dileo and Pereiro, 2019), entrepreneurial role model networks (Fuentelsaz et al., 2018; Dileo and Pereiro, 2019), opportunity recognition (Capelleras et al., 2013) and fear of failure (Noguera et al., 2013; Schmutzler et al., 2019). Prior studies have indicated that there is a strong relationship between these perceptual variables and entrepreneurship.

Considering that women entrepreneurship contributes to economic growth (Hughes et al., 2012; Jennings and Brush, 2013) and given that unemployment crises have occurred in particular economies (Demartini, 2018), evaluating gender disparities in countries with different levels of development is essential (Gimenez-Jimenez et al., 2020). However, prior investigations neglected developing countries (Karimi et al., 2017). Thus, this dissertation investigates the individual and perceptual variables' effect on women's entrepreneurship in a global and diversified context.

Except for the concern expressed above, when investigating the influence of perceptions in different institutional environments, prior investigations neglected the type of women entrepreneurship. Although the impact of different types of entrepreneurial activities on economic growth varies significantly (Amorós et al., 2019), previous research has mostly focused on nascent (early-stage) entrepreneurship (e.g., Minniti, 2010; Koellinger et al., 2013). Thus, evidence on the relationship between perceptions and other types of venture creation, such as innovative entrepreneurship, is scant.

Innovative entrepreneurship presents a new product or service (Audretsch et al., 2012), and it may positively impact the economic growth of the surrounding environment (Autio, 2007; Acs et al., 2008). In addition, there are differences between the innovation degrees that men and women offer to economies (Koellinger, 2008). However, investigations on the determinants of innovative entrepreneurship across genders are scant (Malerba and McKelvey, 2020; Wang and Zhou, 2020); therefore, our knowledge regarding gender disparity toward innovative entrepreneurship is limited (Carrasco, 2014; Strohmeyer et al., 2017). Moreover, empirical research does not present indisputable results considering the effect of perceptions on entrepreneurial outcomes (Wilson et al., 2009; Shinnar et al., 2012; Camelo-Ordaz et al., 2016).

Therefore, this study first simultaneously analyses the influence of two groups of individual factors (perceptual and socioeconomic characteristics) and a country-level factor (development stage) on women's entrepreneurial propensity. Second, it investigates the influence of the same factors on women's innovative entrepreneurship. This leads to the following research questions:

RQ1.1. What are the effects of perceived perceptual variables on women's entrepreneurial propensity?

RQ1.2. What are the effects of perceived perceptual variables on women's innovative entrepreneurship?

RQ1.3. How do country-level institutions influence the relationship between perceptual variables and women's entrepreneurial propensity?

RQ1.4. How do country-level institutions influence the relationship between perceptual variables and women's innovative entrepreneurship?

Impact of entrepreneurial role models on women's entrepreneurship

Individuals socialise and are influenced by stereotypes in their institutional culture (Gupta et al., 2009). Prior investigations have labelled entrepreneurship as a male-dominated area, and critical challenges have been identified for women (Ogbor, 2000; Hamilton, 2013). In this context, men have larger and stronger social networks (Koellinger et al., 2013); therefore, they have greater chances to socialise with entrepreneurs (Davidsson and Honig, 2003). This is important because women's behaviour is closely linked to their surrounding institutions and their position in society (Minniti and Nardone, 2007; Díaz and Jiménez, 2010; BarNir et al., 2011; Koellinger et al., 2013). Social ties are an essential way to obtain social legitimacy (Zimmerman and Zeitz, 2002), and they can encourage the appearance of societal norms (Portes, 1998). Thus, exposure to role models may abate gender stereotypes (Fagenson and Marcus, 1991; Rivera et al., 2007) and facilitate entrepreneurship (Audretsch et al., 2011). Thus, in this dissertation, we investigate whether the access to entrepreneurial networks affects women's entrepreneurship.

Moreover, past scholars found that the impact of entrepreneurial role models could vary in contexts with different sociocultural factors (De Clercq et al., 2013; Capelleras et al., 2019) and that in specific contexts, women demonstrate more entrepreneurial propensity than men (Saadin and Daskin, 2015). Entrialgo and Iglesias (2018) emphasised that the effect of entrepreneurial role models can vary in different contexts; thus, analysing a cross-cultural sample is necessary for generalisation. Moreover, studies on the effects of prior exposure to entrepreneurial role models have rarely been conducted in developing countries; therefore, scholars have emphasised including samples from developing economies (Zapkau et al., 2017). In doing so, in this dissertation, we will compare the entrepreneurial role models' effects on women's entrepreneurship in different institutional contexts. In this regard, this dissertation aims to answer the following two research questions:

RQ2.1. To what extent does a country's development stage influence the relationship between entrepreneurial role models' perception and women's entrepreneurial propensity?

RQ2.2. To what extent does a country's development stage influence the relationship between entrepreneurial role models' perception and women's innovative entrepreneurship?

Impact of perceived entrepreneurial capability on women's entrepreneurship

Individuals have various evaluations regarding their knowledge and skills to start a new business (Chen et al., 1998; Capelleras et al., 2013). The past literature has underlined the importance of entrepreneurial perceived capability (Walker et al., 2013; Noguera et al., 2013; Tsai et al., 2016; Mickiewicz et al., 2017; Dileo and Pereiro, 2019), particularly for women (Brush et al., 2017). When individuals are confident about their entrepreneurial capabilities, they may engage in entrepreneurial activities (De Clercq and Arenius, 2006; Kickul et al., 2008; Hechevarría et al., 2012). These studies revealed that women have a lower perception of their entrepreneurial knowledge and skills than do men (Wilson et al., 2007; Curado et al., 2011). Hence, academic investigations have suggested that boosting women's entrepreneurial capability will diminish the perception of gender disparities in entrepreneurship (Brush et al., 2017).

While some studies (Roper and Scott, 2009) have shown that the perception of gender disparities negatively impacts women's perceived entrepreneurial capabilities, others have demonstrated that the impact of gender disparities on women's entrepreneurial propensity is conditioned by the economic advancement of the country (Klyver et al., 2013). This research finds the literature on women's entrepreneurship and perceived capabilities to be fragmented.

Although this dissertation's focus is the relationship between women's perception of their entrepreneurial skills and their entrepreneurship propensity, it also addresses recent calls in the literature to evaluate perceived entrepreneurial capability in various contexts (Brush et al., 2017; Schmutzler et al., 2019). Thus, this dissertation addresses the following research questions:

RQ3.1. To what extent does a country's development stage influence the relationship between perceived entrepreneurial capability and women's entrepreneurial propensity?

RQ3.2. To what extent does a country's development stage influence the relationship between perceived entrepreneurial capability and women's innovative entrepreneurship?

Impact of perceived entrepreneurial opportunity on women's entrepreneurship

Opportunity estimation is an essential predictor of entrepreneurial activities (Kirzner, 1978; DeTienne and Chandler, 2007), and entrepreneurs are more likely to recognise business opportunities (Kirzner, 1979; Ozgen and Baron, 2007). While assessing new opportunities is a crucial reason for entrepreneurial disparities across genders (De Bruin et al., 2007), past

literature has emphasised gender differences in opportunity evaluation (Baker et al., 2003). Some authors have noted that women have different socialisation processes than men, which has an impact on their perceptions of opportunity (DeTienne and Chandler, 2007; Langowitz and Minniti, 2007); therefore, women may believe they are less capable of recognising entrepreneurial opportunities (Camelo-Ordaz et al., 2016). In this context, stereotypes have conditioned the women's network contacts, and accordingly, women have fewer chances to perceive entrepreneurial opportunities (Wilson et al., 2007; Mousa and Wales, 2012).

Other authors highlighted that differences in human capital variables, including work experience and education, could partly explain women's lower opportunity evaluation (Carter and Brush, 2005; DeTienne and Chandler, 2007). DeTienne and Chandler (2007) argued that women have different human capital than men, which creates different network contacts (Arenius and De Clercq, 2005) and consequently influences their entrepreneurial opportunity evaluation. Gonzalez-Alvarez and Solis-Rodriguez (2011) identified that men perceive more entrepreneurial opportunities and own more social and human capital. The fact that women entrepreneurs are mostly engaged in entrepreneurial activity by necessity and not by opportunity (Welter et al., 2006) may result from disparities in human capital variables (Brush et al., 2017).

While entrepreneurship is an independence opportunity for some women, others take advantage of a business opportunity for higher satisfaction (Jamali, 2009). In fact, through opportunity creation, various economic development levels may influence entrepreneurial activities (Wennekers et al., 2002). Thus, the institutions' role in the perception of differing opportunities is irrefutable (Schmutzler et al., 2019). There is indeed little doubt that an institutional perspective is necessary to understand the relationship between perceived opportunity evaluation and women entrepreneurship, particularly in developing economies (Jamali, 2009; Terjesen and Amorós, 2010). Thus, this study evaluates disparities in opportunity evaluation and investigates the moderation effect of a country's development stage on women's entrepreneurship by addressing the following research questions:

RQ4.1. To what extent does a country's development stage influence the relationship between perceived opportunity evaluation and women's entrepreneurial propensity?

RQ4.2. To what extent does a country's development stage influence the relationship between perceived opportunity evaluation and women's innovative entrepreneurship?

Impact of perceived fear of failure on women's entrepreneurship

The past literature has documented fear of failure to have an impact on entrepreneurial activities (Arenius and Minniti, 2005; Hessels et al., 2011), particularly in the case of women entrepreneurship (Minniti and Nardone, 2007; Langowitz and Minniti, 2007; BarNir et al., 2011). Most of the studies within the gender literature found that women have a higher fear of failure (Wagner, 2007; Noguera et al., 2013). Koellinger et al. (2013) underlined that the women in most of their sample's countries (except Japan) had a higher fear of failure. The literature considers that this gender gap remains similar in different contexts (Wagner, 2007; Koellinger et al., 2013). In this vein, observing entrepreneurial role models can reduce the fear of failure (Minniti and Nardone, 2007; Wyrwich et al., 2016), and women who observe an entrepreneur might have a lower fear of failure (Langowitz et al., 2006). However, prior research has refrained from investigating the effects of fear of entrepreneurial failure in different institutions (Wyrwich et al., 2016).

A more recent analysis (Holienka et al., 2016) emphasised the relationship between women's fear of failure and "necessity" entrepreneurship. They found that "opportunity-driven" entrepreneurs had a significantly higher amount of fear than necessity entrepreneurs. Another study by Sahasranamam and Sud (2016) demonstrated that in their sample, fear of failure had no impact on necessity entrepreneurs. Although the potential advantage of "opportunity-driven" entrepreneurs is indisputable, the rate of necessity entrepreneurship is higher in institutional contexts with higher unemployment rates, poverty, or economic crises (Tominc and Rebernik, 2004; Banerjee and Duflo, 2007; Amorós et al., 2019). Thus, investigating the impact of women's entrepreneurial fear of failure in different institutional contexts is necessary. This leads to the following research questions:

RQ5.1. To what extent does a country's development stage influence the relationship between perceived fear of failure and women's entrepreneurial propensity?

RQ5.2. To what extent does a country's development stage influence the relationship between perceived fear of failure and women's innovative entrepreneurship?

1.4 Dissertation structure

This dissertation comprises six chapters. Chapter 2 focuses on the relevant literature on role models and entrepreneurship. Replicating the study of KMS, Chapter 3 concentrates on the relationship between perceptual variables and women's entrepreneurial propensity.

Chapter 4 will focus on extending the replicated study in 2 steps, while Chapter 5 investigates the influence of perceptual variables and a country's development stage on women's innovative entrepreneurship. Chapter 6 concludes the main findings, discusses the main implications and suggests future research avenues. Figure 1-2 provides an overview of the structure of this research and its main objectives.

More precisely, **Chapter 2** provides a literature review on entrepreneurial role models and their function in shaping the individuals' entrepreneurial intentions and behaviour. It categorises the literature on entrepreneurial role models and identifies prior research mainly concerned with different types of role models, the stage of life at which the exposure to role models occurs and the sociocultural context of the occurrences. It also presents a framework of entrepreneurial role models and discusses the existing literature's main limitations, which provided the motivations for this dissertation. The chapter concludes with open research questions and future research directions.

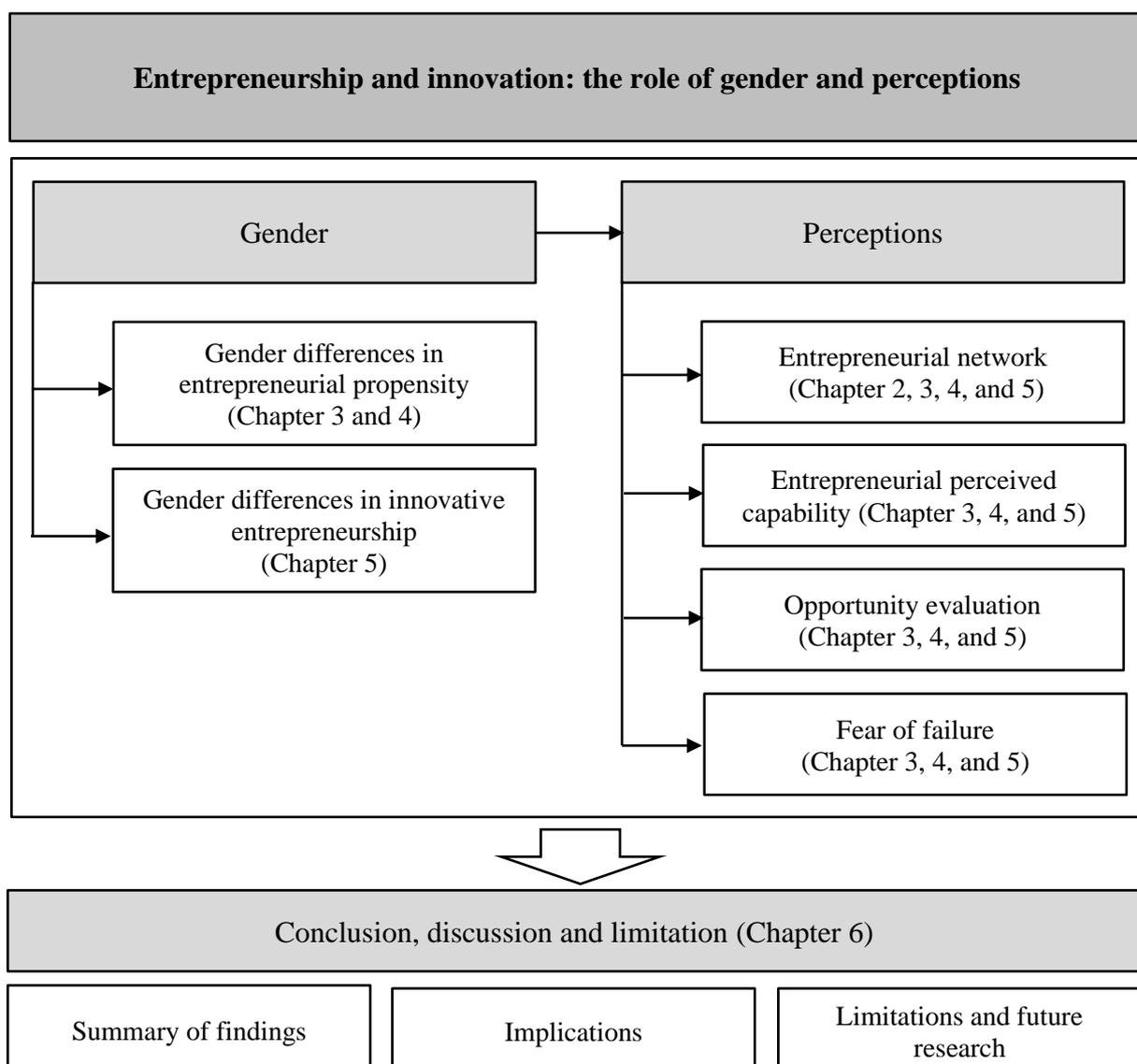
Chapter 3 addresses gender differences in perceptual variables and the effects of these differences on women's entrepreneurial propensity. KMS analysed gender differences in entrepreneurial propensity by studying 17 countries. This chapter replicates their study by using the same data and analysis. The first focus is on gender disparities in four perceptual variables: perceived entrepreneurial capability, entrepreneurial networks, opportunity evaluation and fear of failure. Moreover, the chapter describes the approach employed for data analysis. Specifically, it investigates dissimilarities by employing a probit estimation for the analysis. The second focus is on the influence of perceptual variables on women's entrepreneurial propensity. Furthermore, the chapter compares these disparities and their impacts across countries.

Chapter 4 more comprehensively examines gender disparities in entrepreneurial propensity. This chapter generalises and extends the results of KMS in two steps. Hence, to provide empirical generalisation, this chapter concerns itself with conducting the same analysis in a different context (Tsang and Kwan, 1999). To increase the understanding of gender disparities in perceptual variables and their impact on women's entrepreneurial activities, it conducts various methods on data in two different steps. First, the study employs a sample of 372,069 individuals from the same countries from 2011 to 2016. Second, to find if the gender disparities are substantial and persistent across nations, the chapter reruns the analysis by employing a large cross-country sample of 1,029,863 individuals from 71 countries.

Chapter 5 analyses the influence of perceptual factors and a country's development stage on women's innovative entrepreneurship. This chapter uses the Global Entrepreneurship Monitor (GEM) data for 71 countries, focusing on innovative entrepreneurs' demographic, perceptual and contextual characteristics. The main results show that perceptions are the main determinants of women's decision to offer a new product or service. The gender disparities in innovative entrepreneurship reversed in the women's favour when the analysis presumed that women have an equal perception of entrepreneurial capability. The chapter also finds that women's innovative entrepreneurship is associated with the country's development stage.

Finally, **Chapter 6** summarises the findings of the analysis, explaining the results in comparison to prior research results. The chapter provides the implications of these findings for theory and practice. The implications that emerged from this dissertation may be of concern to policymakers and educators. This dissertation ends with the limitations and conclusions of the study.

Figure 1-2. Structure of the dissertation



2 Role models and entrepreneurship¹

2.1 Introduction

There is an extensive discussion among researchers and practitioners about why some individuals start their own business while others do not (e.g., Zapkau et al., 2017; Baron, 2004; Shane and Venkataraman, 2000). However, to date, no clear answer to this question exists. When asked why they started their own business, entrepreneurs often answer that "others" significantly influenced their decision. These "others" are usually entrepreneurs of different types and with different characteristics, such as renowned individuals, previous colleagues, or relatives. Such people can be understood as role models (Bosma et al., 2012). There is a consensus among researchers that observing role models empowers individuals to discover and learn specific skills and gain the knowledge required to be an entrepreneur (Scherer et al., 1989b; Scott and Twomey, 1988; Scherer et al., 1989a; Lent et al., 1994; Bosma et al., 2012). However, although prior studies acknowledge the significance of role models for potential entrepreneurs, there is no common understanding of the effect of role models on entrepreneurship, and research in this area is quite fragmented (Bosma et al., 2012; Van Auken et al., 2006). This chapter aims to provide a structured outline of previous research on role models in the entrepreneurship context. It particularly focuses on the research areas investigating different types of role models, in which context and at which stage of an individual's life are entrepreneurial intentions and behaviour most affected.

This study contributes to the role model and entrepreneurship literature in different ways and provides implications for policymakers and educators. First, this chapter contributes to the ERM literature by providing a structured overview of prior findings on ERMs (e.g., Scherer et al., 1989a; Van Auken et al., 2006; BarNir et al., 2011; Mungai and Velamuri, 2011), identifying gaps and proposing future research directions. Second, it contributes to the entrepreneurship literature (e.g., Bosma et al., 2012; Carr and Sequeira, 2007; Lindquist and Van Praag, 2015) by demonstrating that entrepreneurial intentions and behaviour are affected by exposure to role models and that this effect depends on by whom, when and in which context this exposure occurs. Lastly, it contributes to the entrepreneurial education literature (e.g., Du Toit and Muofhe, 2011; Walter and Block, 2016; Souitaris et al., 2007; Nowiński

¹ This chapter is a revised version of the paper by Abbasianchavari and Moritz (2020).

and Haddoud, 2019) by highlighting that the integration of role models in entrepreneurial education programs could foster entrepreneurial intentions and behaviour (Block et al., 2013). Policymakers and educators can benefit from this structured knowledge of ERMs to effectively integrate role models in entrepreneurial education programs.

2.2 Methodology

Studies on role models' effects on entrepreneurship have noticeably increased over the past few years. However, research contexts and findings on ERMs are not homogenous, and the literature is fragmented. To analyse the literature on ERMs and to appropriately explore and structure the findings, this study used a structured approach (Webster and Watson, 2002). Based on recommendations by Fisch and Block (2018) and in line with best practices (Short, 2009), this review used Web of Science, Google Scholar, and related databases to identify studies on role model influences on entrepreneurship. First, we searched for the relevant publications by using the keywords "entrepreneurial role model" and matching words such as "parents", "peers", "family", "positive", "gender", "negative", "successful", "unsuccessful", "entrepreneurial examples", "nonfamily", "mentors", "teachers", "educators", "similar", "intentions", "behaviour" and "social learning" in their titles, keywords or abstracts. In a second step, backward and forward searches were used based on the articles' citations and reviewed these findings (Levy and Ellis, 2006).

Overall, the search yielded 563 papers.² This study includes only peer-reviewed journal articles, as they are considered validated knowledge (Podsakoff et al., 2005). The review not specified or narrow down the research to higher-impact journals and included articles from all journals that met the selection criteria. However, this study excluded books, book chapters, reports, and conference papers due to missing or inconsistent peer review processes (Jones et al., 2011; Block et al., 2017). We further limited our study to English-language journals, as they have an extensively higher impact factor than non-English journals (Mueller et al., 2006). After following these steps, 189 articles remained in the sample. We read the abstracts of all 189 papers to ensure that the articles deal with the influence of role models on entrepreneurial intentions and behaviour and their antecedents such as entrepreneurial attitudes (Robinson et al., 1991; Kolvereid, 1996) and related constructs such as entrepreneurial interest (McClelland, 1965; Schmitt-Rodermund, 2004), entrepreneurial motivation (Shane et al., 2003, Segal, 2005) and entrepreneurial career preference (Scherer et al., 1989a). When in

² The search was conducted between mid-July 2018 and mid-April 2019.

doubt about the exact contribution of a paper to this research question, the entire paper was reviewed. However, identified papers that were focusing on the effects of role models on entrepreneurial aspirations (Capelleras et al., 2019), entrepreneurial potential (e.g., Krueger and Brazeal, 1994; Galloway and Kelly, 2009), entrepreneurial fear of failure (Wyrwich et al., 2016; Wyrwich et al., 2019), entrepreneurial awareness and mindset (Robinson et al., 2016), and on self-efficacy (e.g., Dempsey and Jennings, 2014) were excluded from this study, as this chapter's focus is on entrepreneurial intentions and behaviour. This research eliminated papers in which role models were not the main focus, or the type of role model was undefined. During this process, an additional 103 papers were excluded.

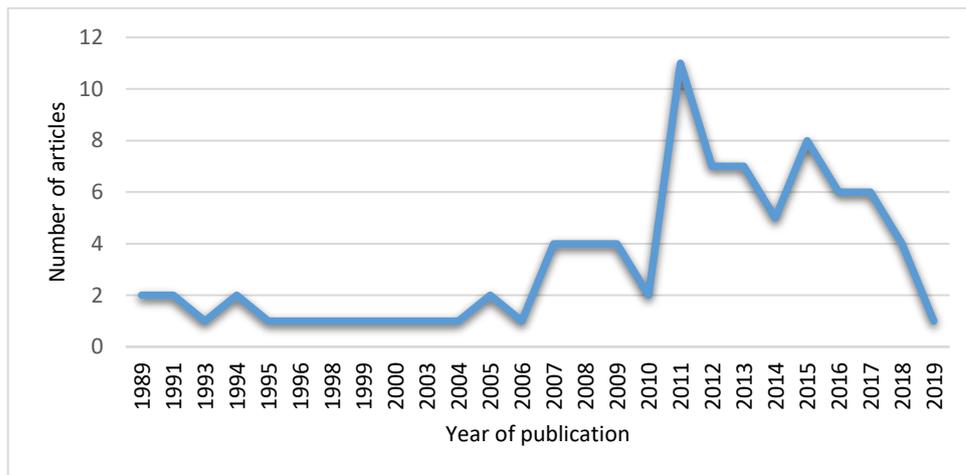
In total, 86 published journal articles remained for inclusion in the review, of which 76 are quantitative, 8 are qualitative, and 2 are conceptual. The studies are from a variety of disciplines, including business and economics (e.g., Minniti, 2005; Dohse and Walter, 2012), psychology (e.g., BarNir et al., 2011; Obschonka et al., 2011), sociology (e.g., Sørensen, 2007), and education research (e.g., Schwarz et al., 2009; Rosique-Blasco et al., 2016; Fellnhofer, 2018).

2.3 Results of the literature review

2.3.1 Distribution of published articles

Distribution of articles by year of publication

The distribution of articles included in this review by the year of publication is shown in Fig. 2-1. This graph highlights that the number of publications investigating ERM effects in the context of entrepreneurial intentions and behaviour has considerably increased over the years.

Figure 2-1. Distribution of articles by year of publication

Distribution of articles by journals

Table 2-1 highlights the distribution of articles included in this review by journal. Articles related to role model effects in entrepreneurship are distributed across 56 journals. For the sake of clarity, this chapter only included journals with more than one publication in its research area (ordered by the number of articles published; journals that published the same number of articles are in alphabetical order). Of these, *Entrepreneurship Theory and Practice* covers 8.1% and *Small Business Economics* 6.9% of the total number of articles investigated. Table 2-1 provides a list of journals that published two or more articles on entrepreneurial role models during this time.

Table 2-1. Distribution of articles by journal

Journal	Number of articles
Entrepreneurship Theory and Practice	7
Small Business Economics	6
Journal of Small Business Management	3
Entrepreneurship & Regional Development	4
Education + Training	2
International Journal of Entrepreneurial Behaviour & Research	3
Journal of Business Research	3
Journal of Economic Geography	2
Journal of Entrepreneurship Education	3
International Journal of Entrepreneurship and Innovation Management	2
Journal of Business Venturing	2
Journal of Enterprising Culture	2

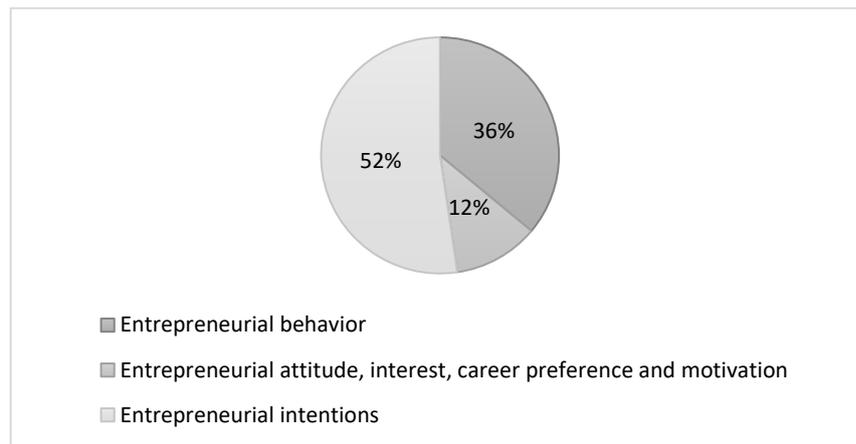
Journal	Number of articles
Journal of Small Business and Enterprise Development	2
Regional Studies	2
International Entrepreneurship and Management Journal	2

Contextual distribution of the articles

In terms of geographic distribution, the large share of articles included research conducted in the US and Spain. The other articles mostly investigated European countries (mainly Germany, Sweden, and Austria). A few studies conducted their research in Australia, Asian countries, New Zealand, and South Africa. Fifteen studies used multicountry data – particularly data from different European countries and the US – to identify cross-cultural differences.

Dependent variables

We focused on papers using entrepreneurial intentions and behaviour and included related constructs such as activities, attitudes, interest, motivation, career preference, entry, success, self-employment, and new venture creation as outcome variables. The most commonly investigated dependent outcome is entrepreneurial intentions, which has been argued to be a strong predictor of actual behaviour (Ajzen, 1991). Forty-five papers focused on intentions, as they are often easier to measure than actual behaviour (52%). The second most frequently examined outcome variable is behavioural outcomes (36%), which focus on such behavioural outcomes as entrepreneurial activity, entrepreneurial success, venture creation, self-employment transmission, or self-employment and entrepreneurship transmission. A small number of papers (12%) investigated entrepreneurial attitude (3 papers), interest (3 papers), career preference (3 papers), and motivation (1 paper), which can be understood as precursors of intention and are therefore included in the review. Figure 2-2 summarises the dependent variables investigated.

Figure 2-2. Dependent variables

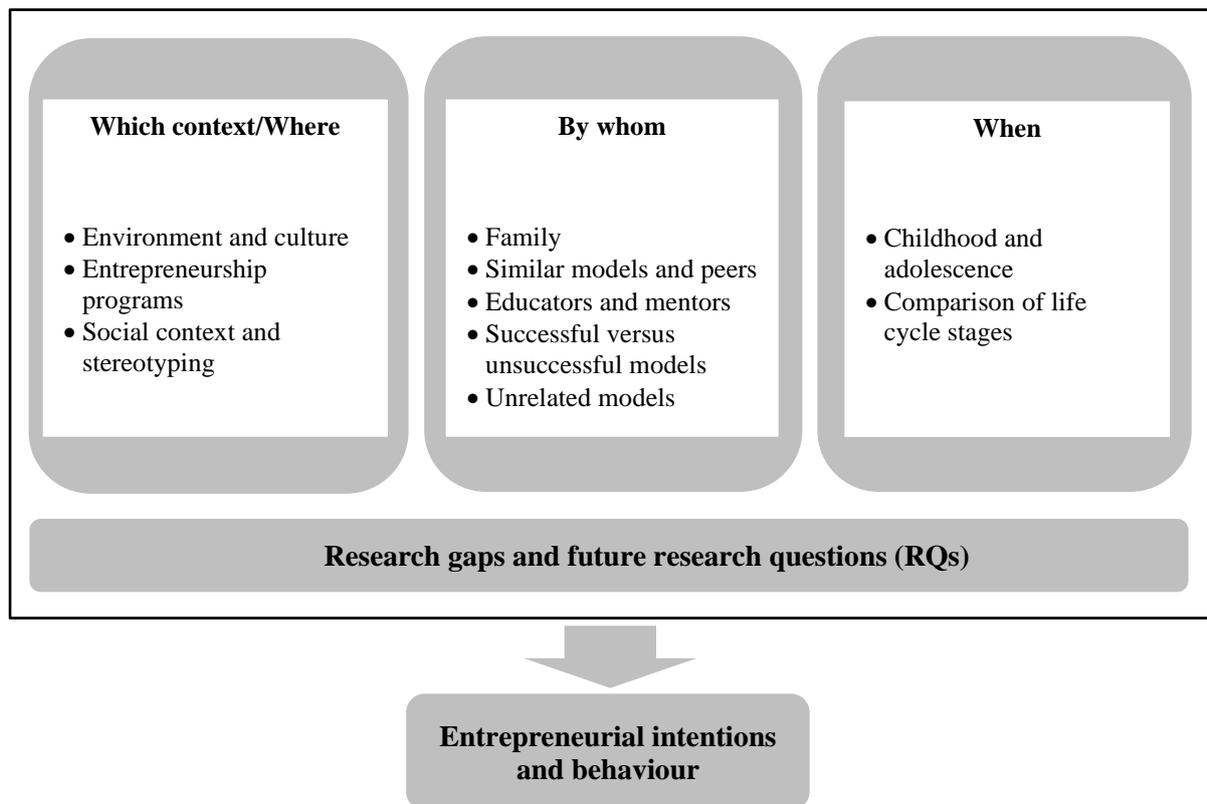
2.3.2 Entrepreneurial role model research areas

Individual preferences to engage in a particular kind of behaviour are perpetually influenced by others' ideas and behaviour, their expressions of identity, and their displayed images (Ajzen, 1991; Akerlof and Kranton, 2000). These influences also affect people's career choices (Krumboltz et al., 1976; Krueger et al., 2000; Douglas and Shepherd, 2002). Researchers have argued that this behaviour increases with the individual's observational learning proficiency (Scott and Twomey, 1988; Scherer et al., 1989b; Lent et al., 1994). Hackett and Betz (1981) find that individuals learn how to make career decisions and to act accordingly by observing others. This positive effect of observing others has also been found in the context of entrepreneurial intentions and behaviour (e.g., Bandura, 1982; Carroll and Mosakowski, 1987; Scott and Twomey, 1988; Dalton and Holdaway, 1989; Scherer et al., 1989a; Kuratko et al., 1997; Krueger et al., 2000). These "others" can be understood as role models capable of influencing and shaping the observer's behaviour. More precisely, scholars argued that exposure to role models positively affects entrepreneurial intentions by providing specific guidance and support or by creating an environment that triggers entrepreneurial behaviour (BarNir et al., 2011).

Role models can influence both the outcome expectancy and self-efficacy of the individual, which can encourage following a specific career path, such as becoming an entrepreneur (Lent et al., 1994; Nauta et al., 1998). Zapkau et al. (2017) investigated how prior entrepreneurial exposure influences entrepreneurial behaviour. To provide answers to this research question, the authors examined the results of 69 quantitative-empirical papers and classified them into four categories: process, individual, environment, and organisation. The effect of entrepreneurial role models is only part of their research question. In contrast to this

study, this chapter focuses on the question of the effects of ERMs on entrepreneurial intentions and behaviour, as research findings on ERM effects are considerably fragmented, and no consensus among researchers exists. This systematic literature review aims to illustrate a concept-centric (Fisch and Block, 2018) and a comprehensive overview of the current knowledge in a structured manner. Figure 2-3 illustrates the framework used to summarise the existing research on role models in entrepreneurship.

Figure 2-3. Framework of the review



The first research stream review focuses on ERMs' existence in different contexts (26 papers, 30.2%). Papers in this group investigate three main areas: environment and culture, entrepreneurship programs and social context, and stereotyping. The second research stream focuses on the types of role models (53 papers, 61.7%). In this category, articles investigate the effects of five different types of role models: family, similar models and peers, educators and mentors, successful versus unsuccessful models, and unrelated models. The third category belongs to the stage of life, where the exposure to role models occurred (when). In this research stream, articles focus on early role models in childhood and adolescence or compare

life cycle stages (7 papers, 8.1%).³ Table 2-2 shows the detailed distribution of articles classified by this framework.

Table 2-2. Main focuses and number of studies in each category

Main focus	Categories	Final sample
Which context/Where	Environment and culture	15
	Entrepreneurship programs	5
	Social context and stereotyping	6
	Family	30
By whom	Similar models and peers	9
	Educators and mentors	2
	Successful versus unsuccessful models	7
	Unrelated models	5
When	Childhood and adolescence	5
	Comparison of life cycle stages	2

2.3.2.1 Literature with a focus on the context

The entrepreneurial behaviour of individuals is influenced not only by personal characteristics but also by the environment (Shane et al., 2003). Mitchell and Krumboltz (1984) propose that role models are an essential contextual factor in building career intentions and making career choices. Role model literature focusing on contextual factors such as sociocultural aspects is concerned with the fact that the presence of entrepreneurs is one of the main factors promoting the creation of new ventures (Gnyawali and Fogel, 1994; Fornahl, 2003; Bergmann and Sternberg 2007; Sternberg, 2009). A more significant number of ERMs in a particular area can (unintentionally) inspire people to become entrepreneurs (Minniti, 2005). More specifically, Dohse and Walter (2012) highlight that role models promote the transfer of explicit knowledge and provide "know-how" and "know-who" that influence entrepreneurial intentions. This influence can cultivate entrepreneurial intentions and encourage entrepreneurial actions because it provides access to information and resources and legitimises entrepreneurial behaviour (Davidsson and Wiklund, 1997; Mueller, 2006).

The majority of papers in this group focus solely on entrepreneurial intentions or their determinants (e.g., Toledano and Urbano, 2008; Liñán and Chen, 2009; Dohse and Walter,

³ However, it should be noted that the categories are not mutually exclusive. This study have assigned the papers according to their main focus.

2012; Schmutzler et al., 2019). However, a few papers focus on such entrepreneurial behaviour as entrepreneurial activities or venture creation (e.g., Driga et al., 2009; Noguera et al., 2013; Contín and Larraza, 2015). This research stream can be divided into three categories: "environment and culture", "entrepreneurship programs", and "social context and stereotyping".

Environment and culture (15 papers)

Entrepreneurial behaviour is influenced at the microlevel by people's access to individual resources and personal characteristics (e.g., Davidsson and Honig, 2003; Shane et al., 2003; Bhagavatula et al., 2010) but also at the macrolevel by the environmental factors and institutions that encompass it (e.g., Shane et al., 2003; Vaillant and Lafuente, 2007; Terjesen and Hessels, 2009; Autio and Acs, 2010). Papers in this category focus on the environment and culture that influence and support individuals in their entrepreneurial aspirations. More specifically, these papers are concerned with the influence of ERMs on entrepreneurial activities at the country and regional levels (Wyrwich et al., 2016).

De Clercq et al. (2013) examine the connection between people's access to resources and their probability of being self-employed. They highlight that a country's context influences both human capital (i.e., knowledge, skills, and experience) and social capital, such as exposure to entrepreneurial role models (Arenius and Minnit, 2005), and their effect on entrepreneurial intentions. Individuals receive situational and individual cues from their environment and translate perceived opportunities into venture creation.

Prior research found that sociocultural factors have an essential impact on entrepreneurial intentions (Autio et al., 2013; Cullen et al., 2014) and that they are one of the most significant causes of entrepreneurial behaviour (Arenius and Minniti, 2005; Koellinger et al., 2007). Living close to successful entrepreneurs not only has a positive effect on the likelihood that people start their own business but also creates an entrepreneurial culture that generates knowledge and local acknowledgement for the community (Dohse and Walter, 2012; Andersson and Larsson, 2014).

To summarise, if entrepreneurs and observers live within the same geographical area, this effect is more pronounced (Wyrwich et al., 2019). The literature has shown that the existence of entrepreneurs in a region accelerates the development of the area's venture creation (Mueller, 2006; Andersson and Larsson, 2014). It seems that the example of others "who have made it" and their story has a stimulating effect and encourages others to create their ventures. Besides, a high regional start-up enthusiasm appears to signal that a region is

a suitable breeding ground for young ventures, which encourages potential entrepreneurs (Dohse and Walter, 2012). This local atmosphere could facilitate entrepreneurial intentions, promote new entrepreneurial activities, and help create entrepreneurial networks (Davidsson and Wiklund, 1997; Mueller, 2006).

The findings of the papers in this category explain some of the differences in entrepreneurial activity in different environments (e.g., Dohse and Walter, 2012; De Clercq et al., 2013; Andersson and Larsson, 2014; Schmutzler et al., 2019). Recommendations for public policy interventions are suggested by emphasising the necessity to approve entrepreneurial surroundings to augment entrepreneurial behaviour (Liñán et al., 2011). However, most of these studies depend on cross-sectional data that do not allow causality to be deduced or the common method bias to be eliminated (e.g., Lafuente et al., 2007; Driga et al., 2009; Contín and Larraza, 2015). Table 2-3 summarises the papers in this group.

Table 2-3. Environment and culture

Reference	Main Content	Method	Dependent variable ⁴	Country
Andersson and Larsson (2014)	Importance of social communication and close regional proximity to entrepreneurs.	Quantitative	Entrepreneurial behaviour	Sweden
Contín and Larraza (2015)	Relationship between the sociocultural environment and ERMs' influences.	Quantitative	Entrepreneurial activity	Spain
De Clercq et al. (2013)	Analysis of 'individuals' access to resources (e.g., exposure to ERM) and their probability of creating a venture.	Quantitative	Entrepreneurial activity	32 countries
Dohse and Walter (2012)	Impact of role models on university students' entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	Germany
Driga et al. (2009)	Impact of institutional factors (e.g., ERMs) on women's entrepreneurial behaviour.	Quantitative	Entrepreneurial activity	Spain
Gnyawali and Fogel (1994)	Environmental conditions (e.g., presence of experienced entrepreneurs) and their effects on boosting entrepreneurship.	Quantitative	New venture creation	U.S
Guiso et al. (2015)	Investigation of learning entrepreneurship from existing entrepreneurs.	Quantitative	Entrepreneurial success	Italy

⁴ A large number of papers used more than one dependent variable. We included only those variables that are within our research focus.

Reference	Main Content	Method	Dependent variable ⁴	Country
Krueger and Carsrud (1993)	Social influences, including any "role model" or "mentor" influence on entrepreneurial behaviour.	Quantitative	Entrepreneurial intentions	U.S
Krueger et al. (2000)	Indirect effects of personal and situational variables (role models) on entrepreneurship.	Quantitative	Entrepreneurial intentions	U.S
Lafuente et al. (2007)	Impact of role models in different regions on entrepreneurial processes in different types of rural areas.	Quantitative	Entrepreneurial intentions, Entrepreneurial activity	Spain
Liñán and Chen (2009)	Influence of knowing a role model or prior entrepreneurial experience (regarding the role of culture) on motivational perceptions of entrepreneurship.	Quantitative	Entrepreneurial intentions	Spain and Taiwan
Minniti (2005)	Impact of the social environment (e.g., role models, information and examples) on entrepreneurial activity.	Qualitative	Entrepreneurial activity	U.S
Reavley and Lituchy (2008)	Analysis of environmental and cultural factors on women's entrepreneurial behaviour.	Qualitative	Entrepreneurial success	6 countries
Schmutzler et al. (2019)	Investigation of the sociocultural environment's (e.g., knowing a nascent entrepreneur) effects on entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	39 countries
Stuetzer et al. (2016)	Analysis of the impact of industry structure and culture in regions with high employment rates (general lack of entrepreneurial role models) on entrepreneurship.	Quantitative	Entrepreneurial activity	UK

Entrepreneurship programs (5 papers)

Papers in this group analyse the presence of role models in different entrepreneurial education programs and their influence on entrepreneurial attitudes and intentions. The existence of role models at universities has been shown to increase students' tendency to pursue entrepreneurial attitudes (Mueller, 2011; Fellnhofer and Puumalainen, 2017) or to choose entrepreneurship as a career (Du Toit and Muofhe, 2011; Rahman and Day, 2014).

Research in this group not only emphasises the positive effect of ERM on students' entrepreneurial attitudes and intentions but also on increasing the awareness of

entrepreneurship. Toledano and Urbano (2008) show that the evolution of an entrepreneurial aptitude among students is profoundly dependent on the existence of ERMs. Thus, they demand to include ERMs in educational programs and emphasise the advantages of self-employment. Scott and Twomey (1988), who show that by providing students with contacts to ERMs, they can be stimulated to pursue business opportunities, also highlight this demand. In line with this idea, Block et al. (2017) argue that new types of entrepreneurial education initiatives are necessary to boost entrepreneurial intentions. Hence, bringing successful entrepreneurs (role models) to university courses or stimulating communication with local entrepreneurs could significantly influence entrepreneurial behaviour (Toledano and Urbano, 2008; Mueller, 2011). Table 2-4 summarizes the results of ERM research in entrepreneurship programs.

Table 2-4. Entrepreneurship programs

Reference	Main Content	Method	Dependent variable	Country
Du Toit and Muofhe (2011)	Impact of entrepreneurial education and role models on entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	South Africa
Fellnhofer and Puumalainen (2017)	Investigation of role models' influences on entrepreneurial feasibility and desirability in entrepreneurship education.	Quantitative	Entrepreneurial attitudes	Austria, Finland and Greece
Mueller (2011)	Impact of specific entrepreneurship courses such as role models or business planning activities on entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	Austria, Germany and Switzerland
Rahman and Day (2014)	Impact of entrepreneurial role models as a source for entrepreneurship education.	Quantitative	Entrepreneurial motivation	Indonesia
Toledano and Urbano (2008)	Analysis of the development of an entrepreneurial attitude through entrepreneurial education programs (engaging ERMs) among university students.	Case-study	Entrepreneurial attitudes	Spain

Social context and stereotyping (6 papers)

Social context and "occupation stereotypes" affect an individual's career inclinations (Cundiff et al., 2013; Forsman and Barth, 2017); therefore, individuals tend to involve themselves in "gender appropriate" careers (BarNir et al., 2011). In these contexts, not

surprisingly, women have less interest in "male-oriented" careers (Johnson et al., 2008; Forsman and Barth, 2017). The past literature argued entrepreneurship is a male-dominated area, which offers more chances for men (Marlow, 2002; Ahl and Marlow, 2012), and women experience more barriers, such as receiving financial support to starting their own business (Akehurst et al., 2012). Although research shows these barriers to be different across countries (Engle et al., 2011), overall it has been found that women seem to have lower entrepreneurial intentions (Shinnar et al., 2012; Joensuu-Salo et al., 2015; Santos et al., 2016; Hundt and Sternberg, 2016). Consequently, several scholars have argued that women have fewer entrepreneurial role models and less social support to become entrepreneurs than their male counterparts (Dyer and Handler, 1994; Noguera et al., 2013). These studies suggest that providing women with early-age entrepreneurship education is the key to increase their entrepreneurial intentions and to reduce the unfavourable effects of stereotyping (Entrialgo and Iglesias, 2018). To stimulate the entrepreneurial intentions and behaviour of young women, Kickul et al. (2008) propose including female role models in women's educational environment (e.g., as guest speakers). In line with this idea, more female role models for women are necessary to promote women's self-employment (Noguera et al., 2013; Karimi et al., 2013; Karimi et al., 2014). Table 2-5 summarizes prior research on social context and stereotyping.

Table 2-5. Social context and stereotyping

Reference	Main Content	Method	Dependent variable	Country
BarNir et al. (2011)	Investigating the impact of role models on entrepreneurial intentions and whether these influences differ by gender stereotypes.	Quantitative	Entrepreneurial career intention	U.S
Engle et al. (2011)	Analysis of social norms' influence (family, friends, and role models) on entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	14 countries
Karimi et al. (2013)	Investigating the effect of gender and role models on students' entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	Iran
Karimi et al. (2014)	Analysis of the effects of entrepreneurial role models on entrepreneurial intentions and whether these influences differ by gender.	Quantitative	Entrepreneurial intentions	Iran
Noguera et al. (2013)	Impact of sociocultural factors (e.g., role models) on female entrepreneurship.	Quantitative	Women's entrepreneurial activity	Spain

Reference	Main Content	Method	Dependent variable	Country
Sitaridis and Kitsios (2018)	Investigation of the impact of entrepreneurial obstacles on entrepreneurial intention. The effects of role models are evaluated.	Quantitative	Entrepreneurial intentions	Greece

2.3.2.2 Literature with a focus on the types of role models (by whom)

Previous research has identified different types of role models (e.g., Chlosta et al., 2012; Falck et al., 2012; Chen et al., 2016; Austin and Nauta, 2016) and shown that exposure to them reduces the ambiguity and concerns associated with entrepreneurship (Minniti, 2005). Consequently, scholars argued that not only the existence of role models is consequential but also the achievements of an entrepreneurial career conveyed by those role models (Scherer et al., 1989a; Davidsson, 1995). For example, several findings emphasise that exposure to a successful ERM has a favourable impact on entrepreneurial behaviour (e.g., Boyd and Vozikis, 1994; Boissin et al., 2011; Brunel et al., 2017). BarNir et al. (2011) argued this exposure increases entrepreneurial intentions to start new businesses by facilitating information concerning available opportunities, providing appropriate guidance and help, or by creating encouraging surroundings that foster entrepreneurial outcomes. Prior literature has identified different types of role models and exposure to them, arguing that this exposure is positively related to entrepreneurial behaviour. Most of the research in this group focuses on entrepreneurial intentions (e.g., Bosma et al., 2012; Laspita et al., 2012; Geldhof et al., 2014) and its antecedents entrepreneurial attitude (Fellnhofer, 2017a; Fellnhofer, 2018) and related constructs, such as entrepreneurial interest (Matthews and Moser, 1996; Wang and Wong, 2004) and entrepreneurial career preference (Scherer et al., 1989a; 1991a). Only a small number of papers analyzed the impact on behavioural outcomes such as self-employment (Chlosta et al., 2012; Hoffmann et al., 2015) or venture creation activities (Hickie, 2011). In total, 53 papers are identified, with a focus on the type of role model. Papers in this research stream can be divided into five subcategories: "Family", "similar models and peers", "educators and mentors", "successful versus unsuccessful models", and "unrelated models".

Family (30 papers)

Parents are early role models for children in acquiring social values, habits, and attitudes (Scherer et al., 1991b) and can act as negative or positive models for entrepreneurship (Block et al., 2013; Pablo-Lerchundi et al., 2015; Morales-Alonso et al., 2016; Block and Walter,

2017). Prior research suggests that having entrepreneurial parents affects the likelihood of entrepreneurial intentions (e.g., Wang and Wong, 2004; Niittykangas and Tervo, 2005; Andersson and Hammarstedt, 2011; Chlosta et al., 2012; Laspita et al., 2012; Geldhof et al., 2014; Saeed et al., 2014; Zapkau et al., 2015; Criaco et al., 2017).

Hickie (2011) finds that entrepreneurial parents can constitute an advantage in developing relevant human capital but can also provide access to the values, knowledge, and support of someone with experience. In addition, the presence of a parental entrepreneurial role model is associated with higher education and training ambitions, task self-efficacy, and an inclination toward entrepreneurial careers (Scherer et al., 1989b). This impact is independent of the parents' existing social and economic conditions (Wyrwich, 2015). Moreover, Mungai and Velamuri (2011) emphasise that parental impact is more prominent when the child is a young adult (18-21 years) compared to adolescence (12-17 years) or childhood (8-11 years). Furthermore, prior scholars revealed that typically individuals who take over businesses from their parents do engage in this transition at the beginning of their careers (Blumberg and Pfann, 2016).

In sum, researchers agree that self-employed parents strongly influence their children as ERMs, but it is not yet clear which factors moderate the link between parental entrepreneurship and their offspring's entrepreneurial intentions (e.g., Schröder et al., 2011; Geldhof et al., 2014). Table 2-6 summarizes the research in this subcategory.

Table 2-6. Family

Reference	Main Content	Method	Dependent variable	Country
Andersson and Hammarstedt (2011)	Investigation of entrepreneurial ability transmissions (parents as role models) among migrants in Sweden.	Quantitative	Self-employment	Sweden
Caputo and Dolinsky (1998)	Influence of husbands' prior business experience (as role models) on women's venture creation activity.	Quantitative	Self-employment	U.S
Chlosta et al. (2012)	Influence of parental role models on their children to become entrepreneurs.	Quantitative	Self-employment	Germany
Criaco et al. (2017)	Analysis of perceived parents' achievement as self-employed on children's entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	33 countries

Reference	Main Content	Method	Dependent variable	Country
Díaz and Jiménez (2010)	Investigation of entrepreneurial intentions and the role of gender and family entrepreneurs.	Quantitative	Entrepreneurial intentions	Spain
Geldhof et al. (2014)	Influence of personal variables (e.g., entrepreneurial parents and innovation orientation) and contextual factors on entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	U.S
Hickie (2011)	Impact of prior entrepreneurial experiences (family impact) and knowledge on entrepreneurial behaviour.	Qualitative	Venture creation	U.K
Jaén and Liñán (2013)	People with family role models have higher entrepreneurial intention.	Quantitative	Entrepreneurial intentions	Spain
Kennedy et al. (2003)	Impact of different types of role model observations on students' entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	Australia
Kickul et al. (2008)	Investigation of gender differences in the entrepreneurial intentions of adolescents.	Quantitative	Entrepreneurial intentions	U.S
Kirkwood (2007)	Investigation of how parents affect their offspring's decision to be an entrepreneur.	Qualitative	Venture creation	New Zealand
Laspita et al. (2012)	Investigation of entrepreneurial intentions in families from different cultures.	Quantitative	Entrepreneurial intentions	15 countries
Liñán and Santos (2007)	Comparing the impact of nonfamily and family entrepreneurial role models on entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	Spain
Matthews and Moser (1996)	Impact of parental entrepreneurship and gender on entrepreneurial interest.	Quantitative	Entrepreneurial interest	U.S
Mathews and Moser (1995)	Influence of family background, gender, and work experience on venture creation interest.	Quantitative	Entrepreneurial interest	U.S
Morales-Alonso et al. (2016)	Influence of observing civil servant role models (as negative models) on entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	Spain
Niittykangas and Tervo (2005)	Analysis of transmission of entrepreneurship in self-employed families in Finland.	Quantitative	Self-employment	Finland

Reference	Main Content	Method	Dependent variable	Country
Pablo-Lerchundi et al. (2015)	Impact of parents on their children's entrepreneurial intentions and behaviour.	Quantitative	Entrepreneurial intentions	Spain
Pruett et al. (2009)	Effects of cultural, social (personal role models, family support) and psychological characteristics on entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	U.S, Spain, and China
Saeed et al. (2014)	Investigation of means of transmission of entrepreneurial intentions in self-employed families.	Quantitative	Entrepreneurial intentions	U.K
Scherer et al. (1989a)	Effects of parental entrepreneurial role models on offspring's entrepreneurial behaviour.	Quantitative	Entrepreneurial career preference	U.S
Scherer et al. (1991a)	Relationship between personality characteristics and entrepreneurial career choices. Impact of perceived parents' entrepreneurial performance.	Quantitative	Entrepreneurial career preference	U.S
Scherer et al. (1991b)	Investigation of the effects of parental role model performance and gender on entrepreneurship.	Quantitative	Entrepreneurial career preference	U.S
Schölin et al. (2016)	Influence of family entrepreneurship background on an individual's intention to become an entrepreneur.	Quantitative	Self-employment intention	Sweden
Tkachev and Kolvereid (1999)	Effects of tracking models (parents) and demographic characteristics on students' entrepreneurial intentions.	Quantitative	Self-employment intentions	Russia
Uygun and Kasimoglu (2013)	Relationship between personal characteristics (e.g., role models) and entrepreneurial intentions.	Qualitative	Entrepreneurial intentions	Turkey
Van Auken et al. (2006)	Impact of role model (family) actions on potential entrepreneurial intentions to start a venture.	Quantitative	Entrepreneurial intentions	U.S and Mexico
Wang and Wong (2004)	Investigation of entrepreneurial interest of students in Singapore. Researchers investigated the effects of parental role models.	Quantitative	Entrepreneurial interest	Singapore
Wyrwich (2015)	Investigation of the intergenerational transmission	Quantitative	International transmission of entrepreneurship	Germany

Reference	Main Content	Method	Dependent variable	Country
	(parental role modelling) of entrepreneurship.			
Zapkau et al. (2015)	Impact of role models (parents) and their perceived quality on entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	Germany

Similar models and peers (9 papers)

The past literature found that opportunity recognition is enhanced by the perceived similarity between the individual and the ERM in terms of personal characteristics, skills, age, gender, and field of expertise (Wohlford et al., 2004; Wheeler et al., 2005), as well as values and ambitions (Filstad, 2004). The observer is more likely to show imitative behaviour when the perceived similarity is considerably high (Wilson et al., 2009; Scott, 2009). According to Bosma et al. (2012), entrepreneurs and their role models have a propensity to imitate each other concerning characteristics and attributes that simplify role identification, i.e., gender, sector, and nationality. Following this line of reasoning, Bandura (1977; 1986) suggests that learning experiences are probably associated with escalating factors that affect the decision to start a business because of similarities between a role model and an observer in terms of specific characteristics such as gender. In line with this idea, Heckert et al. (2002) demonstrate that individuals are more likely to predicate their career prospects on information supplied from people of the same gender or the same ethnicity (Urbano et al., 2011).

Consequently, previous studies showed the father as the most influential role model for male offspring and the mother as the most crucial role model for female offspring (Hoffmann et al., 2015; Lindquist and Van Praag, 2015). However, some researchers found that having a same-sex entrepreneurial role model is not inevitably associated with having stronger entrepreneurial intentions (Austin and Nauta, 2016) and that sometimes women are even more likely to choose male role models (Wohlford et al., 2004). Considering the different research designs, methodologies, and the contexts in which those studies have been conducted can provide some explanations for these mixed results.

On the other hand, since entrepreneurial behaviour results from an individual's socialization process, peers can have a strong influence on the entrepreneurial intentions of an individual (Falck et al., 2012; Kacperczyk, 2013). The review of the literature showed that researchers discuss two different kinds of peers in particular: school peers and coworkers. Scholars showed that employees are more likely to become self-employed if a colleague had previous self-employment experiences (Nanda and Sørensen, 2010). Individuals learn from

"established colleagues" as "multiple contingent role models" in organizational socialization processes (Filstad, 2004). Furthermore, Wyrwich et al. (2016) demonstrated that self-employment is an approved career possibility. Thus, an individual's fear of entrepreneurial failure diminishes when observing the role model (Wyrwich et al., 2016). Based on these findings, some scholars argued that innovative behaviour among employees could be transferred by training that motivates innovative behaviour among their colleagues by performing as ERMs (Miao et al., 2018) and by creating an entrepreneurial culture (Huyghe and Knockaert, 2015). The second identified peer group in this setting is school peers (Falck et al., 2012). Although prior research stresses the importance of early childhood experiences on cognitive and noncognitive capabilities (Heckman, 2006; Cunha and Heckman, 2007), only one paper investigates this relationship and discovers that having an entrepreneurial peer group at an early age (15 years old) can have a positive influence on an individual's entrepreneurial intention (Falck et al., 2012). Table 2-7 summarizes the research in this subcategory.

Table 2-7. Similar models and peers

Reference	Main Content	Method	Dependent variable/s	Country
Austin and Nauta (2016)	Analysis of entrepreneurial role models' effects on females' entrepreneurial self-efficacy (analysis of Bandura's similarity hypothesis).	Quantitative	Women's entrepreneurial intentions	U.S
Bosma et al. (2012)	Relationship between entrepreneurial role models and entrepreneurship. The impact of similarity between observer and role model.	Quantitative	Entrepreneurial intentions	Netherlands
Falck et al. (2012)	Relationship between school peers and entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	28 countries
Hoffmann et al. (2015)	Effects of self-employed parents on offspring's entrepreneurial behavior ("same-sex hypothesis" is evaluated).	Quantitative	Self-employment	Denmark
Huyghe and Knockaert (2015)	Impact of university role models on scientists' entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	Sweden and Germany
Kacperczyk (2013)	Investigation of social transmission of	Quantitative	Entrepreneurial entry	U.S

Reference	Main Content	Method	Dependent variable/s	Country
	entrepreneurial behaviour through peers (as role models) at university.			
Lindquist and Van Praag (2015)	Impacts of pre- and post-birth factors on offspring's entrepreneurial behaviour. Investigation of parents' gender effect.	Quantitative	Self-employment	Sweden
Nanda and Sørensen (2010)	Impact of previous career experience of an individual's colleague on entrepreneurial behaviour.	Quantitative	Entrepreneurial activity	Denmark
Urbano et al. (2011)	Role of sociocultural factors and models with the same ethnicity on transnational entrepreneurship.	Qualitative / Case-study	Transnational entrepreneurial activities	Spain

Educators and mentors (2 papers)

The two papers in this group investigate the effect and role of educators and mentors in entrepreneurship education programs (Eesley and Wang, 2017; Diegoli and Gutierrez, 2018). Diegoli and Gutierrez (2018) examined the effect of an educator with previous entrepreneurial involvement. The authors find that when the educator has entrepreneurial experience, he has a more significant impact on a specific group of students' entrepreneurial intentions (i.e., students with converging learning styles). However, they conclude that it is impossible to determine if an educator's specific characteristic or experience affects students' entrepreneurial intentions; hence, students' individual needs should be considered.

The second paper in this group (Eesley and Wang, 2017) is a recent randomized field experiment that investigates the impact of mentors (entrepreneurs and non-entrepreneurs) on entrepreneurial behaviour. Their results show that although entrepreneurial mentors had more significant social influence compared to non-entrepreneurs, these mentors had an even higher impact on students with no family-related entrepreneurial history. They argue that having an entrepreneurial parent or peers with entrepreneurial experience is not possible for everyone, but that educational programs can foster entrepreneurial development by creating connections between individuals and entrepreneurial mentors. Table 2-8 summarizes the research in this subcategory.

Table 2-8. Educators and mentors

Reference	Main Content	Method	Dependent variable	Country
Diegoli and Gutierrez (2018)	Investigation of educators' effects as a role model on students' entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	Mexico
Eesley and Wang (2017)	Impact of mentors on entrepreneurship.	Quantitative	Entrepreneurial behaviour	U.S

Successful versus unsuccessful models (7 papers)

The literature has identified that successful and failed entrepreneurs are related to entrepreneurial intentions and emphasises that individuals' impression of their role model's entrepreneurial outcomes should be observed (Boissin et al., 2011). Although successful role models create a higher perceived entrepreneurial feasibility (Krueger and Brazeal, 1994) and that observing failed models can increase fear of failure (Boissin et al., 2011), exposure to unsuccessful entrepreneurs nevertheless increases entrepreneurial intentions (Chen et al., 2016). However, Scherer et al. (1989a) argue that people with "low-performing" role models show entrepreneurial interest, but argue that their self-efficacy is lower than that of individuals exposed to "high-performing" role models. In other words, individuals with successful role models enjoy a more considerable amount of self-efficacy (Boyd and Vozikis, 1994) and have lower fear of failure (Wyrwich et al., 2019) due to their role models.

Gibson (2004) and Buunk and Gibson (2007) found that making "upward or downward comparisons" with different types of role models has positive effects on entrepreneurial intentions (Brunel et al., 2017). In line with social comparison theory, they find that individuals usually make an "upward comparison" with the model and believe they will be at least as successful as the model they observed. They find that exposure to either failed or successful entrepreneurs have a positive impact on individuals' entrepreneurial intention (Brunel et al., 2017). Additionally, it is assumed that exposure to negative or "low-performing" models creates a practical and rational view for observers and helps them to learn from the mistakes of others (Scherer et al., 1989a). Consequently, scholars suggested that despite the usefulness of both successful and failed models in entrepreneurship education (Schwarz et al., 2009; Brunel et al., 2017), arranging exposure to successful entrepreneurs at early ages (elementary or secondary schools) is likely to increase entrepreneurial intentions. Particularly in those groups of children without entrepreneurial parents (Scherer et al., 1989b). Table 2-9 summarizes the research in this subcategory.

Table 2-9. Successful versus unsuccessful models

Reference	Main Content	Method	Dependent variable/s	Country
Boissin et al. (2011)	Influence of prior experience with ERMs (successful or unsuccessful) on entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	France
Boyd and Vozikis (1994)	Impact of ERMs (high- and low-performing parental role model) on entrepreneurial self-efficacy.	Conceptual model	Entrepreneurial intentions and actions	U.S
Brunel et al. (2017)	Influence of (successful and failed) role models on students' entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	France
Chen et al. (2016)	Effects of business failure role models on entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	U.S
Nowiński and Haddoud (2019)	Influence of previous role model observation (successful entrepreneurs) on students' entrepreneurial intentions.	Qualitative	Entrepreneurial intentions	Poland
Scherer et al. (1989b)	Impact of modelling successful ("high performers") and low-performing entrepreneurs on enhancing entrepreneurial behaviour.	Conceptual model	Entrepreneurial behaviour	U.S
Schwarz et al. (2009)	Investigation of main factors affecting students' entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	Austria

Unrelated models (5 papers)

Few papers thus far have examined the effect of unrelated role models on entrepreneurial intentions and behaviour. One type of "unrelated role model" can be found through narratives and storytelling about entrepreneurship. Fellnhofer (2017a) argues that although there has been a discussion among researchers about entrepreneurship education and its effects, the nondeniable effect of the opportunities provided by multimedia storytelling and narratives have been wholly ignored. On this subject, the author conducted a quasi-experiment to compare the effects of real company cases with videos (Fellnhofer, 2018). The results highlight that entrepreneurial feasibility is higher for groups who watched videos.

Lavolette et al. (2012) show that observing a fictional role model – "entrepreneurs" testimonials and narratives' – positively influences entrepreneurial self-efficacy and intentions. They find that as long as role models provide the possibility for an individual to identify with them, they can stimulate a positive attitude toward entrepreneurship and increase

entrepreneurial activities. They demonstrate that narratives positively affect attitudes toward entrepreneurship and individuals' entrepreneurial self-efficacy and intentions. The authors find that stories about successful fictional role models had more significant effects compared to stories of unsuccessful "real-life" role models. Therefore, scholars suggested that telling stories about entrepreneurs in entrepreneurship education programs could influence entrepreneurial intentions (Laviolette et al., 2012; Fellnhofer, 2017b). In this respect, Radu and Loué (2008) suggest that using social media could create a higher impact if it exposes young generations to more similar idealistic (and realistic) role models instead of heroic role models that could fulfil social and/or family requirements. They find that if the narrative entrepreneur is more realistic, the observer will be more involved, and consequently, the effects will be more significant. Table 2-10 summarizes research in this subcategory.

Table 2-10. Unrelated models

Reference	Main Content	Method	Dependent variable/s	Country
Fellnhofer (2017b)	Influence of entrepreneurial role models (narratives) on the entrepreneurial passion of individuals.	Quantitative	Entrepreneurial intentions	Austria, Finland and Greece
Fellnhofer (2017a)	Investigation of entrepreneurial storytelling (as role models) and multimedia's effects in entrepreneurial education.	Qualitative	Entrepreneurial attitudes, Entrepreneurial intentions	Finland
Fellnhofer (2018)	Influence of narratives (as role models) on entrepreneurial attitudes and intentions.	Quantitative	Entrepreneurial attitudes	Austria, Finland and Greece
Laviolette et al. (2012)	Evaluating the effects of fictional role models on students' self-efficacy and entrepreneurial intentions.	Experimental research	Entrepreneurial intentions	France
Radu and Loué (2008)	Effects of exposure to symbolic role models on entrepreneurial self-efficacy.	Experimental study	Entrepreneurial intentions	France

2.3.2.3 Literature with a focus on the stage of life of the exposure (when)

Although there has been significant research on ERMs and their positive impact on entrepreneurial intentions and behaviour, previous studies have largely ignored the evaluation of role models' impacts on different stages of an individual's life to determine whether these

effects are more potent at certain ages (Mungai and Velamuri, 2011). A large number of studies conclude that having entrepreneurial parents creates a higher chance of choosing an entrepreneurial career (e.g., Scott and Twomey, 1988; Scherer et al., 1991a; Kennedy et al., 2003; Criaco et al., 2017). However, most of these studies examine the effects of parental role models in adulthood while at university (e.g., Pruett et al., 2009; Díaz and Jiménez, 2010; Dohse and Walter, 2012; Pablo-Lerchundi et al., 2015). This research approach does not allow differentiating at which life stages the effects of the role models were particularly formative. Only a few papers investigate role models' effects at early ages during adolescence (e.g., Obschonka et al., 2011; Rosique-Blasco et al., 2016) or differentiate between stages of life (Lafuente and Vaillant, 2013). Considering the differences among role model influences over different age ranges (Lafuente and Vaillant, 2013), we categorized papers in this group into *childhood and adolescence* and *comparison of life cycle stages*.

Childhood and adolescence (5 papers)

Only a small number of papers identified the impact of ERMs at early ages (e.g., Obschonka et al., 2011; Rosique-Blasco et al., 2016). Two of these papers evaluate role model effects on adolescents from 14 to 15 years old (Obschonka et al., 2011; Rosique-Blasco et al., 2016), and one examines the impact of entrepreneurial parents on late adolescents averaging 18 years of age (Schröder et al., 2011). All three studies find a significant influence of role models on career choice intentions or entrepreneurial success.

The other two studies in this subcategory use longitudinal data and investigate ERMs' effects on entrepreneurial behaviour (Sørensen, 2007; Schoon and Duckworth, 2012). Schoon and Duckworth (2012) show that having an entrepreneurial father had the most significant effect on male offspring, but parents' socioeconomic status had the most significant impact on females. In line with this finding, Sørensen (2007) shows that although ERMs had a significant influence on both male and female offspring, the effect was more significant for males. Moreover, they conclude that having entrepreneurial parents during adolescence can positively shape an offspring's inclination toward entrepreneurship. Considering the importance of having an entrepreneurial role model in general (Bosma et al., 2012) and during early ages in particular (Rosique-Blasco et al., 2016), scholars suggested that entrepreneurial career intentions can be promoted by observing entrepreneurs during childhood and adolescence. In this regard, early entrepreneurship education programs could be a potential

"seedbed" for using ERMs to develop initial entrepreneurial career intentions. Table 2-11 summarizes the research in this subcategory.

Table 2-11. Early role models

Reference	Main Content	Method	Dependent variable	Country
Obschonka et al. (2011)	Analysis of the influence of entrepreneurs' early experiences and personality traits on starting a business.	Quantitative	Entrepreneurial success	Germany
Rosique-Blasco et al. (2016)	Investigation of early-stage role models on entrepreneurial intentions.	Quantitative	Entrepreneurial intentions	Spain
Schoon and Duckworth (2012)	Investigation of the effects of socioeconomic background and early life experiences (parental role modelling) on adolescents' entrepreneurial intentions.	Quantitative	Self-employment	U.K
Schröder et al. (2011)	Analysis of the determinants of adolescents' entrepreneurial intentions with a family business background.	Quantitative	Career choice intentions	Germany
Sørensen (2007)	The impact of parental role modelling on children's entrepreneurial behaviour.	Quantitative	Self-employment	Denmark

Comparison of life cycle stages (2 papers)

Most of the research on ERMs focuses on either their impact in various contexts or on the different types of role models but does not differentiate among the effects of role models across different life stages (Mungai and Velamuri, 2011). Only two papers investigate this research question. Lafuente and Vaillant (2013) examine role models' effects on entrepreneurial behaviour at different stages of an individuals' life (18 to 45 years old) and find that entrepreneurial role models had more significant effects on younger adults and the smallest effect on older individuals (Lafuente and Vaillant, 2013). The second paper, by Mungai and Velamuri (2011), examines role models' impact during three different stages of life (late childhood, adolescence, and young adulthood). This research defined young adulthood as the period of life between 18 to 21 years. The authors find that the effect of ERMs is higher when the observer is a young adult. Since there are only two papers in this group, and they had different target sample ages, no clear picture can be obtained from their

findings. This limitation illustrates a critical gap in the literature. Table 2-12 summarizes the research in this subcategory.

Table 2-12. Comparison of life cycle stages

Reference	Main Content	Method	Dependent variable/s	Country
Lafuente and Vaillant (2013)	Impact of entrepreneurial role models' presence on entrepreneurial behaviour in different age groups (18-45 years old).	Quantitative	Entrepreneurial activities	Spain
Mungai and Velamuri (2011)	Investigation of role models' influence during individuals' different life stages.	Quantitative	Entrepreneurial career choice	U.S

2.4 Summary, open research questions, and limitations

This chapter provides a systematic review of the current literature on role model effects in an entrepreneurship context. We developed a framework for categorizing the various research topics of the 86 papers on ERMs investigated in this study. The chapter differentiates among three main research streams: in which context/where, by whom, and when the exposure to ERMs occurs. The first category, in which context/where, can be subdivided into research on *environment and culture*, *entrepreneurship programs*, and *social context and stereotyping*. Prior research investigating different types of ERMs (by whom) and their different impact on entrepreneurial intentions and behaviour can be divided into research about *family*, *similar role models and peers*, *educators and mentors*, *successful versus unsuccessful role models*, and *unrelated models*. The third research stream is focused on the stage of life at which exposure to ERMs occurs (when) and can be categorized into two groups: *childhood and adolescence* and *comparison of life cycle stages*.

The review highlights that ERMs' emergence and their effects vary among different environments. Regions with a high degree of entrepreneurial activities create more ERMs and consequently further increase entrepreneurial activity. Observing others increases the feasibility of starting a business and motivates more people to do so. Additionally, prior research suggests that entrepreneurship programs are significant for entrepreneurial intentions and behaviour. Furthermore, scholars showed that social context and stereotyping have a significant effect on entrepreneurial activity.

Furthermore, we shed light on the different types of ERMs and their role as an important influencing factor in starting a business. Prior research suggests that the type of role model (by whom) has various effects on observers' entrepreneurial intentions and behaviour. Moreover, the relationship between the ERM and the individual affects the attitude toward entrepreneurship. In particular, the type of role model (i.e., similar models and peers, as well as their success) can have a significant influence on an individual's entrepreneurial intention and behaviour.

Altogether, the results of this literature review reveal that it matters *in which context, by whom, how and when* the exposure to role models occurs. Based on these findings, this study identifies different research gaps and propose ideas for future research.

Research questions focusing on the context/where

- *Does exposure to ERMs have different effects in various cultural contexts? How does this affect entrepreneurial intentions and behaviour?*

Research on the effects of ERMs on individuals in different cultural environments remains scarce. This is, however, a principal research area (Reavley and Lituchy, 2008; Engle et al., 2011; Wyrwich et al., 2016) because culture comprises mutual values, beliefs, and predictable behaviours (Hofstede, 1980). It also includes comparable patterns of thoughts, feelings, and activities (Hofstede et al., 2005). Consequently, the behaviour of individuals is affected by their cultural values and social norms. This effect is also actual in terms of entrepreneurial behaviour (Krueger et al., 2013). For example, research examining women entrepreneurs in different cultures highlights that women's social status varies significantly among cultures (Lee, 1996; Reavley and Lituchy, 2008; Ramadani et al., 2013), which directly affects their intention to start a business (Schoon and Duckworth, 2012).

This chapter proposed to intensify future research in two ways. First, it is suggests investigating the effect of ERMs in different countries with different sociocultural systems and, second, investigating the effect of ERMs on entrepreneurial intentions and behaviours in these different environments. Answering these research questions can help better understand how ERMs work in different countries with different sociocultural systems. Furthermore, knowledge about this relationship can also provide a better understanding of how ERMs affect individuals with different cultural backgrounds.

- *Does exposure to ERMs have different effects in various social contexts with different stereotypes? How do stereotypes affect entrepreneurial intentions and behaviour?*

Gender stereotypes are individuals' common knowledge and perceptions, which are identified as being aspects and characteristics of each gender (Powell and Graves, 2003). Previous studies reveal that social context and stereotypes affect individuals' occupational choices (Johnson et al., 2008). Moreover, stereotypes have more significant effects on female entrepreneurial career intentions (Engle et al., 2011). BarNir et al. (2011) found that role models affect female entrepreneurial self-efficacy more than they affect male entrepreneurial self-efficacy.

Individuals socialize and are affected by stereotypes in their culture (Gupta et al., 2009). Entrepreneurship is known as a male-dominated area, and critical challenges have been identified for women (Ogbor, 2000; Hamilton, 2013). Women's behaviour is closely linked to the surrounding institutions and women's position in society (e.g., Minniti and Nardone, 2007; Díaz and Jiménez, 2010; BarNir et al., 2011; Koellinger et al., 2013;). Thus, the presence of role models can possibly abate gender stereotypes (Fagenson and Marcus, 1991; Rivera et al., 2007). Hence, future research could investigate which social stereotypes affect entrepreneurial intentions and behaviour and how they do so. Moreover, one could examine how these stereotypes affect the relationship between ERMs and entrepreneurial intentions and behaviour in different contexts.

Research questions focusing on types of role models (by whom)

- *How does the entrepreneurial orientation of ERMs affect individuals' entrepreneurial intentions and behaviour?*

From the literature, we know that there are various types of ERMs (e.g., Boissin et al., 2011; Bosma et al., 2012; Laviolette et al., 2012). These different types of role models affect entrepreneurial intentions and behaviour in different ways (e.g., Nanda and Sørensen, 2010; Schoon and Duckworth, 2012; Eesley and Wang, 2017).

However, prior studies do not allow us to draw clear conclusions regarding the question of which types of ERMs have the most substantial effect on entrepreneurial intentions and behaviour (Scherer et al., 1989a; Davidsson, 1995). In particular, they do not take the entrepreneurial orientation of the ERMs into account. Hence, it would be very revealing to investigate whether ERMs with different entrepreneurial orientations have different effects on

entrepreneurial intentions and behaviour. For example, it would be interesting to examine whether individuals react differently to social or profit-oriented ERMs.

- *Does similarity (e.g., gender, race, and nationality) between individuals and their role models affect entrepreneurial intentions and behaviour? Do children and adolescents differently react than do adults to similar role models?*

Previous studies show that role models are more effective when individuals and role models share the same gender or racial group (e.g., Marx and Goff, 2005; Lockwood, 2006; Marx et al., 2009). This finding is explained by the fact that similar role models inspire the belief that individuals can overcome uncertainties and risks associated with a specific task (Lockwood and Kunda, 1997; Marx et al., 2005). For example, prior research suggests that direct exposure to female ERMs can strengthen the entrepreneurial self-efficacy of women (Dempsey and Jennings, 2014). Hence, more in-depth knowledge of the similarity effect of ERMs can help identify fitting role models and integrate this knowledge into entrepreneurship programs, such as mentoring and coaching, to facilitate entrepreneurial intentions and behaviour. Furthermore, it would be interesting to see if this effect depends on the individual's age.

- *What are ERMs' effects on the individuals' actual entrepreneurial behaviour?*

Our literature review reveals that past studies mainly used cross-sectional research designs (e.g., Lafuente et al., 2007; Díaz and Jiménez, 2010; Laspita et al., 2012; Lafuente and Vaillant, 2013; Karimi et al., 2014; Criaco et al., 2017). Although this design fits the datasets and surveys used, it does not allow this study to assess longer-term effects and actual entrepreneurial behaviour (e.g., Du Toit and Muofhe, 2011; Laviolette et al., 2012; Huyghe and Knockaert, 2015; Fellnhofner, 2018). Longitudinal data could help close this gap and measure not only entrepreneurial intentions but also investigate actual behaviour (Davidsson and Honig, 2003; Karimi et al., 2014).

Research questions focusing on when the exposure occurs

- *How can exposure to ERMs in entrepreneurship programs for children and adolescents affect their entrepreneurial attitude?*

Prior research has found that the integration of role models into educational programs has a positive effect on entrepreneurial career intentions (Scott and Twomey, 1988). This effect is even higher in unfavourable environments (Walter and Block, 2016) such as those

with a bureaucratic legal system (Lim et al., 2010) or low property rights (McMullen et al., 2008). However, our literature review reveals that there is, to the best of our knowledge, no research on ERMs' effects on entrepreneurial attitudes and intentions in early entrepreneurship education (primary and secondary schools). Most studies tend to focus on adults (Fellnhöfer and Puumalainen, 2017) in higher education, such as university students (e.g., Toledano and Urbano, 2008; Du Toit and Muofhe, 2011; Mueller, 2011; Rahman and Day, 2014). None of the studies investigates younger ages, even though the importance of early childhood programs to adult behaviour has been acknowledged in many disciplines, such as research on labour markets (e.g., Heckman et al., 2013), cognitive and social development (Camilli et al., 2010) and career choice intentions (Schröder et al., 2011). However, Obschonka et al. (2011) provide the first insights into this relationship in the entrepreneurship context and argue that childhood and adolescent experiences are significant for later venture creation. Hence, future research focusing on early entrepreneurship education could improve our understanding of these interdependencies.

2.5 Limitations of the literature review

The results from our review must be considered in light of some limitations. Despite the extensive efforts, this literature search may not have captured all research related to role models and entrepreneurship. First, our in-depth content analysis was based on a keyword search, and it is therefore limited by the search keywords we selected. To decrease this risk, a backward search, expanded to keywords used in the articles, was conducted.

Second, this study only focused on peer-reviewed articles and ignored, for example, book chapters. Third, the review is limited to articles published in English. Although this procedure is an accepted practice, it should be noted that we excluded non-English articles from this literature search.

2.6 Conclusion of the literature review

This chapter conducted a systematic review of the literature investigating the effects of ERMs on entrepreneurial intentions and behaviour. This research was motivated due to the fact that although numerous studies have investigated the efficacy of ERMs, their findings are ambiguous, and the literature is quite fragmented. The aim was to structure the existing research, identify research gaps, and identify areas for future research. Altogether, this study contributes to the entrepreneurship and ERM literature in various ways. First, this review

provides a framework and categorizes the 86 publications focusing on ERMs and their effect on entrepreneurial intentions and behaviour that were identified since the first publications appeared in 1988 until the end of March 2019. We identified three main research streams, differentiating among in which context, by whom and at which stage of life the exposure to role models occurs. The context (where) can be divided into three subcategories: "*environment and culture*", "*entrepreneurship programs*", and "*social context and stereotyping*". The research on different types of role models (by whom) comprises papers focusing on *family, similar models and peers, educators and mentors, successful versus unsuccessful models and unrelated models*. The third research stream focuses on the stage of life at which the exposure to the ERM occurs. In this group, we categorized papers into two groups: *childhood and adolescence* and *comparison of life cycle stages*.

This approach enabled this study to identify research gaps in current ERM research. Based on these gaps, this chapter provides future research questions that can help increase our understanding of the effects of ERMs on entrepreneurial intentions and behaviour.

Second, these findings contribute to the entrepreneurship literature by demonstrating that exposure to role models affects entrepreneurial intentions and behaviour. In particular, we found that this effect depends on *by whom, when* and *in which context* the exposure to role models occurs.

Third, by highlighting that the integration of role models in entrepreneurial education programs, particularly at younger ages, could increase entrepreneurial intentions and behaviour, we also contribute to the discussion of entrepreneurial education. By providing evidence from prior research, this chapter shows that implementing suitable role models in entrepreneurship programs can help foster entrepreneurial activities. This knowledge is particularly relevant for policymakers and educators fostering entrepreneurial education programs, as it provides ideas about how to structure these programs and how to include ERMs effectively. In particular, policymakers and educators should consider aspects such as the stage of life, gender, peer groups, and prior experience or individual contexts while structuring and implementing entrepreneurship programs and initiatives.

Finally, this understanding of the importance of ERMs in increasing entrepreneurial intentions and behaviour is in line with previous investigations, which identified perceptual factors as key determinants of entrepreneurship (Arenius and Minniti, 2005; Koellinger et al., 2013; Boudreaux et al., 2019). However, access to an entrepreneurial network is not the only distinguishing factor in explaining entrepreneurial outcomes. Perceived entrepreneurial

capability, opportunity evaluation, and fear of failure have been identified by entrepreneurship literature as antecedents of entrepreneurial intentions and behavior (Arenius and Minniti, 2005; Koellinger et al., 2013; Boudreaux et al., 2019). Therefore, the following chapter investigates the effect of perceptual factors that prior field research has recognised as relevant antecedents of venture intentions and entrepreneurial behavior (Arenius and Minniti, 2005; Noguera et al., 2013; Welsh et al., 2017).

3 Gender differences in entrepreneurial propensity: Replication study⁵

3.1 Introduction

Although an increase in women's business ownership rates has been indisputable in recent years (Minniti and Nardone, 2007; Brush et al., 2009), gender imbalance is a constant fact in entrepreneurial activities (Dabic et al., 2012; Santos et al., 2016; Guzman and Kacperczyk, 2019). Past research has identified several explanations for the present imbalance. Explicitly, disparities in access to financing (Brixiová and Kangoye, 2016; Guzman and Kacperczyk, 2019) negatively affect women's perception of barriers. Indeed, a considerable number of studies have stressed that unfavourably impacting the perceptions of their capability and opportunity evaluation (Shinnar et al., 2012; Noguera et al., 2013), women are in a position surrounded by gender-based occupational roles (Ahl, 2006; Mousa and Wales, 2012). These roles presume that women are more suitable for supporting roles, while the same society recognises men as better competitors (Gupta et al., 2014; Tsai et al., 2016; Giménez and Calabrò, 2018). In other words, "women shy away from competition and men embrace it" (Niederle and Vesterlund, 2007, p. 1076).

These gender disparities in competitiveness may affect one's propensity toward entrepreneurship (Bönte and Piegeler, 2013; Tsai et al., 2016). Because of their presumed roles, women have higher family obligations, and consequently, family- and friend-based contacts represent most of their network. Thus, the major challenge for women entrepreneurship is not only the creation of a balance between family and entrepreneurship (Al-Dajani and Marlow, 2010; Javadian and Singh, 2012) but also, due to women's less prominent networks, the limitation of access to entrepreneurial role models (Bosma, 2013). As a result, while magnifying men's opportunity estimation (Gupta et al., 2014), these stereotypes linked to entrepreneurship are a threat to women's business ownership (Roper and Scott, 2009; Gupta et al., 2014). For this reason, as long as entrepreneurship continues as a stereotyped male domain (Naidu and Chand, 2017) and women are likely to confront systemized challenges (Dileo and Pereiro, 2019; Wu et al., 2019), perceptual variables will remain critical factors of entrepreneurial activities (Minniti and Nardone, 2007).

⁵ This chapter is based on Abbasianchavari and Block (2021).

Other researchers have determined that women are more risk averse (Dohmen et al., 2011) and that risk attitude perceptions have a critical effect on entrepreneurial propensities (Koellinger et al., 2007). Karimi et al. (2013) stated that gender disparities in entrepreneurship have a fundamental sociocultural dimension. In this regard, Noguera et al. (2013) found that for the region of Catalonia, the main sociocultural factors that influence women's entrepreneurship are perceived capabilities and fear of failure. Some scholars underlined the importance of these factors compared to that of objective variables, such as age, education and work status (Arenius and Minniti, 2005; Noguera et al., 2013; Welsh et al., 2017). The past literature, however, emphasises that perceptions are often surrounded by written and customary rules (Ahl, 2006); therefore, growing our understanding of individual perceptions associated with entrepreneurship is essential (Liñán and Fayolle, 2015; Schlaegel and Koenig, 2014).

The work of KMS is one of the most influential papers that investigated the influence of perceptual variables, and it showed that the lower rate of women entrepreneurship is associated with the lower level of their entrepreneurial network, perceived entrepreneurial capability, and opportunity evaluation and with their higher fear of entrepreneurial failure. They reported that gender disparities in perceptual variables differ significantly across nations but that these disparities have a widespread impact. By replicating the study of KMS, this study advances our understanding of the relationship between perceptual variables and women's entrepreneurship. This knowledge is crucial for successfully tackling the gender disparity towards entrepreneurship and for expanding women entrepreneurship across nations.

3.2 Background of the replication study

Despite the proliferated research on women entrepreneurship (Geiger and Oranburg, 2018; Gupta et al., 2014; Malmström et al., 2020; Strohmeyer et al., 2017; Yang et al., 2020), the evaluation of the perceptual variables' influences on women's decisions toward entrepreneurship is substantially missing (Arenius and Minniti, 2005; Shinnar et al., 2012; van der Zwan et al., 2012; Welsh et al., 2017). To address this gap, using GEM data for 17 nations, KMS found that the lower rate of women's entrepreneurial behaviour results from a lower women's propensity towards entrepreneurship rather than from disparities in firm survival chances across genders. The authors reveal that women have a lower level of confidence about their entrepreneurial capabilities, have fewer entrepreneurial networks and have a higher fear of failure than men. They point out that these subjective perceptual variables are essential in

explaining much of the gender gap in entrepreneurial behaviour. The proportion of these factors changes considerably across cultures; even so, they are cosmopolitan factors that affect women's entrepreneurial outcomes. They further controlled for the respondents' age, educational level, household income, and work status; nevertheless, the gender gap did not differ significantly. The inclusion of perceptual variables, indicating socioeconomic differences, could potentially, through perceptual factors, affect the decision towards entrepreneurship. From their standpoint, the gender gap in entrepreneurial perceptual variables is a significant factor and could not be explained by observed socioeconomic conditions or the business type's selection. Overall, the authors demonstrate that potential cognitive biases and different perceptions influence the decision to be an entrepreneur, clarifying a large portion of the gender gap in entrepreneurial behaviour.

To advance our understanding of the gender gap in entrepreneurial propensity, we attempt to replicate the analysis done by KMS. Consequently, this chapter implements the same analysis by using the same data (exact replication) and measurements.

3.3 Method

3.3.1 Data, sample and inclusion criteria

To replicate the study of KMS, we utilised the Global Entrepreneurship Monitor (GEM) adult population survey. The dataset emerged as a standardised dataset on entrepreneurship and provides cross-national entrepreneurship research at an individual level (Reynolds et al., 2005). With very few exceptions, for each country, the data comprise a representative random sample of a minimum of 2,000 employable people for each year. We use three datasets to conduct the analysis. For the replication, we utilised the sample that covered the period from 2001 to 2006 and that spanned over 17 countries. We yielded 236,556 individuals across the same countries. The individual-level data were accessible for educational level, work status, and participant income group for 2001, 2002, 2005 and 2006.

Table A.2 lists the countries included in the sample. We eliminated the observations with missing values for the required variables. Furthermore, similarly as in the original study, we focused on individuals between 18 and 64 years of age. This study did not consider respondents who were older than 64 years of age at the survey time because individuals in this age group are less likely to start a business (Holtz-Eakin et al., 1994; Obschonka and Stuetzer, 2017). Table A.1 documents the variables used in the analysis and the full description of all variables used.

3.3.2 Measures

To measure entrepreneurial propensity and perceptions, we used the same survey items that KMS used. GEM specifies three types of entrepreneurs: nascent, new and established entrepreneurs. First, we evaluated whether the respondents were engaged in early-stage entrepreneurial activity. We defined individuals as a *nascent entrepreneur* if in the last 12 months before the survey, they had taken steps towards creating a business that they would either partly or fully own. However, their business had to have paid wages, profits or payments to the owners or others for at most three months. For the second category, we classified respondents as *new entrepreneurs* if they were actively involved in start-ups. These individuals owned and managed a business that had been paying wages for more than three months but less than 42 months. Individuals were categorised as *established entrepreneurs* if their business had been paying wages, profits or payments for more than 42 months. In our classification, *nonentrepreneurs* were individuals who were not engaged in any self-employment activity. Additional perceptual variables measuring the individuals' subjective perceptions were as follows:

Perceptions of entrepreneurial capabilities (suskill) were measured by asking participants if they have the knowledge, skill, and experience that are essential for being self-employed (1=Yes, 0=No).

Opportunity perceptions (opport) were assessed by asking participants whether they think that in the area where they live, good opportunities for starting a business existed in the last six months before the questionnaire (1=Yes, 0=No).

Fear of failure (fearfail) of the respondents was captured by asking them about the likelihood that fear of failure stops them from being self-employed (1=Yes, 0=No).

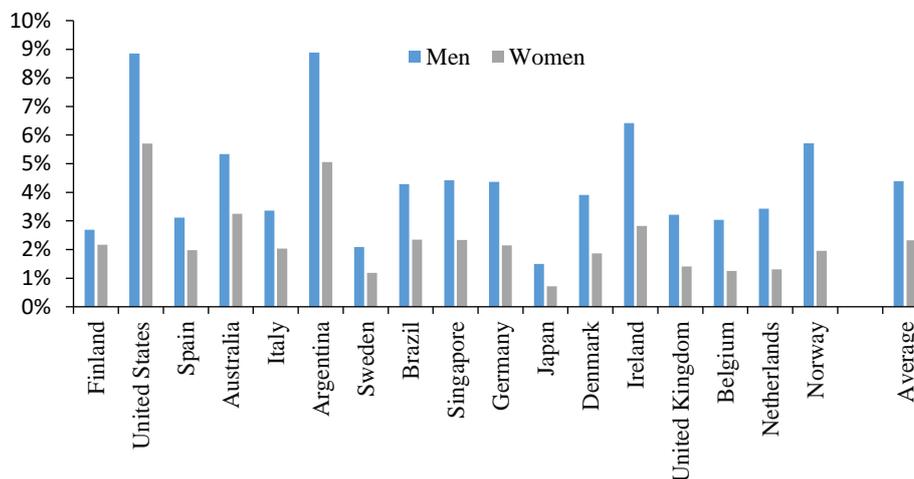
In addition to the above variables, observing entrepreneurial role models may enable individuals to identify and acquire specific competencies and the know-how to start a business (Lent et al., 1994; Bosma et al., 2012; Scott and Twomey, 1988). For this reason, *entrepreneurial role model observation* (knowent) was assessed by asking participants if they had personally known an entrepreneur in the last two years (1=Yes, 0=No). The last included measurement looked into the previous entrepreneurial experience. It was assessed by asking whether respondents had closed down a business in the last 12 months following the questionnaire (closebus). The goal was to investigate whether prior entrepreneurial experience could be beneficial for starting a new business.

3.4 Results

3.4.1 Key descriptive findings

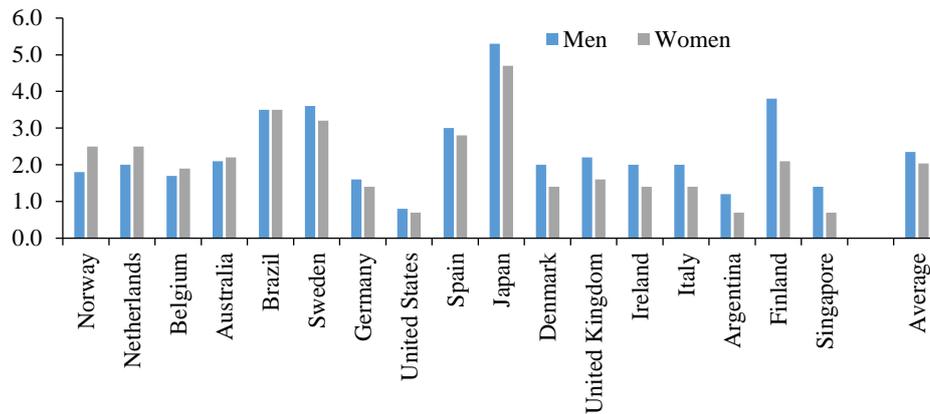
Similarly to the results of KMS, the results indicate that women show lower levels of entrepreneurial activities across countries. We can observe that the ratio of males to females for the years 2001-2006 is 1.9 (see Figure 3-1). We also found a significant gender gap in favour of men for established entrepreneurs. Our results reveal that for each female per established enterprise, there are 2.39 males. This ratio is larger than that in the original study (2.15).

Figure 3-1. Nascent entrepreneurs as a percentage of the adult population



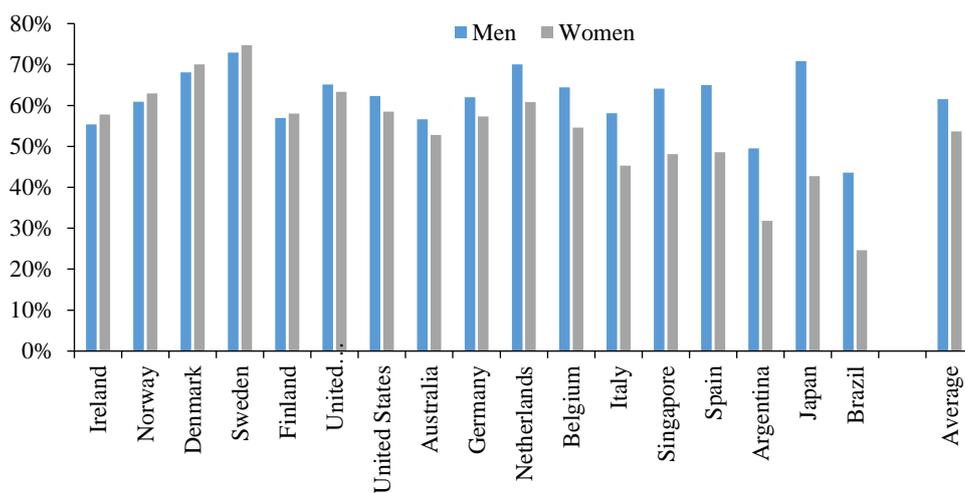
Notes. In the engagement in start-up activity, we ordered countries according to the ratio of men to women. The gender gap is increasing from left to right.

To further demonstrate the differences across time and to estimate the average chances of firm survival in each country, KMS used the ratio of established to nascent entrepreneurs. They reported that although men and women's overall survival chances are equal, the survival rate is higher for females in 6 out of the 17 countries. Women in Spain, Norway, Japan, the Netherlands, Belgium and Australia had higher survival chances than men. Nevertheless, this study found that women have a higher chance only in Norway, the Netherlands, and Belgium. Contrary to the replicated study, our results show that survival chances are not equal and that compared to the women's survival rate, the men's average survival chances are 1.2 times greater.

Figure 3-2. Ratios of nascent entrepreneurs to established business owners

Note. Similar to the original study, countries on the left offer higher average survival chances for women than men.

Our further analysis shows that gender differences in employment may not be the main reason for a differential entrepreneurial propensity rate among men and women. The gender differences between employees are not significant in all 17 countries, but, similarly to the original study, women from Ireland, Norway, Denmark, Sweden and Finland also have a higher employment percentage.

Figure 3-3. Wage-earners as a percentage of the adult population

Note. We ordered countries according to the ratio of men to women. The gender gap is increasing from left to right.

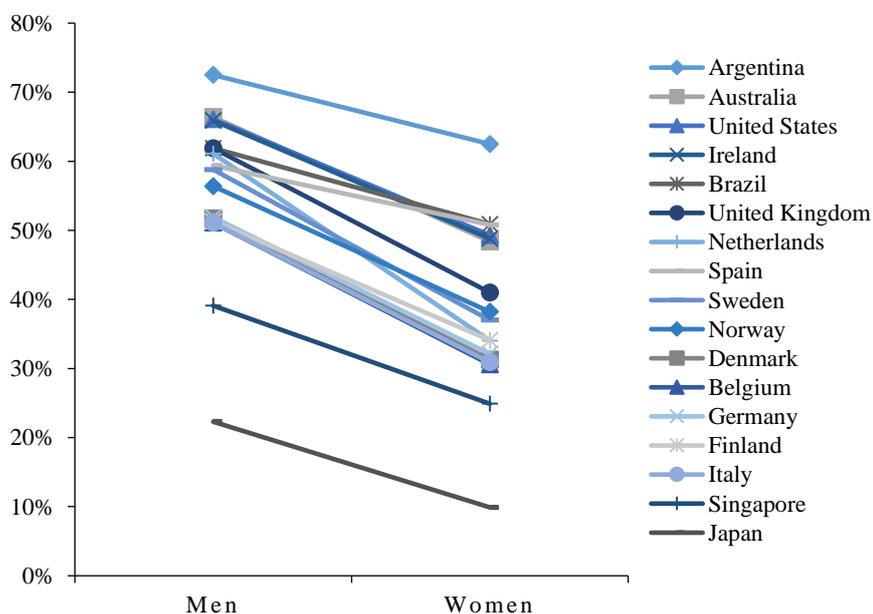
Despite the above description, our findings indicate noticeable gender differences in perceptions. Table 3-1 summarises the original and the replication studies' results and demonstrates our replication's results are in line with KMS. 57% of men consider having enough competencies and experience to establish their own business (suskill) in comparison with females, where only 40% believed in their entrepreneurial capabilities. Figure 3-4 demonstrates that in all countries, men are more confident about their entrepreneurial capabilities. Overall, the ratio of males to females is 1.5; however, gender disparities are stronger in certain countries such as Japan, Belgium or Netherlands compared to some others (e.g., Argentina, Spain, and Brazil).

Table 3-1. Perceptual disparities between men and women in both studies

	Original study		Exact replication	
	Men (%)	Women (%)	Men (%)	Women (%)
Suskill (yes)	58	41	57	40
Fearfail (yes)	33	40	33	40
Opport (yes)	41	33	40	32
Knowent (yes)	43	31	43	31
Total sample (N)	108,919		119,609	

Note. Similarly to the analyses of KMS, gender gaps in perceptions are significant at >99% confidence according to a chi2-test for all groups.

Figure 3-4. Perceived entrepreneurial skill across countries by gender



Similarly to the results of KMS, significant gender dissimilarities exist for opportunity perception (opport), fear of failure (fearfail) and knowing an entrepreneurial role model (knowent). The significant gender imbalance could result from institutional factors, which created stereotypes for individuals' roles in societies (Tsai et al., 2016). Institutions create unwritten social rights (Suchman, 1995) and influence entrepreneurial propensity through perceptions (Giménez and Calabrò, 2018; Schmutzler et al., 2019). Thus, in opposition to men, women's interpretation of their environment plays a significant role (De Bruin et al., 2007; Shinnar et al., 2012). Differences in objective variables could be another reason for this gender gap that previous studies found less influential (Arenius and Minniti, 2005; Koellinger et al., 2008; van der Zwan et al., 2012).

Men indicated a more favourable opportunity evaluation than women. 40% of men reported that in the last six months preceding the survey, good opportunities for starting a business existed in the area where they live, whereas only 32% of females have the same perception. This difference may indicate the impact of entrepreneurs' gender stereotypes on the evaluation of opportunities so that males evaluate business opportunities more favourably than women (Gupta et al., 2014) or the existence of fewer entrepreneurial opportunities for women, which can be a result of having smaller entrepreneurial networks (Davis, 2012; Jamali, 2009) or less human capital (Gonzalez-Alvarez and Solis-Rodriguez, 2011).

In the exact replication, 33% of males think their fear of failure could stop them from being self-employed. In comparison, in 16 out of 17 countries, women have a higher fear of failure (40%). The only exception is Japan, where women have a significantly lower fear of failure to start a business. The gender gap in fear of failure could result from lower perceived capability (Tsai et al., 2016) or an inapplicable environment for entrepreneurial activities (Shahriar, 2018). Lastly, men had a higher possibility of knowing an entrepreneurial role model (43%) than women (31%). This finding acknowledges the arguments related to the lack of entrepreneurial role models and, therefore, less social support for women (Dyer and Handler, 1994; Noguera et al., 2013). The findings of this chapter are consistent with the idea that more female role models for women are needed to promote women's business ownership (Noguera et al., 2013; Karimi et al., 2014; Abbasianchavari and Moritz, 2020).

Table 3-2 displays the means of all four perceptions at all three various levels of the entrepreneurial procedure and for non-entrepreneurs. In line with KMS, there is a significant difference for all four perceptions between non-entrepreneurs and entrepreneurs. The likelihood to find entrepreneurial opportunities (opport) and to meet entrepreneurial role

models (knowent) is higher for individuals with higher confidence in their entrepreneurial capability (suskill). Besides, these people are less afraid of failure than non-entrepreneurs. Altogether, descriptive results reveal universal gender disparities toward entrepreneurship.

In contrast to KMS, our descriptive results show not only the gender gap in men's favour in starting businesses but also that the survival rates across genders are the reason for low female business ownership. Thus, the analysis of decision-making processes toward entrepreneurship needs to consider perceptual variables. These variables may change over time via individuals' experiences and their role in society (Arenius and Minniti, 2005), and with our data, it is impossible to observe individuals across time. Nevertheless, we could compare respondents in various steps of the entrepreneurial process.

Table 3-2. Perceptual disparities between women and men

	Suskill (yes)		Fearfail (yes)		Opport (yes)		Knowent (yes)		N
	Men (%)	Women (%)	Men (%)	Women (%)	Men (%)	Women (%)	Men (%)	Women (%)	
Non-entrepreneurs	49	35	37	41	37	30	39	29	91,059
Nascent entrepreneurs	89	83	21	24	62	61	64	57	3,915
New entrepreneurs	90	85	20	28	56	49	63	54	3,924
Established entrepreneurs	88	83	21	23	46	42	54	46	8,301

Note. Similarly to the analyses of KMS, gender gaps in perceptions are significant at >99% confidence according to a chi2-test for all groups. All valid observations are included.

3.4.2 Start-up decisions and perceptual variables

Start-up decisions

Similarly to KMS, we ran three stepwise probit models on nascent entrepreneurship to investigate why females own a lower portion of start-up activities. For a better evaluation of this, we attempted to clarify the existing gender gap by differences in individual perceptions and socioeconomic variables; variables were added stepwise to our model. To provide robust statistical inferences, we integrated the robust covariance matrix, which is renowned as a sandwich estimator (Huber, 1967; White, 1982) in all models. Note that the sandwich estimator has the advantage of relating "robust" or "sandwich"-based covariance standard error estimates, which are autonomous from distributional hypotheses. Our large sample can leverage the usual sandwich estimator and make robust covariance estimates appealing (Carrol et al., 1998).

The first model only involved a gender dummy and a constant, while the second model added household income, education, work status, age and whether the participant closed business in the last 12 months following the survey. The estimated effect implies that being female is highly significant (-.031), while in model 2, the gender effect slightly reduced to -0.27. Nevertheless, loglikelihood confirms the significant effect of gender. Our results show that these variables describe quite a small fraction of the gender disparities in entrepreneurial propensity. Adding perceptual variables (fearfail, oport, suskill, and knowent) reduces the gender gap to -0.13 in the exact replication. However, it does not affect the results very much, and gender disparity does not disappear. Higher entrepreneurial capabilities (suskill), knowing an entrepreneurial model (knowent), and perception of business opportunities are positively associated with higher entrepreneurial propensity. Our results are in line with KMS and Minniti and Nardone (2007). With a coefficient value of 0.84 in the exact replication, we find full support for the idea that perceive capability strengthening the entrepreneurial propensity while fear of failure (fearfail) causes a relative decline in entrepreneurial propensity. Present results provide support for previous understandings about the link between perceptual variables and entrepreneurial propensity (Arenius and Minniti, 2005; Koellinger et al., 2008) by clarifying parts of the systemized gender gap toward entrepreneurship. Finally, and not surprisingly, individuals with prior entrepreneurial experience (closesub) had relatively higher entrepreneurial propensity.

Table 3-3. Probit estimates on nascent entrepreneurship

Variable	Model 1		Model 2		Model 3	
	β	P > z	β	P > z	β	P > z
Female	-.31**	0.00	-0.27**	0.00	-0.13**	0.00
Hh income - middle 33% income			0.00	0.96	-0.00	0.99
Hh income - upper 33% income			0.11**	0.00	0.03*	0.04
Education - secondary			0.06**	0.00	0.00	0.82
Education - post-secondary			0.16**	0.00	0.05*	0.01
Education - graduate			0.24**	0.00	0.08**	0.00
Work status - working			0.17**	0.00	0.12**	0.00
Work status - retire/student			-0.28**	0.00	-0.30**	0.00
Age 25-34			0.01	0.59	-0.03	0.23
Age 35-44			-0.00	0.81	-0.05*	0.05
Age 45-54			-0.12**	0.00	-0.15**	0.00
Age 55-64			-0.26**	0.00	-0.29**	0.00
Fear of failure (fearfail) - yes					-0.30**	0.00
Opportunity perception (opport) - yes					0.34**	0.00
Sufficient skill perception (suskill) - yes					0.84**	0.00
Knowing another entrepreneur (knowent) - yes					0.31**	0.00
Shut down business in past 12 months - yes			0.64**	0.00	0.32**	0.00
Constant	-1.49**	0.00	-1.73**	0.00	-2.38**	0.00
Number of observations	95,895		95,895		95,895	
Loglikelihood	-18,902		-18,231		-15,782	
Prob > chi2	0.00		0.00		0.00	

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than a secondary degree); work status (not working); currently non-entrepreneur; and not shut down business in the past 12 months. In the estimation, we included country and year dummies. We included only observations classified as nascent entrepreneurs or non-entrepreneurs. New entrepreneurs and established entrepreneurs are excluded. Robust standard errors are estimated. *p < 0.1; ** p < 0.01.

Differences in perceptual variables

As a further robustness check of the descriptive findings, similarly to KMS, we ran two probit models for each perceptual variables (fearfail, opport, suskill, and knowent). As regressors, we involved all valid sample and the following variables in the first model: gender, household income, work status, education, age, previous entrepreneurial experience, country, and year dummies. Second, we added entrepreneurial engagement variables to the probit model. It furthermore indicates that socioeconomic variables failed in explaining perceptual variables. Table 3-4 displays that the gender gap remains profoundly meaningful and that our models provide support for the descriptive results.

Individuals' business type selection may lead to gender differences. We found consistent support for Bates (1995) by displaying that men are more engaged in wholesale, mining and construction than women. In particular, women are more presentative in health, education, social services and consumer services. Appendix A.3 documents substantial differences

disseminating of males and females across various sectors when they pursue an entrepreneurial career. To shed more light on the matter of sector effects, we ran further probit models on (fearfail), (opport), (suskill) and (knowent) between nascent entrepreneurs. This time, as a regressor, we used sector of the business, gender, income, education, working status, age, and previous business experience. The replication study revealed that even though we controlled for mentioned drivers, nascent female entrepreneurs are less confident about their entrepreneurial skills and capabilities (suskill).

In line with the original study, women are less likely to be in contact with entrepreneurial role models and have a higher fear of failure. In the KMS study, opportunity evaluation is the only perception that described gender differences by controlling the start-up's sector. Our explorative results emphasise subjective perceptions may not explain the fear of failure and opportunity when we control for the type of start-up (see Table 3-5).

Table 3-4. Probit estimates on perceptual variables, all observations

Variable	Y=suskill				Y= fearfail				Y=opport				Y=knowent			
	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z
Female	-0.40**	0.00	-0.34**	0.00	0.15**	0.00	0.12**	0.00	-0.20**	0.00	-0.18**	0.00	-0.26**	0.00	-0.23**	0.00
Hh income - mid 33% income	0.07**	0.00	0.06**	0.00	-0.02*	0.01	-0.02*	0.02	0.04**	0.00	0.04**	0.00	0.08**	0.00	0.08**	0.00
Hh income - upper 33% income	0.27**	0.00	0.22**	0.00	-0.16**	0.00	-0.14**	0.00	0.16**	0.00	0.14**	0.00	0.26**	0.00	0.24**	0.00
Education - secondary	0.15**	0.00	0.15**	0.00	-0.05**	0.00	-0.05**	0.00	0.07**	0.00	0.06**	0.00	0.11**	0.00	0.11**	0.00
Education - post-secondary	0.28**	0.00	0.28**	0.00	-0.10**	0.00	-0.10**	0.00	0.19**	0.00	0.18**	0.00	0.23**	0.00	0.22**	0.00
Education - graduate	0.31**	0.00	0.31**	0.00	-0.06**	0.00	-0.05**	0.00	0.28**	0.00	0.27**	0.00	0.33**	0.00	0.32**	0.00
Work status - working	0.24**	0.00	0.10**	0.00	-0.03**	0.00	0.01	0.10	0.06**	0.00	0.02*	0.08	0.15**	0.00	0.09**	0.00
Work status - retired/student	-0.06**	0.00	-0.03*	0.02	-0.10**	0.00	-0.11**	0.00	-0.06**	0.00	-0.05**	0.00	-0.02	0.13	-0.00	0.62
Age 25-34	0.25**	0.00	0.23**	0.00	0.05**	0.00	0.06**	0.00	-0.03*	0.03	-0.04**	0.00	-0.06**	0.00	-0.07**	0.00
Age 35-44	0.31**	0.00	0.27**	0.00	0.04**	0.00	0.07**	0.00	-0.08**	0.00	-0.09	0.10	-0.19**	0.00	-0.21**	0.00
Age 45-54	0.30**	0.00	0.25**	0.00	0.00	0.70	0.02*	0.05	-0.14**	0.00	-0.15**	0.00	-0.36**	0.00	-0.38**	0.00
Age 55-64	0.26**	0.00	0.22**	0.00	-0.14**	0.00	-0.12**	0.00	-0.16**	0.00	-0.17**	0.00	-0.48**	0.00	-0.51**	0.00
Nascent entrepreneur	-	-	1.13**	0.00	-	-	-0.43**	0.00	-	-	0.61**	0.00	-	-	0.56**	0.00
New entrepreneur	-	-	1.18**	0.00	-	-	-0.45**	0.00	-	-	0.39**	0.00	-	-	0.51**	0.00
Established entrepreneur	-	-	1.15**	0.00	-	-	-0.47**	0.00	-	-	0.21**	0.00	-	-	0.40**	0.00
Shut down business < 12	0.90**	0.00	0.79**	0.00	-0.14**	0.00	-0.06**	0.00	0.20**	0.00	0.13**	0.00	0.56**	0.00	0.48**	0.00
Constant	-0.28**	0.00	-0.36**	0.00	0.12**	0.00	-0.68**	0.00	-0.33*	0.02	-0.39**	0.00	-0.30**	0.00	-0.36**	0.00
Number of observations	108,309		108,309		108,309		108,309		108,309		108,309		108,309		108,309	
Loglikelihood	-68,948		-64,233		-69,039		-68,152		-66,522		-65,683		-66,755		-65,634	
Prob > chi2	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than a secondary degree); work status (not working); currently non-entrepreneur; and not shut down business in the past 12 months. Estimation included country and year dummies. Robust standard errors are estimated. *p < 0.1; **p < 0.01.

Table 3-5. Probit estimates for perceptual variables of nascent entrepreneurs

Variable	Original study				Exact replication											
	Y=suskill		Y=fearfail		Y=opport		Y=knowent		Y=suskill		Y=fearfail		Y=opport		Y=knowent	
	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z
Female	-0.19**	0.01	0.13*	0.04	-0.05	0.36	-0.23**	0.00	-0.20**	0.00	0.09	0.20	-0.05	0.40	-0.17**	0.00
Hh income - middle 33% income	0.07	0.45	-0.11	0.14	0.10	0.14	0.00	0.99	0.02	0.78	-0.15*	0.09	0.11	0.18	0.02	0.77
Hh income - upper 33% income	0.12	0.17	-0.09	0.25	0.19**	0.01	0.16*	0.02	0.06	0.55	-0.05	0.52	0.15*	0.07	0.16*	0.05
Education - secondary	0.08	0.42	-0.03	0.75	-0.02	0.77	0.04	0.63	0.11	0.34	-0.04	0.68	-0.02	0.76	0.02	0.78
Education - post-secondary	0.09	0.38	-0.01	0.89	-0.04	0.60	0.03	0.76	0.06	0.58	-0.00	0.98	-0.04	0.67	0.00	0.97
Education - graduate	0.21*	0.05	0.04	0.64	-0.10	0.24	0.16*	0.06	0.26*	0.03	0.12	0.24	-0.15	0.13	0.21*	0.04
Work status - working	0.24*	0.02	-0.22*	0.01	0.08	0.30	0.27**	0.00	0.15	0.15	-0.16*	0.09	0.12	0.15	0.26**	0.00
Work status - retired/student	0.07	0.69	-0.23	0.14	-0.03	0.83	-0.03	0.82	0.02	0.89	-0.22	0.21	0.12	0.45	-0.06	0.68
Age 25-34	0.37**	0.00	-0.01	0.92	0.05	0.58	0.00	0.99	0.35**	0.00	0.01	0.91	0.08	0.41	0.02	0.84
Age 35-44	0.43**	0.00	-0.05	0.60	-0.01	0.89	-0.14	0.15	0.39**	0.00	-0.02	0.80	0.12	0.24	-0.11	0.31
Age 45-54	0.44**	0.00	-0.04	0.69	-0.18*	0.06	-0.29*	0.00	0.29*	0.02	-0.00	0.96	-0.07	0.48	-0.31**	0.00
Age 55-64	0.62**	0.00	0.03	0.81	-0.14	0.20	-0.32**	0.01	0.46**	0.00	0.04	0.74	0.05	0.67	-0.28*	0.03
Sector:																
Mining, construction	0.58*	0.04	-0.04	0.85	0.39*	0.06	0.47*	0.02	0.34	0.27	0.10	0.65	0.38*	0.07	0.50*	0.01
Manufacturing	-0.14	0.54	0.09	0.65	0.03	0.85	0.18	0.33	-0.32	0.24	0.15	0.49	-0.13	0.53	0.22	0.26
Trans, comm, utilities	0.33	0.21	-0.09	0.67	0.20	0.30	0.26	0.17	0.04	0.87	-0.00	0.98	0.09	0.65	0.32	0.12
Wholesale, repair	-0.11	0.65	-0.27	0.20	0.13	0.51	0.48*	0.01	-0.07	0.78	-0.08	0.70	0.12	0.55	0.66**	0.00
Retail, hotel, restaurants	-0.01	0.95	-0.01	0.94	0.34*	0.05	0.38*	0.02	-0.20	0.41	0.13	0.49	0.31*	0.09	0.50**	0.00
Informatic and communication	0.32	0.24	-0.28	0.21	0.44*	0.03	0.44*	0.03	0.07	0.80	-0.09	0.71	0.45*	0.04	0.49*	0.02
Finance, insurance, real estate	-0.00	0.98	-0.13	0.48	0.21	0.21	0.42*	0.01	-0.22	0.38	0.04	0.83	0.17	0.36	0.47**	0.00
Business services	-0.15	0.51	-0.02	0.52	0.31*	0.09	0.52**	0.00	-0.35	0.18	0.04	0.84	0.29	0.14	0.57**	0.00
Administrative services	-0.10	0.64	-0.01	0.92	0.26	0.16	0.28	0.12	-0.34	0.19	0.08	0.70	0.24	0.22	0.34*	0.07
Health, education, social services	-0.01	0.96	-0.01	0.89	0.02	0.87	0.32	0.00	-0.01	0.91	-0.03	0.76	-0.11	0.32	0.34**	0.00
Consumer services	0.58*	0.02	-0.67**	0.00	0.18	0.38	-0.06	0.78	0.78**	0.00	-0.73**	0.00	0.38	0.10	-0.21	0.36
Shut down bus < 12 months	-0.19**	0.01	0.13*	0.04	-0.05	0.36	-0.23**	0.00	-0.20**	0.00	0.09	0.20	-0.05	0.40	-0.17**	0.00
Constant	0.07	0.45	-0.11	0.14	0.10	0.14	0.00	0.99	0.02	0.78	-0.15*	0.09	0.11	0.18	0.02	0.77
Number of observations	2,566		2,566		2,566		2,566		1,771		1,771		1,771		1,771	
Loglikelihood	-916		-1,254		-1,622		-1,566		-686		-897		-1,121		-1,098	
Prob > chi-squared	0.00		0.00		0.00		0.00		0.00		0.03		0.00		0.00	

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than a secondary degree); work status (not working); currently non-entrepreneur; and not shut down business in the past 12 months. Estimation included country and year dummies. Robust standard errors are estimated. *p < 0.1; **p < 0.01.

3.5 Discussion

3.5.1 Explaining the gender gap in entrepreneurial propensity

For generalisation, to measure women's entrepreneurial propensity, we reran precisely the same analysis as that ran by KMS. Thus, we entered influential variables in the recursive, simultaneous-equations bivariate probit model proposed by Evans and Schwab (1995). In the pursuit of a business opportunity, we took into account the possible endogeneity of (suskill), (opport), (fearfail) and (knowent) along with possible biases from omitted variables. As we report in Table 3-6, the two dependent variables are (suskill) and (nascent entrepreneurship) in this model. We conducted the same analysis for all four perceptual variables, but we displayed only the results of perceived entrepreneurial capability because it was the only variable for which we did not find any significant differences regarding the gender dummy in the nascent entrepreneurship equation. This finding is in the same vein as the probit estimates on nascent entrepreneurship, which showed that perceived entrepreneurial capability had the strongest correlation (Table 3-3). The gender disparity is substantially weakened in all other three models.

We observe that the error terms have a bivariate standard cumulative distribution with covariance ρ and that they are independent of one observation to another. Thus, we conducted the model employed by KMS: $\text{Prob} [\text{nascent}=1, \text{suskill}=1 \mid X1, X2] = \Phi_2 (\beta'1x1 + \gamma y2, \beta'2x2, \rho)$. Hence, Φ_2 equals the bivariate normal cumulative distribution function, and ρ equals the covariance of error terms for evaluating $\text{Prob} [\text{nascent} = 1 \mid x1, \text{suskill}]$ and $\text{Prob}[\text{suskill}=1 \mid x2]$. Consequently, the independent variables are constant, gender, household income, education, work status, age, (fearfail), (opport), (knowent) and (closebus) (z1 to z10). Then, the vectors of the regressors are as follows:

$$X1=Z1, Z2, Z3, Z4, Z5, Z6, Z7, Z8 \text{ and } X2=Z1, Z2, Z3, Z4, Z5, Z6, Z7, Z8, Z9, Z10$$

The high correlation between (suskill) and (nascent) shows that the more confident individuals are about their entrepreneurial skills, the greater the probability of an individual being a nascent entrepreneur. To control this effect, we used a simultaneous bivariate probit model. We ran the bivariate probit model, including the endogenous dummy variables, with simultaneous equation models introduced by Heckman (1977) and later Green (1998) to investigate gender differences. We used this model because it enables us to investigate the effect of omitted variables that might be simultaneously associated with (suskill) and (nascent). We presumed the error terms are a normally distributed term. If ρ is equal to 0, it indicates that the error terms of the equations are not correlated and that the bivariate probit model outperforms

the individual models. If ρ is significantly different from zero, it implies that in individual equations, escaping omitted variables biases that model.

Since endogenous variables appear on the right-hand side in one of the equations, the model is recursive (Evans and Schwab, 1995; Kassouf and Hoffmann, 2006). Therefore, we used two variables on the right side of equation (x2), which we did not include in x1. Since (closebus) and (knowent) may indirectly affect (suskill), we included both in x2. In the estimated method, there was a correlation between (knowent) and (closebus) with (suskill), which could be relevant to the omitted variables that indicate an association with exogenous variables. The results demonstrate a highly significant coefficient of 0.84 for (closebus) and 0.51 for (knowent) in the single equation probit model for the replication study (see Table 3-6). Moreover, an individual probit model for $\text{Prob} [\text{nascent}=1 | x1]$ displays that (knowent) and (closebus) are not correlated with errors of the equation.

The results also show women are less confident about their entrepreneurial knowledge and skills even when we control for observed and omitted variables. We can explain the gender disparities in (suskill) perception, while our replication analysis displays the consistency of the gender gap regarding entrepreneurial capabilities (suskill). For further analysis, we conducted the same analysis for (knowent), (fearfail) and (opportunity). Gender gap linked to opportunity recognition, knowing an entrepreneur and fear of failure remained highly significant, although this gap is not as substantial as the differences regarding perceptions toward entrepreneurial capabilities. The correlation of error term is significant and negative, which shows that omitted variables have a significant negative impact on entrepreneurial skills perception. There are several potential explanations for the puzzling effects of skills on entrepreneurial propensity. The unwritten social rules may expect women to spend more time with family and to have more family obligations (Roomi et al., 2009; Tsai et al., 2016). Second, in line with past scholars, we think that the advance of equality in developed countries may reduce women's entrepreneurial propensity while they receive more equal opportunities (Tsai et al., 2016). However, we could not compare developed countries with developing countries since 15 out of 17 included countries are developed nations.

Table 3-6. Recursive simultaneous bivariate probit model: exact replication

Variable	Equation for nascent entrepreneurs (nascent)		Equation for sufficient skill perception (suskill)	
	β	P > z	β	P > z
Female	0.00	0.99	-0.31**	0.00
Hh income - middle 33% income	-0.04**	0.00	0.04**	0.00
Hh income - upper 33% income	-0.05**	0.00	0.15**	0.00
Education - secondary	-0.01	0.51	0.13**	0.00
Education - post-secondary	-0.03	0.19	0.24**	0.00
Education - graduate	-0.01	0.46	0.26**	0.00
Work status - working	0.11**	0.00	0.10**	0.00
Work status - retired/student	-0.23**	0.00	-0.06**	0.00
Age 25-34	-0.10**	0.00	0.27**	0.00
Age 35-44	-0.14**	0.00	0.35**	0.00
Age 45-54	-0.23**	0.00	0.35**	0.00
Age 55-64	-0.32**	0.00	0.31**	0.00
Fear of failure (fearfail) - yes	-0.12**	0.00	-0.32**	0.00
Opportunity perception (opport) - yes	0.22**	0.00	0.31**	0.00
Sufficient skill perception (suskill) - yes	1.85**	0.00		
Knowing another entrepreneur (knowent) - yes			0.51**	0.00
Shut down business in past 12 months - yes			0.84**	0.00
Constant	-2.20**	0.00	-0.49**	0.00
Number of observations		95,895		
Loglikelihood		-73,606		
Prob > chi-squared		0.00		
Rho		-0.73**		

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than a secondary degree). In the estimation, we included country and year dummies. We included only observations classified as nascent entrepreneurs or non-entrepreneurs. We excluded new entrepreneurs and established entrepreneurs. Robust standard errors are estimated. *p < 0.1; ** p < 0.01.

Environment influences women's entrepreneurial activities by demonstrating entrepreneurship as a stereotyped men domain (Tsai et al., 2016; Giménez and Calabrò, 2018; Shahriar, 2018) which affects women's access to entrepreneurial networks (Bosma, 2013) or perceived financial obstacles (Verheul et al., 2012; Roper and Scott, 2009). Moreover, the environment and gender stereotypes may affect human capital like the field of the study (Bosma, 2013). We could not observe this in our data, but it may affect women's entrepreneurial propensity. These omitted variables could be the reason that we do not see any gender differences in the replicated study. Thus, gender differences in entrepreneurial propensity could be a result of disparities in individuals' perceptions of their entrepreneurial capabilities.

The point is that between all investigated variables, perceived entrepreneurial capability had the most significant positive factor in the equation on (nascent). In line with past literature, individuals' confidence in their entrepreneurial skills is an essential factor to clarify the gender gap in entrepreneurial propensity (Brush et al., 2017). We observe the negative direction of ρ ,

which points out that overlooked variables have a combined impact on individuals' entrepreneurial capability perception, even though in reverse directions.

Table 3-7 shows our simultaneous bivariate probit model for all countries in our sample. In the exact replication, in all 17 countries, females are less confident about their entrepreneurial knowledge and skills. This indicates that the gender disparity in entrepreneurial perceptions shows up in all countries with various sociocultural environments. Although the gender differences for nascent entrepreneurship become negligible in 15 out of 17 countries, women in Norway are not as likely as men to start businesses. Nevertheless, our findings indicate that women are more likely than men to start a business in Germany. Whereas women have similar entrepreneurial inclinations, we can argue that environmental differences and their impact on individual perceptions play a role in women's business ownership.

Table 3-7. Country-specific gender effects

Country	Female coefficient in equation for nascent entrepreneurs (nascent)		Female coefficient in equation for sufficient skill perception (suskill)		N
	β	P > z	β	P > z	
Argentina	0.02	0.76	-0.14*	0.01	2,269
Australia	0.10	0.15	-0.34**	0.00	2,916
Belgium	-0.05	0.61	-0.39**	0.00	3,364
Brazil	0.00	0.95	-0.20**	0.00	1,989
Denmark	0.01	0.83	-0.44**	0.00	6,543
Finland	0.15	0.12	-0.27**	0.00	1,739
Germany	0.10*	0.01	-0.35**	0.00	11,630
Ireland	-0.25	0.09	-0.40**	0.00	794
Italy	-0.36	0.09	-0.36**	0.00	908
Japan	-0.32	0.07	-0.38**	0.00	1,967
Netherlands	0.01	0.91	-0.55**	0.00	3,374
Norway	-0.23*	0.02	-0.35**	0.00	2,241
Singapore	-0.07	0.29	-0.24**	0.00	3,942
Spain	-0.02	0.56	-0.05*	0.03	17,327
Sweden	0.17	0.08	-0.43**	0.00	3,445
United Kingdom	-0.00	0.91	-0.39**	0.00	25,830
United States	0.05	0.30	-0.35**	0.00	5,617

Notes. Country-specific gender effects are in the recursive simultaneous bivariate probit model. We reported results based on country-specific replications of the pooled model reported in Table 3-6. *p <0.1; ** p <0.01.

3.5.2 Implications

By replicating the study of KMS, we attempted to investigate the critical fracture in the literature concerning the relevant justifications for disparities in entrepreneurial propensity across genders. A confirmed responsible driver for these disparities is perceptual variables (Shinnar et al., 2012; Noguera et al., 2013; Koellinger et al., 2013). By utilising the available original dataset of the authors and thus conducting the same analysis as that conducted by KMS, we investigated the role of individual and perceptual variables in raising and mitigating gender disparities in entrepreneurship. First, we examined gender differences in perceived entrepreneurial capability, entrepreneurial networks, fear of failure, and opportunity evaluation, as previous research emphasised the strong explanatory power of these variables (Capelleras et al., 2013; Brush et al., 2017; Fuentelsaz et al., 2018; Dileo and Pereiro, 2019; Schmutzler et al., 2019) compared to that of individual-level factors, such as age and education. Our empirical analysis revealed that compared to men, women have lower entrepreneurial network levels, perceived entrepreneurial capability, and opportunity evaluation and higher fear of failure. In line with KMS, we found that these perceptions are drivers of gender disparities in entrepreneurial propensity. Indeed, our findings show that when we considered perceptual variables, the descriptive value of education, age, household income and work status shrank significantly. Thus, we support the conclusion of Koellinger et al. (2013) that "these variables may influence start-up decisions primarily because of their influence on perceptions" (p. 17).

More importantly, in contrast to the original study, we suggest that the lower rate of women entrepreneurial behaviour is not only due to their lower propensity to start businesses but also due to disparities in firms' survival chances across genders. Our results show that men clearly have higher survival chances (1.2) compared to women. Although the rate of women nascent entrepreneurship is lower than their male counterparts in all countries, in three nations (Norway, the Netherlands, Belgium), women's firm survival chances are higher. In this respect, our results support KMS' finding that there is no relationship between a lower rate of women entrepreneurship and a firm's survival chances in these countries.

There are some possible justifications for these effects of perceptions on women's propensity towards entrepreneurship. On the one hand, the unwritten social rules may create more family obligations for women compared to men (Jennings and McDougald, 2007; Roomi et al., 2009; Tsai et al., 2016), and in this vein, they socialize with family and friends more than men; therefore women's entrepreneurial networks are smaller (Bosma, 2013). On the other hand, 15 out of 17 nations in the sample were developed countries, which may suggest that the advance of equality in developed nations weakens women entrepreneurship while women in

these societies acquire more equivalent possibilities in the labour market (Tsai et al., 2016). Another explanation for these disparities could be the results of environmental institutions that can form women's entrepreneurial activities by marking entrepreneurship as a stereotyped men domain (Tsai et al., 2016; Giménez and Calabrò, 2018; Shahriar, 2018). As we previously noted, these stereotypical characteristics influence women's access to entrepreneurial role models (Bosma, 2013) or their perceived financial constraints (Roper and Scott, 2009; Verheul et al., 2012). Moreover, taking into account the importance of omitted variables, considerations about their influence on women's perceived entrepreneurial capability and nascent entrepreneurship should be mentioned. However, our survey does not allow us to find which factors they are, but it is relevant to support the idea of KMS and posit entrepreneurial education also may shape the entrepreneurial propensity (Shinnar et al., 2012).

The present research finds that some of our investigated variables are more significant for women's entrepreneurial propensity. In fact, entrepreneurial skill perception had the most significant influence on women's nascent entrepreneurship. In all 17 nations, women have lower confidence in their entrepreneurial knowledge and skills. This finding is in line with the prior scholars' prior hypotheses and findings (Roper and Scott, 2009; Curado et al., 2011). This study contributes to the growing body of literature, which clarifies that individuals' confidence in their entrepreneurial skills is a critical factor in illuminating gender disparity in entrepreneurial propensity (Brush et al., 2017). This result supports prior arguments about the influence of gender disparities in entrepreneurial networks and its negative impact on women's opportunity evaluation (DeTienne and Chandler, 2007; Langowitz and Minniti, 2007). First, due to lower entrepreneurial networks and fewer business opportunities, women may underestimate their entrepreneurial opportunities capability (Bhagavatula et al., 2010; Camelo-Ordaz et al., 2016). Second, entrepreneurial role models could positively influence individuals' perceived entrepreneurial capability to undertake a venture (Liñán and Santos, 2007).

Finally, we also demonstrate that although the percentage of gender disparities in perceptual variables varies significantly across nations, they are a worldwide factor influencing women's entrepreneurship. This result calls attention to the link between gender disparities and entrepreneurial perceptions in countries with various institutional contexts. However, women's different perceptions in various contexts show that this study is a small step to call attention to the different institutional contexts where women entrepreneurship is shaped. Considering the fact that the ongoing research largely ignores women entrepreneurship in developing countries (e.g., Ahl and Nelson, 2015; Pettersson et al., 2017; Wang, 2019; Cochran, 2019; Cukier and Chavoushi, 2020), investigations in these countries could advance our understanding about

women entrepreneurship and moderating effect of contexts. Considering the essential role of entrepreneurial activities for the economic development of regions (Fritsch and Wyrwich, 2017; Stuetzer et al., 2018), understanding women entrepreneurship in different institutional contexts is justifiable. Thus, our results offer the insight that cross-national studies should consider the countries' level of development when they investigate women entrepreneurship.

3.5.3 Research directions

The present results have important implications for practitioners and academics. First, as we mentioned previously, in line with KMS, this study provided insights on the role of perceptions, and their effect on entrepreneurship is not consistent across nations. Cross-cultural qualitative approaches could enable us to lead comprehensive investigations of interactions between perceptual variables and women's entrepreneurial propensity. However, our results are limited to 17 nations and 15 out of 17 countries were developed nations. Thus, we cannot be sure whether our results would hold for all nations, particularly for developing countries. Although recent calls underlined the irrefutable role of institutional contexts on women entrepreneurship (Shinnar et al., 2012; Tsai et al., 2016), most of the studies focused on women entrepreneurship in developed nations; thus, further studies may examine whether countries' development level impacts on women's entrepreneurial perceptions. The study by Klyver et al. (2013), for example, found that women's decision to undertake a business has a relationship with a country's level of development. Thus, further studies can dive deeper and investigate how and which institutional variables shape women's perceptions toward entrepreneurship.

Second, our results highlight the weight of gender disparity is not the same across nations. In addition, the impact of "stereotype threat" and its role to explain part of the gender disparity in entrepreneurship is irrefutable (Gupta et al., 2014). Thus, to advance our understanding of women entrepreneurship, future examinations could analyse the effects of formal and informal institutions, which seem to play a role in women's perceptions of entrepreneurship (Gimenez-Jimenez et al., 2020). We suggest future research could exploit informal institutions such as stereotypes how and in the form of which processes affects women's propensity towards entrepreneurship (Gupta et al., 2014). Moreover, prior scholars find that creating a balance between self-employment and family is a challenge for women (Jennings and McDougald, 2007). It could be relevant to investigate women's decision to undertake a venture conditioned by which institutional factors (Klyver et al., 2013). Our results follow the line of prior studies that have stressed the relationship between individuals' perceived entrepreneurial capability and

intentions differs in different contexts (Tsai et al., 2016). Whereas prior studies examined the influence of formal (Puffer et al., 2010; Lee et al., 2011; Goltz et al., 2015) and informal (Webb et al., 2020; Gimenez-Jimenez et al., 2020) institutional contexts extensively, relatively little is known about the complete process of how they affect perceptions. In this respect, Langowitz and Minniti (2007) made the first advancement and focused on cognitive processes between women and their surrounding context. However, untangling the process through which contextual factors shape perceptions remains to be realized.

Finally, to boost women business ownership with utilitarian interventions, policymakers need to design distinctive programs (Malach Pines et al., 2010) concerning the environment (Schmutzler et al., 2019), legal and regulatory features (Armour and Cumming, 2008), cultural matters and women's social position to promote women's perceptions positively towards entrepreneurship (Noguera et al., 2013). Thus, to guide policymakers practically, far more research into the relationship between perceptual factors and formal and informal institutional context is undoubtedly needed.

3.6 Conclusion

In this study, we replicated the work of KMS on women's propensity towards entrepreneurship and revealed that perceptual variables play an important role in women's propensity to start businesses. Our findings show women's lower propensity to own businesses is because of not only their higher fear of failure, lower entrepreneurial networks, perceived entrepreneurial capability, and opportunity evaluation but also their lower chances of firm survival. We utilised a sample of 236,556 individuals from 2001 to 2006 across 17 countries. We found evidence for the higher explanatory power of entrepreneurial perceptions compared to individual-level factors such as age, education, household income and work status. These insights expand and deepen our knowledge about women entrepreneurship drivers, present some new directions, and bring forth ambiguous justifications among women's entrepreneurial propensity drivers. This research drives a strong argument that women entrepreneurship cannot be realised without a proper understanding of the determinants of perceived entrepreneurial perceptions and their interactions with surrounding contexts. Finally, to examine the replication study's results in a cross-country context with less developed economies included, the next chapter, by extending the work of KMS, advances our knowledge of the relationship between perceptual variables and women entrepreneurship.

4 Gender differences in entrepreneurial propensity: Extension analysis⁶

4.1 Introduction to women's entrepreneurial propensity

The growth of women's business ownership in recent years is indisputable (Minniti and Nardone, 2007; Brush et al., 2009; García and Welter, 2011). However, gender imbalance is a constant fact in entrepreneurship (Dabic et al., 2012; Santos et al., 2016; Guzman and Kacperczyk, 2019). Gender disparities (García and Welter, 2011; Kelly et al., 2015), a lack of consensus in the discourse (Gupta et al., 2014; Ahl and Nelson, 2015; Marlow and Martinez, 2018; Wu et al., 2019), and the economic contribution of entrepreneurship established women entrepreneurship as a hot topic (Henry et al., 2016; Foss et al., 2019).

As mentioned in the previous chapter, prior scholars developed several explanations for the existing discrepancy. In particular, inequalities in access to financing (Marlow and Swail, 2014; Brixiová and Kangoye, 2016; Guzman and Kacperczyk, 2019) negatively impact women's perception of obstacles. Accordingly, a significant proportion of investigations highlighted that, unfavourably influencing their perceived entrepreneurial capability and opportunity evaluation (Shinnar et al., 2012; Noguera et al., 2013), women are in a compassed status with gender-biased occupational characteristics (Ahl, 2006; Mousa and Wales, 2012). These gender-based characteristics favourably see women in supporting roles, whereas the same society considers men to be better actors of competitive professions (Gupta et al., 2014; Tsai et al., 2016; Giménez and Calabrò, 2018). Consequently, "women shy away from competition and men embrace it" (Niederle and Vesterlund, 2007, p. 1076). These gender inequalities in competitive capacity might impact women's entrepreneurial propensity (Bönte and Piegeler, 2013; Tsai et al., 2016). Through expected role characteristics, women have higher family responsibilities (Kirkwood and Tootell, 2008), and accordingly, friends and family-centred networks exemplify most of their contacts. Hence, balancing between family and business ownership is a fundamental issue for women entrepreneurship (Al-Dajani and Marlow, 2010; Javadian and Singh, 2012).

More importantly, their lack of access to appropriate networks restricts women's accessibility to entrepreneurs (Bosma, 2013). Unequivocally, these chained stereotypical characteristics of entrepreneurship are a hazard to women entrepreneurship (Roper and Scott,

⁶ This chapter is based on Abbasianchavari and Block (2021).

2009; Gupta et al., 2014), whereas they boost men's entrepreneurial opportunity evaluation (Gupta et al., 2014). On this ground, as entrepreneurship is sustained as a stereotyped male-dominated area (Naidu and Chand, 2017) and women are likely to encounter systemized challenges (Dileo and Pereiro, 2019; Wu et al., 2019), perceptual variables will stay vital factors of entrepreneurial behaviours (Minniti and Nardone, 2007).

Prior scholars have revealed that women have a higher aversion to risks (Dohmen et al., 2011) and that the fear of entrepreneurial failure has a crucial impact on entrepreneurial activities (Koellinger et al., 2007). Karimi et al. (2013) indicated that gender disparities in entrepreneurship have an irrefutable sociocultural aspect. For example, for Catalonia, the primary sociocultural considerations that affect women's entrepreneurial activities are perceived entrepreneurial capability and fear of failure (Noguera et al., 2013). More importantly, past authors highlighted that perceptual factors have greater explanatory importance than objective factors, such as education, age, and work status (e.g., Arenius and Minniti, 2005; Noguera et al., 2013; Welsh et al., 2017). Prior investigations, however, brought light to the fact that perceptions are usually encircled by written and customary rules (Ahl, 2006); therefore, increasing the knowledge on entrepreneurial perceptions is indispensable (Liñán and Fayolle, 2015; Schlaegel and Koenig, 2014).

Chapter 3 replicates the study of KMS, which investigates the influence of perceptual factors on women's entrepreneurship. In line with KMS, a reanalysis provides evidence that women entrepreneurship's lower rate is connected to the lower levels of their entrepreneurial network, perceived entrepreneurial capability, and opportunity evaluation and their higher fear of failure. By extending the work of KMS, we advance our knowledge of the relationship between perceptual variables and women entrepreneurship. In doing so, while our understandings about the link between entrepreneurship and perceptual variables across different institutions are narrow (Shinnar et al., 2012; Liñán et al., 2013), we attempt to generalise and advance the significant findings of KMS by shifting the focus of the analysis from developed countries to 71 diverse nations across the globe. While doing so, we involve institutional theory (North, 1990; 2005) to argue that women's decisions towards entrepreneurship originate from their interactions with their surrounding institutional contexts (Klyver et al., 2013). Particularly, we focus on how a country's level of development influences women's entrepreneurial perceptions. As institutional research on women's entrepreneurship is deficient (Brush et al., 2017), this knowledge is crucial for successfully tackling the gender disparity towards entrepreneurship and expanding women's entrepreneurship across nations.

This study's results extend not only KMS' study but also prior findings on the relationship between women's entrepreneurship and the influence of a country's level of development.

4.2 Background of the extension

Despite the significant differences in women entrepreneurship across nations with different development levels (Estrin and Mickiewicz, 2011; Kelly et al., 2015), the simultaneous evaluation of the perceptual variables and the institutional context that influences women's entrepreneurial propensity is substantially missing (Camelo-Ordaz et al., 2016; Welsh et al., 2017). Most of the prior studies on perceptions and women entrepreneurship focused on developed countries (Camelo-Ordaz et al., 2016; Santos et al., 2016; Wyrwich et al., 2019). In this regard, the findings of KMS provided valuable insights for understanding women's entrepreneurial perceptions; however, their main focus was on developed countries. 15 out of 17 included countries in their sample were developed nations. Therefore, to construct a country-balanced data set, we involved more developing countries in our extension analysis.

We attempt to extend the analysis done by KMS to advance our understanding of the gender disparity in entrepreneurial propensity by considering the effects of a country's level of development. Consequently, we use more recent data but for a similar population (Extension 1). Second, we conduct the same analysis in a completely different population (Extension 2) by adding more countries to the sample. These extension analyses provide empirical generalisation (Tsang and Kwan, 1999) and strengthen prior empirical evidence (Bettis et al., 2016).

4.3 Women's entrepreneurship and institutions

Although the gender gap in entrepreneurship is a constant fact (Santos et al., 2016; Guzman and Kacperczyk, 2019), worldwide women entrepreneurs' rate differs significantly at various levels of development (Autio et al., 2013; Kelley et al., 2017). In this respect, in several nations, women have a higher or equal nascent entrepreneurship rate than men (GEM, 2018). In growing attempts to link institutions with women entrepreneurship, factors such as cultural beliefs and stereotypes (Noguera et al., 2013; Bullough et al., 2014) and challenges to accessing necessary resources (Becker-Blease and Sohl, 2007; Cetindamar et al., 2012; Carter et al., 2015) are recognised as some of the major institutional factors by scholars. However, most studies on women's entrepreneurial challenges were conducted in a specific country (e.g., Wyrwich et al., 2016; Balachandra et al., 2019), and cross-national investigations were sparse (e.g., Shinnar et

al. 2012; Koellinger et al., 2013; Ahl and Nelson, 2015; Wu et al., 2019). Moreover, while their results provide valuable insights, their main focus was mostly on developed countries.

The institutional perspective contributes to clarifying disparities in women's entrepreneurship (Welter et al., 2014; Thébaud, 2015; Boudreaux et al., 2019). Thus, scholars progressively used the institutional perspective to investigate gender disparities in entrepreneurship (Klyver et al., 2013; Gimenez-Jimenez et al., 2020). According to North (1990), surrounded institutions shape individuals' behaviour, which may create positive or negative impulses for women towards entrepreneurship (Estrin and Mickiewicz, 2011). Prior authors investigated how institutions differently impact men and women entrepreneurship (Thébaud, 2015; Giménez and Calabrò, 2018). The significant role of countries' institutions, as well as their level of development, on women's entrepreneurship, is recognised by past literature (Rouse et al., 2013; Klyver et al., 2013). Unsurprisingly, one might premise the likelihood that women in developed countries with a higher level of gender parity are more likely to undertake a business (Cheraghi et al., 2019). However, Klyver et al. (2013), using the GEM population survey and World Economic Forum's Global Gender Gap database, found out that a country's development level influences the effect of gender on entrepreneurship. They found that higher gender equality policies in developed countries negatively impact women's entrepreneurship.

Nevertheless, findings on the link between gender disparity and entrepreneurship are inconsistent (Klyver et al., 2013; Giménez and Calabrò, 2018; Cheraghi et al., 2019; Vracheva and Stoyneva, 2020). Despite this fact, research on gender disparities in entrepreneurship tended to believe that gender disparities can be explained on an individual basis instead of an institutional level (Ahl, 2006). Boudreaux et al. (2019) found that countries' institutional context influences the relationship between perception and entrepreneurship; however, fewer studies concurrently investigated perceptual variables and institutions' impact on women's entrepreneurship in developing countries (Karimi et al., 2017).

Since individuals have constant interaction with the surrounding institutions (Shapero and Sokol, 1982), it is crucial to explain why women's perceptions may vary across nations (Schmutzler et al., 2019). Thus, this study draws upon institutional theory (North, 1990) to be in line with recent attempts that consider institutional contexts in explaining entrepreneurship (Klyver et al., 2013; Boudreaux et al., 2019; Dileo and Pereiro, 2019) and investigate how the country-level institutional stage affects women's perceptions of entrepreneurship.

4.4 Method

4.4.1 Data, sample and inclusion criteria

In order to extend the study of KMS, we use the Global Entrepreneurship Monitor (GEM) adult population survey. The dataset emerged as a standardised dataset on entrepreneurship and provides cross-national entrepreneurship research at an individual level (Reynolds et al. 2005). With very few exceptions, for each country, the dataset includes a representative random sample of a minimum of 2,000 respondents for each year.

Generalisation and extension analysis expands the empirical evidence of the research field, but they can also enrich the theoretical scope (Block and Kuckertz, 2018). Doing so, we performed two extension analyses of the replicated study. In extension 1, our analysis covers the period from 2011 to 2016 across the same countries. By using the same method as Wyrwich et al. (2019), we replicated the analysis for the recent data because of its excellent explanatory value in providing the base to compare the changes over time towards entrepreneurial propensity. We yielded 372,069 individuals across the same countries (2011-2016).

Extension 2 includes countries with the data available for at least 3 out of 6 years, obtaining a suitable dataset containing observations from 71 countries (N=1,029,863). Tables A.4 and A.5 list the involved countries in the sample for extension 1 and 2. Although developed countries are over-represented, the sample involved data from all countries. In line with the original and replication studies, we focus on individuals between 18 and 64 years of age. This study did not include respondents who were older than 64 years of age at the time of the survey because individuals in this age group are less likely to undertake a business (Holtz-Eakin et al. 1994; Obschonka and Stuetzer, 2017). Appendix A.5 lists the country-year variables used in the analysis and the full description of all variables.

4.4.2 Measures

We define entrepreneurial propensity as an individual's inclination towards entrepreneurship by creating a new business (Minniti and Nardone, 2007; Koellinger et al., 2013). GEM specifies three types of entrepreneurs (Reynolds et al., 2005): nascent, new, and established entrepreneurs. Following KMS, we investigate women's entrepreneurship in three different stages. In line with KMS, we included gender, opportunity evaluation (opport), perceived entrepreneurial capability (suskill), fear of failure (fearfail), previous entrepreneurial experience (closebus), work status, household income, education, and age as independent

variables. Furthermore, for the comparative cross-national analysis following Klyver et al. (2013), we added the "development stage" to our variables' list to investigate whether a country's development level conditions gender disparity. Table 4-1 summarizes variables, definitions, sources, and their coding.

Table 4-1. Variable descriptions

Variable	Definition	Coding
Nascent entrepreneur	Individuals who, in the last 12 months before the survey, had taken steps toward creating a business that they would either partly or fully own. Their business had to have paid wages, profits or payments to the owners or other people for at most three months.	0=No 1=Yes
New entrepreneur	Individuals who were actively involved in start-ups. These individuals own and manage a business that has been paying wages for more than three months but less than 42 months.	0=No 1=Yes
Established entrepreneur	Individuals whose business had been paying wages, profits or payments for more than 42 months.	0=No 1=Yes
Non-entrepreneur	Individuals that were not engaged in any self-employment activity.	0=No 1=Yes
Entrepreneurial capabilities (suskill)	Individuals who declare having the essential knowledge, skill, and experience for being self-employed	0=No 1=Yes
Opportunity evaluation (opport)	Individuals who think that in the area where they live, good opportunities for starting a business have existed in the last six months before the questionnaire	0=No 1=Yes
Fear of failure (fearfail)	Individuals who declare that there is a likelihood that fear of failure stops them from being self-employed.	0=No 1=Yes
Entrepreneurial role model observation (knowent)	Individuals who personally knew an entrepreneur in the last two years.	0=No 1=Yes
Development stage	Countries' level of development, according to the World Economic Forum's categorization (Schwab and Sala-i-Martin, 2016).	Factor-driven economies=1 Factor-driven economies in transition=2 Efficiency-driven economies=3 Efficiency-driven economies in transition=4 Innovation-driven economies=5
Age	Participant's age.	
Gender	Respondents between 18 and 64 years are included.	0=Male 1=Female
Education	Less than a secondary, secondary degree, post-secondary, graduate experience	Less than secondary=1 Secondary degree=2 Post-secondary=3 Graduate experience=4
Work status	Participant's work status in three categories.	Not working=1 Working full or part time=2 Retired/students=3
Income level	Participant's income level in three categories.	Lowest 33%=1

Variable	Definition	Coding
		Middle 33%=2 Upper 33%=3
Previous entrepreneurial experience (closebus)	Individuals who closed down a business in the last 12 months following the questionnaire	0=No 1=Yes

Source. GEM population survey

4.5 Results of extensions 1 and 2

4.5.1 Main descriptive findings of the extension analysis

Table 4-2 shows the distribution of included countries in accordance with the World Economic Forum's categorization of countries' level of development (Schwab and Sala-i-Martin, 2016). In extension 1, the analysis covers the same set of countries as KMS but belongs to the years 2011 to 2016. In extension 2, although innovation-driven economies are overrepresented (28 out of 71 countries), our sample involved data from all countries, and the sample is gender balance heterogeneous.

Table 4-2. Distribution of included countries

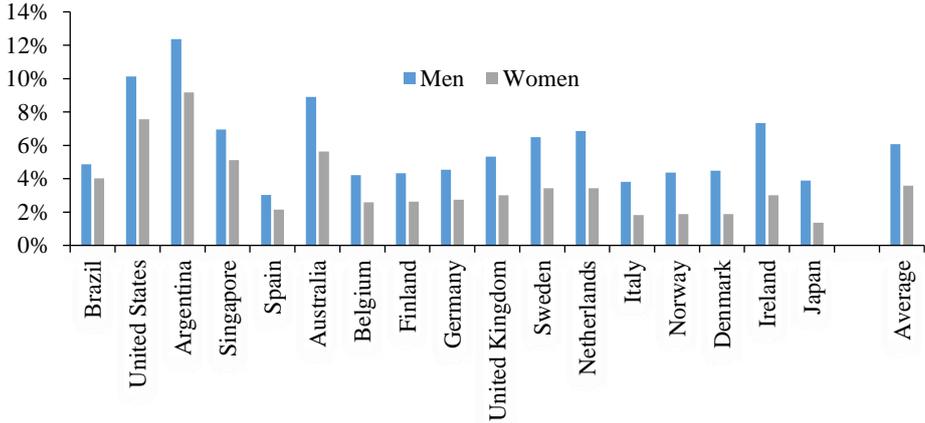
	Factor-driven economies	Factor-driven economies (in transition)	Efficiency-driven economies	Efficiency-driven economies (in transition)	Innovation-driven economies
Extension 1					
Countries	-	-	-	Argentina, Brazil	Australia, Belgium, Denmark, Finland, Germany, Ireland, Italy, Japan, Netherlands, Singapore, Spain, United Kingdom, Norway, United States
Frequencies	-	-	-	47,559 (12.8%)	324,510 (87.2%)
Extension 2					
Countries	Burkina Faso, Cameroon, India, Nigeria, Uganda, Vietnam	Algeria, Angola, Botswana, Iran, Philippines	Bosnia and Herzegovina, China, Colombia, Ecuador, Egypt, El Salvador, Guatemala, Indonesia, Jamaica, Macedonia, Peru, Romania, South Africa, Thailand	Argentina, Barbados, Brazil, Chile, Croatia, Estonia, Hungary, Kazakhstan, Latvia, Lithuania, Malaysia, Mexico, Panama, Poland, Russia, Slovakia, Turkey, Uruguay	Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Israel, Italy, Japan, Luxembourg, Netherlands, Norway, Portugal, Puerto Rico, Singapore, Slovenia, South Korea, Spain, Sweden, Switzerland, Taiwan, Trinidad and Tobago, United Kingdom, United States
Frequencies	50,550 (4.9%)	52,501 (5.1%)	185,793 (18%)	283,327 (27.5%)	457,692 (44.4%)

Similarly to the replicated study, the results indicate that women display lower levels of entrepreneurial activities across countries. Figures 4-1 and 4-2 show that the males' ratio to

females decreased from 1.9 (2001-2006) to 1.7 in extensions 1 and 2 (2011-2016). As Figure 4-2 shows, we assessed the same analysis for 71 countries and found that men are significantly more engaged in entrepreneurial activities in most countries. Exceptionally, Indonesian and Philippine women have a slightly higher rate of entrepreneurial activities. For established entrepreneurs, we also found a significant gender gap in favour of men. Our extension results reveal that for each female per established enterprise, there are 2.4 males. However, adding more countries to the sample significantly reduced this ratio to 1.9.

To further demonstrate the differences across time and to reach an estimation of the average chances of firm survival in each country, KMS used the ratio of established to nascent entrepreneurs. They reported that although men's and women's overall survival chances are globally equal, it is higher for females in 6 out of the 17 countries. Extension 1 shows that only women from Ireland, the Netherlands and Japan have a higher survival chance than men. Surprisingly, contrarily to the replicated study and in line with recent research (Box et al., 2018), the results show that survival chances are not equal, and men's average survival chances are 1.2 compared to women's. Accordingly, extension 2 also shows that survival chances did not change by adding more countries to the sample. However, extension 2 reveals a firm's survival chances are higher for women in 14⁷ out of 71 countries. In 10⁸ countries, men and women have equal chances (see Figure 4-4).

Figure 4-1. Nascent entrepreneurs as a percentage of the adult population, extension 1

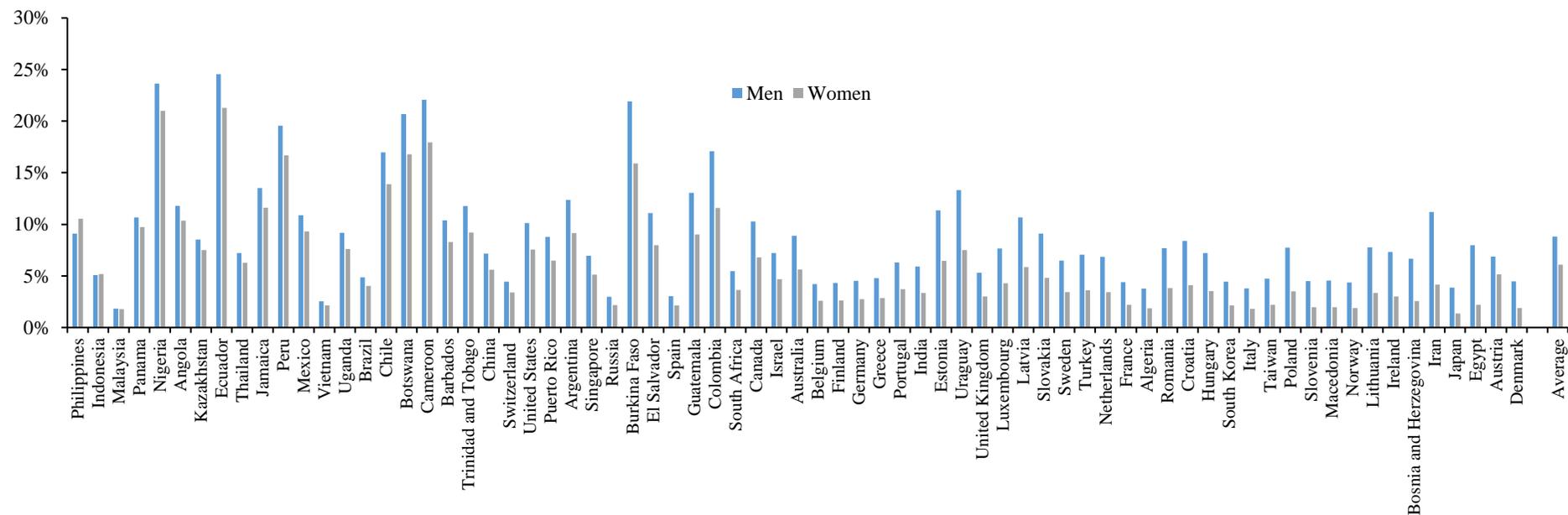


Notes. In the engagement in start-up activity, we ordered countries according to the ratio of men to women. The gender gap is increasing from left to right. Results are based on extension 1: country averages 2011-2016.

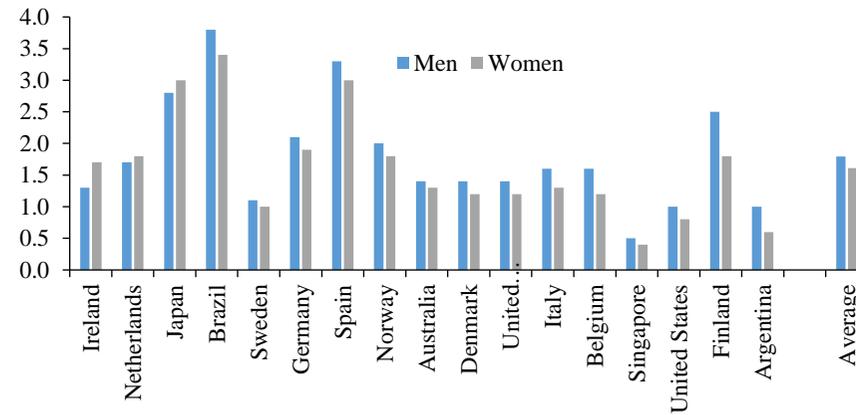
⁷ These countries are the Netherlands, Japan, Romania, Vietnam, Taiwan, Thailand, Nigeria, Russia, El Salvador, Bosnia and Herzegovina, South Africa, Ireland, Burkina Faso, and Macedonia.

⁸ These countries are Canada, Luxembourg, Poland, Latvia, Estonia, Croatia, Guatemala, Angola, Uganda, and Botswana.

Figure 4-2. Nascent entrepreneurs as a percentage of the adult population, extension 2

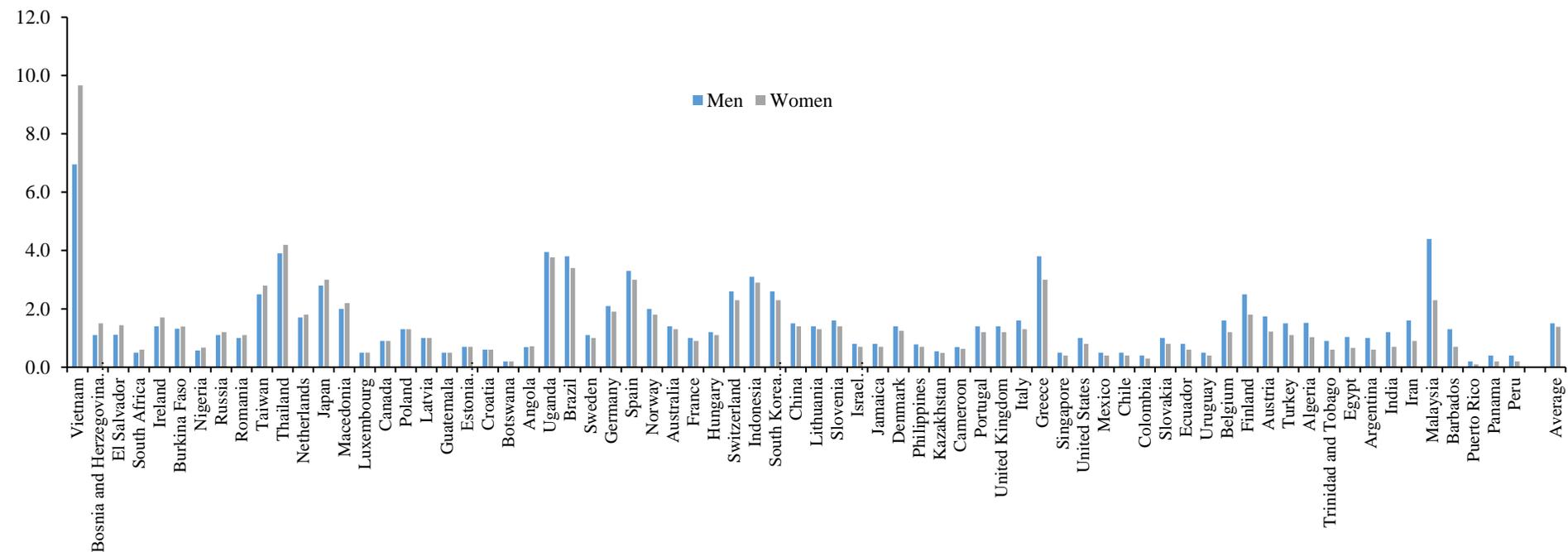


Notes. In the engagement in start-up activity, we ordered countries according to the ratio of men to women. The gender gap is increasing from left to right. Results are based on extension 2: country averages 2011-2016.

Figure 4-3. Ratios of nascent entrepreneurs to established business owners, extension 1

Notes. Women in countries further left have higher average survival chances than men. Results are based on extension 1: country averages 2011-2016.

Figure 4-4. Ratios of nascent entrepreneurs to established business owners, extension 2



Notes. Countries further left have higher average survival chances for women compared to men. Results are based on extension 2: country averages 2011-2016.

Going from factor-driven to innovation-driven economies, we observe a significant reduction in gender disparity in employees' rate. More developed nations demonstrate higher gender equality, and women in these nations have an almost equal portion of the labour market. Table 4-3 presents the ratio of men to women employees by type of economy.

Table 4-3. Ratio of men to women by type of economy

	Factor-driven economies	Factor-driven economies (in transition)	Efficiency-driven economies	Efficiency-driven economies (in transition)	Innovation-driven economies
Ratio of men to women employees	1.84	1.74	1.68	1.24	1.09
Ratio of men to women nascent entrepreneurs	1.31	1.59	1.69	1.59	1.80
Ratio of men to women established entrepreneurs	1.44	2.24	1.87	1.95	2.02

Note. Results are based on extension 2: country averages 2011-2016.

Figure 4-5 shows the employment rate for the same countries, but for the years 2011 to 2016. In Finland, Norway, Ireland, Sweden, the Netherlands, the United Kingdom and Denmark, there are more employed females than males. In further exploration, extension 2 shows that the employment market favours women in 11 out of 71 countries⁹. Figures 4-5 and 4-6 present the percentage of full and part-time employees among countries by gender in extension 1 and 2.

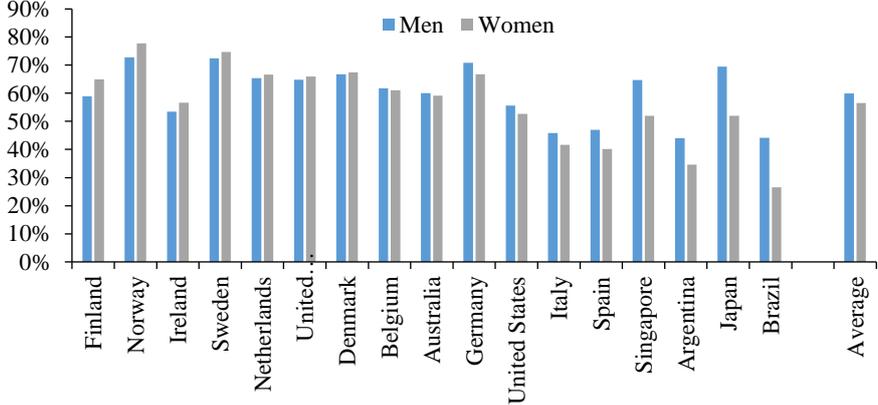
Turning to the perceptual variables, the findings of this dissertation indicate noticeable gender differences. These results follow prior scholars' hypotheses and findings (Roper and Scott, 2009; Curado et al., 2011). Table 4-4 summarises the results of extension analysis. In the same vein as the replicated study, descriptive analysis for 2011 to 2016 shows that men in both studies have a stronger belief in their entrepreneurial knowledge and skills than women. However, when we conduct the analysis, in the same countries, the percentage of men's belief in their capabilities decreased in recent years.

Nevertheless, in extension 2, we included less developed countries. The results show that 58% of men consider having enough competencies and experience to establish their own business (suskill) compared to females, where only 46% believed in their entrepreneurial

⁹ These countries are Finland, Denmark, Barbados, Norway, Ireland, Estonia, Slovenia, Sweden, the Netherlands, United Kingdom, and Slovakia.

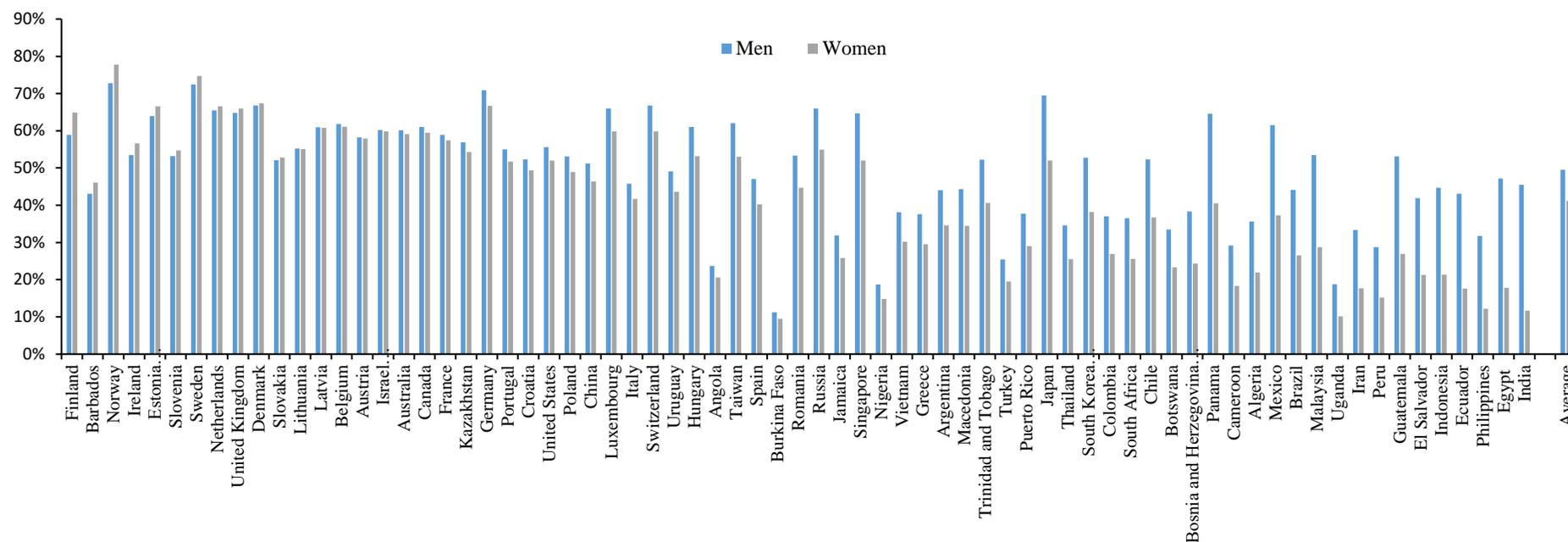
capabilities. Table 4-5 shows that women from innovation-driven economies have the least confidence (35%), whereas women in factor-driven economies have the highest confidence in their entrepreneurial capabilities (69%). Men are more confident about their entrepreneurial capabilities in all involved countries involved in extension 2, except for the Philippines, where women had slightly higher confidence in their entrepreneurial skills and knowledge. On average, males' ratio to females is slightly smaller than before (replicated study: 1.5; extension 2: 1.4). Extension 2 demonstrates that distinctions based on gender are more substantial in certain countries such as Japan, Norway, or Denmark than in others (e.g., the Philippines, Nigeria, and Peru). In Japan, Singapore, Taiwan, South Korea, and Denmark, women had the least confidence in their entrepreneurial skills.

Figure 4-5. Wage-earners as a percentage of the adult population, extension 1



Notes. We ordered countries according to the ratio of men to women increasing from left to right. Results are based on extension1: country averages 2011-2016.

Figure 4-6. Wage-earners as a percentage of the adult population, extension 2



Notes. We ordered countries according to the ratio of men to women increasing from left to right. Results are based on extension 2: country averages 2011-2016.

Table 4-4. Perceptual disparities across genders in all studies

	Results of KMS		Exact Replication		Extension 1 (2011-2016)		Extension 2 (71 countries)	
	Men (%)	Women (%)	Men (%)	Women (%)	Men (%)	Women (%)	Men (%)	Women (%)
Suskill (yes)	58	41	57	40	53	40	58	46
Fearfail (yes)	33	40	33	40	41	49	37	45
Opport (yes)	41	33	40	32	39	33	43	39
Knowent (yes)	43	31	43	31	37	30	42	35
Total sample (N)	108,919		119,609		223,653		671,156	

Notes. Gender disparities in perceptions are significant at >99% confidence according to a chi2-test for all categories. All valid observations are included.

Table 4-5. Economy related specificity of perceptual disparities, extension 2

	Suskill (yes)		Fearfail (yes)		Opport (yes)		Knowent (yes)	
	Men (%)	Women (%)	Men (%)	Women (%)	Men (%)	Women (%)	Men (%)	Women (%)
Factor-driven economies	74	69	28	30	65	60	66	59
Factor-driven economies (in transition)	71	64	34	37	56	54	57	51
Efficiency-driven economies	63	53	35	42	48	44	44	36
Efficiency-driven economies (in transition)	57	45	37	45	39	36	43	36
Innovation-driven economies	51	35	40	49	41	35	37	29

Notes. Gender gaps in perceptions are significant at >99% confidence according to a chi2-test for all categories. Years 2011-2016. All valid observations are included.

Similar to the replicated study, significant gender dissimilarities exist for opportunity perception (opport), fear of failure (fearfail) and knowing an entrepreneurial role model (knowent). The significant gender imbalance could result from institutional factors, which created stereotypes for individuals' roles in societies (Tsai et al., 2016). Institutions create unwritten social rights (Suchman, 1995) and influence entrepreneurial propensity through perceptions (Giménez and Calabrò, 2018; Schmutzler et al., 2019). Thus, in opposition to men, women's interpretation of their environment plays a significant role (De Bruin et al., 2007; Shinnar et al., 2012). Differences in objective variables could be another reason for this gender gap which, according to previous studies, is less influential (Arenius and Minniti, 2005; Koellinger et al., 2008; van der Zwan et al., 2012).

Extension 2 demonstrates that 45% of men reported that in the last six months preceding the survey, good opportunities for starting a business existed in the area where they live, whereas only 40% of females have the same perception. This difference may indicate the impact of entrepreneurs' gender stereotypes on the evaluation of opportunities so that males evaluate business opportunities more favourably than women (Gupta et al., 2014). It may also demonstrate the existence of fewer entrepreneurial opportunities for women, which can be a result of having smaller entrepreneurial networks (Jamali, 2009; Davis, 2012) or less human capital (Gonzalez-Alvarez and Solis-Rodriguez, 2011). Given a large dataset of 71 countries, we found that this gender disparity became smaller in recent years.

Extensions 1 and 2 show that the general fear of failure increased meaningfully from 2011 to 2016. However, similarly to the replicated study, men have a significantly lower fear of failure in 69 out of 71 countries. The only exceptions are India and Nigeria, where women had 2% less fear of failure than men. Besides, women in Japan and South Korea demonstrated only slightly (1%) higher fear of failure than men. The gender gap in fear of failure could result from lower perceived capability (Tsai et al., 2016) or an inapplicable environment for entrepreneurial activities (Shahriar, 2018).

Lastly, extension 2 shows that men had a greater possibility of knowing an entrepreneurial role model (42%) than women (35%). The evidence from extensions 1 and 2 reveals that the gender gap in knowing an entrepreneurial role model is significantly smaller than during the years 2001 to 2006. Nevertheless, in 70 out of 71 countries, men were more likely to get to know entrepreneurs. The Philippines, where 42% of men and 43% of women personally knew an entrepreneur, was the only exception. This finding acknowledges the arguments related to the lack of entrepreneurial role models and, therefore, less social support for women (Dyer and Handler, 1994; Noguera et al., 2013). These results are consistent with the idea that more female role models for women are needed to promote women's business ownership (Noguera et al., 2013; Karimi et al., 2014; Abbasianchavari and Moritz, 2020).

Table 4-6 displays gender disparity in perceptions at all three levels of the entrepreneurial process. Consistent with KMS, there is a significant difference in all four perceptions between non-entrepreneurs and entrepreneurs in extension 1. Given a large dataset of 71 countries and concluding factor-driven economies, the gender disparities narrow significantly. These findings were stronger in more developed nations, although descriptive results reveal universal gender disparities toward entrepreneurship (see Table 4-6).

Moreover, in line with prior discussions, our extension analysis stresses that these variables might change over time via individuals' experiences and their role in society (Arenius and Minniti, 2005). However, with our data, it is impossible to observe individuals across time. Nevertheless, we could compare respondents in various steps of the entrepreneurial process.

Table 4-6. Perceptual disparities across genders, all studies

	Suskill (yes)		Fearfail (yes)		Opport (yes)		Knowent (yes)		N
	Men (%)	Women (%)	Men (%)	Women (%)	Men (%)	Women (%)	Men (%)	Women (%)	
Results of KMS									
Non-entrepreneurs	49	35	37	41	37	30	39	29	91,059
Nascent entrepreneurs	89	84	21	24	63	61	64	57	3,951
New entrepreneurs	90	85	20	28	56	49	63	54	3,948
Established entrepreneurs	89	83	21	23	47	42	54	46	8,362
Exact Replication									
Non-entrepreneurs	49	35	37	41	37	30	39	29	91,059
Nascent entrepreneurs	89	83	21	24	62	61	64	57	3,915
New entrepreneurs	90	85	20	28	56	49	63	54	3,924
Established entrepreneurs	88	83	21	23	46	42	54	46	8,301
Extension 1 (2011-2016)									
Non-entrepreneurs	45	34	44	51	35	31	31	27	183,297
Nascent entrepreneurs	85	80	27	31	58	56	64	57	9,446
New entrepreneurs	85	75	25	34	57	54	64	55	10,081
Established entrepreneurs	83	76	29	35	43	41	46	40	19,483
Extension 2 (71 countries)									
Non-entrepreneurs	49	38	41	47	38	34	36	30	521,237
Nascent entrepreneurs	84	82	27	30	63	64	63	59	45,605
New entrepreneurs	85	80	26	31	61	61	69	63	39,644
Established entrepreneurs	81	75	30	35	49	48	53	50	58,762

Notes. Gender disparities in perceptions are significant at >99% confidence according to a chi2-test for all categories. All valid observations are included.

4.5.2 Women's entrepreneurial propensity and perceptual factors

Women's entrepreneurial propensity

Similarly to KMS, we reran probit models on nascent entrepreneurship to examine why females own a lower portion of businesses. To better evaluate this, we can clarify the ongoing gender disparity by differences in individuals' entrepreneurial perceptions and socioeconomic factors; we included variables to the model stepwise. To provide robust statistical inferences, we integrated the robust covariance matrix, which was renowned as a sandwich estimator (Huber, 1967; White, 1982) in all models. In fact, the sandwich estimator has the advantage of relating "robust" or "sandwich"-based covariance standard error estimates that are autonomous from distributional hypotheses. The large dataset can influence the usual sandwich estimator and builds robust covariance estimates appealing (Carrol et al., 1998).

The first model only involved a gender dummy and a constant, while the second model added household income, education, work status, age and whether the participant closed business in the last 12 months following the survey. The estimated effect for extension 2 implies that being female is highly significant (-0.20), while by adding demographics in model 2, the gender effect reduced to -0.13. However, loglikelihood proves the substantial impact of gender.

The findings show that these variables outline quite a small fraction of the gender disparities in entrepreneurship. Adding perceived entrepreneurial perceptions (fearfail, opport, suskill, and knowent) reduced the gender gap to -0.13 in the exact replication, while in the extension studies, the gender gap weakened significantly to -0.07 for extension 1 and -0.05 for extension 2 (see Table 4-7). However, gender differences do not disappear completely. Higher perceived entrepreneurial skills (suskill), knowing entrepreneurial models (knowent) and perception of business opportunities are positively connected with higher entrepreneurial activities. These results are in line with KMS and Minniti, and Nardone (2007). With a coefficient value of 0.76 in extension 1 and 0.71 in extension 2, we find full support for the idea that perceived capability strengthens entrepreneurial propensity while fear of failure (fearfail) causes its relative decline. Present findings provide support for past understandings regarding the connection between perceived entrepreneurial perceptions and entrepreneurship (Arenius and Minniti, 2005; Koellinger et al., 2008) by clarifying parts of the gender disparity toward entrepreneurship. Finally, and not surprisingly, individuals with prior entrepreneurial experience (closesub) had relatively higher entrepreneurial propensity.

For further investigations, extension 2 conducted the same analysis in different types of economies. Table 4-8 shows our probit estimates on nascent entrepreneurship for economies at a different development stage. The results clearly show that the gender gap in entrepreneurial perceptions is dissimilar in various economies. Although the gender differences in perceived entrepreneurial capability are considerable, there is a major disparity between efficiency-driven economies and innovation-driven economies. In fact, women in more developed countries have a significantly lower entrepreneurial propensity. With these results, we can argue that the country's development stage conditions women's propensity towards entrepreneurship.

Table 4-7. Probit estimates on nascent entrepreneurship, all studies

Variable	Results of KMS		Exact Replication		Extension 1		Extension 2	
	β	P > z	β	P > z	β	P > z	β	P > z
Female	-0.14**	0.00	-0.13**	0.00	-0.07**	0.00	-0.05**	0.00
Hh income - middle 33% income	-0.04*	0.07	-0.00	0.99	-0.07**	0.00	0.01*	0.07
Hh income - upper 33% income	-0.01	0.76	0.03*	0.04	-0.12**	0.00	0.03**	0.00
Education - secondary	0.04*	0.06	0.00	0.82	0.02*	0.09	-0.15**	0.00
Education - post-secondary	0.07**	0.01	0.05*	0.01	0.10**	0.00	-0.14**	0.00
Education - graduate	0.09**	0.00	0.08**	0.00	0.17**	0.00	-0.15**	0.00
Work status - working	0.18**	0.00	0.12**	0.00	0.21**	0.00	0.32**	0.00
Work status - retired/student	-0.30**	0.00	-0.30**	0.00	-0.30**	0.00	-0.28**	0.00
Age 25-34	0.01	0.79	-0.03	0.23	-0.08**	0.00	-0.01*	0.08
Age 35-44	-0.01	0.79	-0.05*	0.05	-0.10**	0.00	-0.08**	0.00
Age 45-54	-0.11**	0.00	-0.15**	0.00	-0.14**	0.00	-0.16**	0.00
Age 55-64	-0.23**	0.00	-0.29**	0.00	-0.25**	0.00	-0.25**	0.00
Fear of failure (fearfail) - yes	-0.30**	0.00	-0.30**	0.00	-0.25**	0.00	-0.22**	0.00
Opportunity perception (opport) -yes	0.39**	0.00	0.34**	0.00	0.32**	0.00	0.34**	0.00
Sufficient skill perception (suskill) - yes	0.84**	0.00	0.84**	0.00	0.76**	0.00	0.71**	0.00
Knowing another entrepreneur (knowent) - yes	0.32**	0.00	0.31**	0.00	0.42**	0.00	0.36**	0.00
Shut down business in past 12 months - yes	0.34**	0.00	0.32**	0.00	0.30**	0.00	0.31**	0.00
Constant	-2.02**	0.00	-2.38**	0.00	-2.32**	0.00	-2.09**	0.00
Number of observations	95,895		95,895		192,743		562,924	
Loglikelihood	-15,415		-15,782		-31,421		-131,955	
Prob > chi2	0.00		0.00		0.00		0.00	

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than secondary); and not shut down business in the past 12 months. In the estimation, we included country and year dummies. We involved only participants classified as nascent entrepreneurs or non-entrepreneurs. We eliminated new and established entrepreneurs. Robust standard errors are estimated. *p < 0.1; ** p < 0.01.

Table 4-8. Economy-specific probit estimates on nascent entrepreneurship, extension 2

Variable	Factor driven economies		Factor driven economies (in transition)		Efficiency driven economies		Efficiency driven economies (in transition)		Innovation-driven economies	
	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z
Female	0.02	0.22	-0.02	0.21	-0.01	0.17	-0.04**	0.00	-0.12**	0.00
Hh income-middle 33%	0.19**	0.00	-0.08**	0.00	0.10**	0.00	0.01	0.35	-0.09**	0.00
Hh income-upper 33%	0.17**	0.00	-0.11**	0.00	0.19**	0.00	0.05**	0.00	-0.15**	0.00
Education-secondary	-0.26**	0.00	-0.03	0.82	-0.14**	0.00	0.07**	0.00	0.02	0.50
Education-post-secondary	-0.42**	0.00	0.00	0.31	-0.10**	0.00	0.09**	0.00	0.15**	0.00
Education-graduate	-0.46**	0.00	-0.10*	0.09	-0.01	0.62	0.03	0.17	0.22**	0.00
Work status-working	0.55**	0.00	0.73**	0.00	0.37**	0.00	0.34**	0.00	0.16**	0.00
Work status-retired/student	-0.19**	0.00	-0.11*	0.01	-0.25*	0.00	-0.29**	0.00	-0.36**	0.00
Age 25-34	0.07*	0.01	0.08**	0.00	-0.02*	0.06	0.04**	0.00	-0.08**	0.00
Age 35-44	-0.01	0.58	-0.06*	0.05	-0.05**	0.00	0.00	0.78	-0.10**	0.00
Age 45-54	-0.13**	0.00	-0.10**	0.00	-0.15**	0.00	-0.05**	0.00	-0.14**	0.00
Age 55-64	-0.09*	0.03	-0.04	0.33	-0.24**	0.00	-0.15**	0.00	-0.23**	0.00
Fear of failure- yes	-0.15**	0.00	-0.13**	0.00	-0.18**	0.00	-0.19**	0.00	-0.26**	0.00
Opportunity perception-yes	0.51**	0.00	0.22**	0.00	0.30**	0.00	0.29**	0.00	0.36**	0.00
Sufficient skill perception-yes	0.56**	0.00	0.51*	0.01	0.66**	0.00	0.70**	0.00	0.76**	0.00
Knowing another entrepreneur-yes	0.41**	0.00	0.18**	0.00	0.26**	0.00	0.34**	0.00	0.44**	0.00
Shut down business < 12 months-yes	0.15**	0.00	0.34**	0.00	0.28**	0.00	0.27**	0.00	0.30**	0.00
Constant	-2.27**	0.00	-2.11**	0.00	-2.03**	0.00	-2.30**	0.00	-2.29**	0.00
Number of observations	27,642		22,617		113,460		157,421		237,784	
Loglikelihood	-9,149		-8,175		-33,602		-40,722		-38,132	
Prob > chi2	0.00		0.00		0.00		0.00		0.00	

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than secondary). In the estimation, we included country and year dummies. We involved only participants classified as nascent entrepreneurs or non-entrepreneurs. We eliminated new and established entrepreneurs. Robust standard errors are estimated. *p < 0.1; ** p < 0.01.

Differences in perceptual factors

As a further robustness check of our descriptive findings and similarly to KMS, we reran two probit models for each perception (fearfail, opport, suskill, and knowent). As regressors, the first model contained all valid samples and the following variables: gender, work status, household income, age, education, prior entrepreneurial experience, country, and year dummies. For both extension studies and all models, the gender disparity remains meaningful. Second, we added entrepreneurial engagement variables to the probit model. It further points out that socioeconomic factors failed in explaining entrepreneurial perceptions. Tables 4-9 and 4-10 prove that the models confirm the descriptive findings. The gender gap slightly decreased when we included less developed countries for most of the perceptions; however, it remains profoundly meaningful. The only exception is opportunity evaluation perception which decreased meaningfully from -0.12 to -0.07 when we included less developed countries (see tables 4-9 and 4-10).

For further analysis, extension 2 conducted the same analysis in different types of economies. Table 4-11 shows our probit estimates for economies at a different development stage in the sample. The results indicate that the gender gap in entrepreneurial perceptions shows up in all economies with various sociocultural environments. Although the gender differences in perceived entrepreneurial capability are highly considerable in all economies, there is a considerable disparity between factor-driven and innovation-driven economies. In fact, women in more developed countries are significantly less confident about their entrepreneurial skills.

Moreover, women in innovation-driven countries have a higher fear of failure and lower evaluation of entrepreneurial opportunity. However, when we conducted the same analysis on the sample of nascent entrepreneurs and excluded non- or established entrepreneurs, the results changed. The gender differences in all perceptions became less substantial; however, they are still significant. The higher negative gender differences of perceived entrepreneurial capability in innovation-driven economies show that in these countries, women nascent entrepreneurs have significantly lower confidence in their entrepreneurial capabilities. With these results, we can argue that the country's development stage conditions individuals' perceptions of entrepreneurship (see Tables 4-11 and 4-12).

Table 4-9. Probit estimates on perceptual variables, KMS and extension 1

Variable	Results of KMS (2001-2006)								Extension 1 (2011-2016)							
	Y=Suskill		Y=Fearfail		Y=Opport		Y=Knowent		Y=Suskill		Y=Fearfail		Y=Opport		Y=Knowent	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Female	-0.40**	-0.35**	0.15**	0.12**	-0.21**	-0.18**	-0.27**	-0.23**	-0.32**	-0.30**	0.20**	0.18**	-0.14**	-0.12**	-0.14**	-0.12**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Hh income-middle 33%	0.07**	0.07**	-0.02*	-0.02*	0.04**	0.04**	0.09**	0.09**	0.04**	0.05**	-0.52	-0.00	0.05**	0.06**	0.07**	0.08**
	(0.00)	(0.00)	(0.01)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.25)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Hh income-upper 33%	0.27**	0.23**	-0.17**	-0.14**	0.16**	0.15**	0.27**	0.24**	0.14**	0.14**	-0.07**	-0.06**	0.20**	0.20**	0.20**	0.20**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education-secondary	0.15**	0.15**	-0.05**	-0.05**	0.07**	0.07**	0.11**	0.11**	0.16**	0.19**	-0.09**	-0.10**	0.03**	0.03**	0.13**	0.14**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education - post-secondary	0.28**	0.28**	-0.11**	-0.10**	0.20**	0.19**	0.23**	0.23**	0.30**	0.33**	-0.10**	-0.11**	0.17**	0.17**	0.23**	0.23**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education-graduate	0.32**	0.32**	-0.06**	-0.05**	0.29**	0.28**	0.33**	0.32**	0.42**	0.44**	-0.10**	-0.09**	0.32**	0.31**	0.34**	0.33**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Work status-working	0.24**	0.11**	-0.04**	0.02	0.06**	0.02*	0.16**	0.09**	0.16**	-0.04**	-0.07**	0.00	0.12**	0.05**	0.17**	0.06**
	(0.00)	(0.00)	(0.00)	(0.10)	(0.00)	(0.07)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.64)	(0.00)	(0.00)	(0.00)	(0.00)
Work status-retired/student	-0.07**	-0.04*	-0.10**	-0.11**	-0.06**	-0.05**	-0.03	-0.01	-0.15**	-0.14**	-0.11**	-0.11**	0.06**	0.07**	-0.03**	-0.02*
	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.14)	(0.62)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.03)
Age 25-34	0.25**	0.24**	0.05**	0.06**	-0.03*	-0.05**	-0.06**	-0.08**	0.25**	0.24**	0.06**	0.07**	-0.00	-0.01	0.00	-0.01
	(0.00)	(0.00)	(0.00)	(0.00)	(0.03)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.44)	(0.12)	(0.80)	(0.32)
Age 35-44	0.32**	0.28**	0.05**	0.07**	-0.08**	-0.10**	-0.19**	-0.22**	0.32**	0.28**	0.05**	0.07**	-0.07**	-0.08**	-0.09**	-0.11**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Age 45-54	0.30**	0.26**	0.01	0.03*	-0.15**	-0.15**	-0.36**	-0.39**	0.33**	0.27**	0.01	0.04**	-0.14**	-0.15**	-0.20**	-0.23**
	(0.00)	(0.00)	(0.70)	(0.06)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.16)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Age 55-64	0.27**	0.22**	-0.15**	-0.13**	-0.17**	-0.17**	-0.49**	-0.51**	0.29**	0.22**	-0.10**	-0.07**	-0.15**	-0.15**	-0.31**	-0.34**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Nascent entrepreneur	-	1.14**	-	-0.44**	-	0.62**	-	0.57**	-	1.15**	-	-0.44**	-	0.52**	-	0.77**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
New entrepreneur	-	1.19**	-	-0.45**	-	0.40**	-	0.52**	-	1.06**	-	-0.45**	-	0.42**	-	0.73**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Established entrepreneur	-	1.15**	-	-0.47**	-	0.22**	-	0.40**	-	1.06**	-	-0.40**	-	0.18**	-	0.37**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Shut down bus < 12 months	0.90**	0.80**	-0.15**	-0.07*	0.21**	0.13**	0.56**	0.48**	0.81**	0.74**	-0.14**	-0.08**	0.05**	-0.00	0.55**	0.48**
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.72)	(0.00)	(0.00)
Constant	-0.29**	-0.37	0.12**	-0.68**	-0.36**	-0.40**	-0.01	-0.36**	-0.33**	-0.38**	-0.21**	-0.19**	-0.36**	-0.39**	-0.83**	-0.90**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.59)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Number of observations	108,309	108,309	108,309	108,309	108,309	108,309	108,309	108,309	223,488	223,488	223,488	223,488	223,488	223,488	223,488	223,488
Loglikelihood	-65,635	-64,233	-65,634	-68,152	-65,635	-65,684	-65,635	-65,635	-143,966	-1343,331	-150,791	-149,050	-132,045	-130,677	-136,358	-132,725
Prob > chi-squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than secondary); work status (not working); and not shut down business in the past 12 months. Estimation contained country and year dummies. Standard errors in parentheses. For the replication study, we reached almost the same results as KMS. All valid observations are included. *p < 0.1; **p < 0.01.

Table 4-10. Probit estimates on perceptual variables, KMS and extension 2

Variable	Results of KMS (2001-2006)								Extension 2 (2011-2016)							
	Y=Suskill		Y=Fearfail		Y=Opport		Y=Knowent		Y=Suskill		Y=Fearfail		Y=Opport		Y=Knowent	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Female	-0.40**	-0.35**	0.15**	0.12**	-0.21**	-0.18**	-0.27**	-0.23**	-0.27**	-0.25**	0.17**	0.16**	-0.08**	-0.07**	-0.13**	-0.11**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Hh income-middle 33%	0.07**	0.07**	-0.02*	-0.02*	0.04**	0.04**	0.09**	0.09**	0.06**	0.06**	-0.02**	-0.02**	0.08**	0.08**	0.11**	0.11**
	(0.00)	(0.00)	(0.01)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Hh income-upper 33%	0.27**	0.23**	-0.17**	-0.14**	0.16**	0.15**	0.27**	0.24**	0.16**	0.13**	-0.09**	-0.07**	0.19**	0.18**	0.26**	0.24**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education-secondary	0.15**	0.15**	-0.05**	-0.05**	0.07**	0.07**	0.11**	0.11**	0.19**	0.21**	-0.06**	-0.05**	-0.00	-0.00	0.15**	0.16**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.14)	(0.19)	(0.00)	(0.00)
Education - post-secondary	0.28**	0.28**	-0.11**	-0.10**	0.20**	0.19**	0.23**	0.23**	0.36**	0.40**	-0.07**	-0.08**	0.07**	0.07**	0.29**	0.30**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education-graduate	0.32**	0.32**	-0.06**	-0.05**	0.29**	0.28**	0.33**	0.32**	0.45**	0.49**	-0.07**	-0.07**	0.17**	0.16**	0.39**	0.39**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Work status-working	0.24**	0.11**	-0.04**	0.02	0.06**	0.02*	0.16**	0.09**	0.24**	0.04**	-0.06**	0.01**	0.15**	0.07**	0.24**	0.11**
	(0.00)	(0.00)	(0.00)	(0.10)	(0.00)	(0.07)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Work status-retired/student	-0.07**	-0.04*	-0.10**	-0.11**	-0.06**	-0.05**	-0.03	-0.01	-0.15**	-0.14**	-0.07**	-0.07**	0.03**	0.03**	-0.02**	-0.01*
	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.14)	(0.62)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.05)
Age 25-34	0.25**	0.24**	0.05**	0.06**	-0.03*	-0.05**	-0.06**	-0.08**	0.17**	0.15**	0.06**	0.07**	-0.02**	-0.04**	0.05**	0.03**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.03)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Age 35-44	0.32**	0.28**	0.05**	0.07**	-0.08**	-0.10**	-0.19**	-0.22**	0.23**	0.19**	0.08**	0.10**	-0.08**	-0.09**	-0.01**	-0.04**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Age 45-54	0.30**	0.26**	0.01	0.03*	-0.15**	-0.15**	-0.36**	-0.39**	0.22**	0.18**	0.06**	0.08**	-0.14**	-0.15**	-0.12**	-0.14**
	(0.00)	(0.00)	(0.70)	(0.06)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Age 55-64	0.27**	0.22**	-0.15**	-0.13**	-0.17**	-0.17**	-0.49**	-0.51**	0.17**	0.12**	-0.01**	0.00	-0.17**	-0.17**	-0.20**	-0.22**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.40)	(0.00)	(0.00)	(0.00)	(0.00)
Nascent entrepreneur	-	1.14**	-	-0.44**	-	0.62**	-	0.57**	-	0.92**	-	-0.32**	-	0.47**	-	0.59**
		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)
New entrepreneur	-	1.19**	-	-0.45**	-	0.40**	-	0.52**	-	0.94**	-	-0.37**	-	0.42**	-	0.67**
		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)
Established entrepreneur	-	1.15**	-	-0.47**	-	0.22**	-	0.40**	-	0.87**	-	-0.32**	-	0.21**	-	0.38**
		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)
Shut down bus < 12 months	0.90**	0.80**	-0.15**	-0.07*	0.21**	0.13**	0.56**	0.48**	0.62**	0.54**	-0.04**	0.00	0.12**	0.06**	0.42**	0.36**
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.96)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	-0.29**	-0.37	0.12**	-0.68**	-0.36**	-0.40**	-0.01	-0.36**	-0.39**	-0.41**	-0.27**	-0.27**	-0.24**	-0.26**	-1.02**	-1.05**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.59)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Number of observations	108,309	108,309	108,309	108,309	108,309	108,309	108,309	108,309	666,633	666,633	666,633	666,633	666,633	666,633	666,633	666,633
Loglikelihood	-65,635	-64,233	-65,634	-68,152	-65,635	-65,684	-65,635	-65,635	-419,280	-396,467	-434,442	-430,782	-409,917	-405,048	-412,726	-402,654
Prob > chi-squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than secondary); work status (not working); and not shut down business in the past 12 months. Estimation contained country and year dummies. Standard errors in parentheses. For the replication study, we reached almost the same results as KMS. All valid observations are included. *p < 0.1. **p < 0.01.

Table 4-11. Economy-specific gender effects of all observations, extension 2

Economy	Y= Suskill		Y= Fearfail		O= Opport		K= Knowent		Total sample
	β	P > z	β	P > z	β	P > z	β	P > z	
Factor- driven economies	-0.10**	0.00	0.01	0.18	-0.12**	0.00	-0.15**	0.00	39,420
Factor-driven economies (in transition)	-0.12**	0.00	0.07**	0.00	-0.01	0.49	-0.11**	0.00	32,799
Efficiency-driven economies	-0.17**	0.00	0.15**	0.00	-0.04**	0.00	-0.12**	0.00	140,173
Efficiency-driven economies (in transition)	-0.24**	0.00	0.18**	0.00	-0.04**	0.00	-0.11**	0.00	185,981
Innovation-driven economies	-0.36**	0.00	0.20**	0.00	-0.14**	0.00	-0.15**	0.00	268,260

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than secondary); work status (not working); and not shut down business in the past 12 months. Economy-specific gender effects are in the probit estimates on perceptual variables. Estimation contained country and year dummies. Robust standard errors are estimated. All observations are included. *p < 0.1; ** p < 0.01.

Table 4-12. Economy-specific gender effects of nascent entrepreneurs, extension 2

Economy	Y= Suskill		Y= Fearfail		O= Opport		K= Knowent		Total sample
	β	P > z	β	P > z	β	P > z	β	P > z	
Factor- driven economies	0.04	0.41	0.09*	0.02	-0.02	0.51	-0.18**	0.00	4,605
Factor-driven economies (in transition)	-0.05	0.36	0.08*	0.07	-0.04	0.33	-0.11*	0.01	3,336
Efficiency-driven economies	-0.10**	0.00	0.15**	0.00	-0.02	0.33	-0.10**	0.00	14,003
Efficiency-driven economies (in transition)	-0.16**	0.00	0.08**	0.00	0.00	0.92	-0.04*	0.02	15,589
Innovation-driven economies	-0.18**	0.00	0.11**	0.00	-0.01	0.54	-0.08**	0.00	12,742

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than secondary); work status (not working); and not shut down business in the past 12 months. Economy-specific gender effects are in the probit estimates on perceptual variables. Estimation contained country and year dummies. Robust standard errors are estimated. Only innovative entrepreneurs are included.

*p < 0.1; ** p < 0.01.

Individuals' business type selection may lead to gender differences. In contrast to previous assumptions, extension 1 shows women are considerably representative not only in health, education, social services, hotel, and restaurants; they are also more representative than men in manufacturing. Men are more engaged in wholesale, mining and construction activities. These findings persisted when we added 54 more countries. Tables 4-13 and 4-14 shows substantial differences disseminating of males and females across various sectors when they pursue an entrepreneurial career. The findings show that including the business' sector substantially decreased the gender differences regarding perceptions. This reduction is more apparent in perceived entrepreneurial capability (from -0.32 to -0.14) and opportunity evaluation (from -0.14 to -0.07) than other perceptions. Similar to our previous analyses, the existing gender disparity became meaningfully smaller by including less developed economies.

For more clarification on the matter of sector effects, we reran probit models on (fearfail), (opport), (suskill) and (knowent) between nascent entrepreneurs. As a regressor, we used sector of the venture, gender, income, education, working status, age, and previous business experience. Extension 2 revealed that perceptual variables could not explain perceived entrepreneurial capability in factor-driven economies when controlled for the type of venture. However, nascent female entrepreneurs are less confident about their entrepreneurial skills and capabilities in innovation-driven economies and efficiency-driven economies in transition than in efficiency-driven economies (see Table 4-15). Similar to perceived capability, when we controlled for the type of the venture, perceptions were not successful in explaining the fear of entrepreneurial failure in factor-driven economies (see Table 4-16). Moreover, women in efficiency-driven economies have the highest fear of failure. Specifically, Table 4-19 shows that the explorative results emphasising subjective perceptions may not explain the perceived opportunity evaluation in any type of economy when we control the type of venture. Table 4-18 indicates that the highest gender disparity in knowing an entrepreneurial role model belongs to women in factor-driven economies (-0.14).

These results indicate that gender differences became less significant than in the replicated study, but they are still substantial. Despite this decrease, the high significance of (fearfail), (opport), (suskill) and (knowent) is not connected to individuals' type of business, as well as individuals' socioeconomic characteristics. More importantly, the economy's development stage moderates the relationship between perceptions and women's entrepreneurial activities.

Table 4-13. Probit estimates of nascent entrepreneurs, KMS and extension 1

Variable	Results of KMS (2001-2006)								Extension 1 (2011-2016)							
	Y=Suskill		Y=Fearfail		Y=Opport		Y=Knowent		Y=Suskill		Y=Fearfail		Y=Opport		Y=Knowent	
	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z
Female	-0.19**	0.01	0.13*	0.04	-0.05	0.36	-0.23**	0.00	-0.20**	0.00	0.12**	0.00	-0.07*	0.01	-0.09**	0.00
Hh income - middle 33% income	0.07	0.45	-0.11	0.14	0.10	0.14	0.00	0.99	0.09*	0.02	-0.00	0.85	0.13**	0.00	0.08*	0.01
Hh income - upper 33% income	0.12	0.17	-0.09	0.25	0.19**	0.01	0.16*	0.02	0.09*	0.02	-0.07*	0.03	0.22**	0.00	0.20**	0.00
Education - secondary	0.08	0.42	-0.03	0.75	-0.02	0.77	0.04	0.63	0.03	0.45	-0.03	0.35	-0.03	0.37	0.10*	0.01
Education - post-secondary	0.09	0.38	-0.01	0.89	-0.04	0.60	0.03	0.76	0.16**	0.00	-0.01	0.77	0.07	0.10	0.24**	0.00
Education - graduate	0.21*	0.05	0.04	0.64	-0.10	0.24	0.16*	0.06	0.22**	0.00	0.09	0.13	0.12*	0.03	0.30**	0.00
Work status - working	0.24*	0.02	-0.22*	0.01	0.08	0.30	0.27**	0.00	0.08	0.10	-0.05	0.24	-0.04	0.28	0.25**	0.00
Work status - retired/student	0.07	0.69	-0.23	0.14	-0.03	0.83	-0.03	0.82	-0.10	0.22	-0.07	0.32	-0.04	0.59	0.09	0.22
Age 25-34	0.37**	0.00	-0.01	0.92	0.05	0.58	0.00	0.99	0.24**	0.00	-0.03	0.47	0.08	0.06	0.11*	0.01
Age 35-44	0.43**	0.00	-0.05	0.60	-0.01	0.89	-0.14	0.15	0.32**	0.00	-0.01	0.79	0.02	0.64	0.01	0.76
Age 45-54	0.44**	0.00	-0.04	0.69	-0.18*	0.06	-0.29*	0.00	0.42**	0.00	-0.05	0.26	-0.07	0.10	-0.10*	0.03
Age 55-64	0.62**	0.00	0.03	0.81	-0.14	0.20	-0.32**	0.01	0.40**	0.00	-0.07	0.20	-0.12*	0.02	-0.23**	0.00
Sector:																
Mining, construction	0.58*	0.04	-0.04	0.85	0.39*	0.06	0.47*	0.02	0.19	0.07	0.02	0.77	0.10	0.25	0.29**	0.00
Manufacturing	-0.14	0.54	0.09	0.65	0.03	0.85	0.18	0.33	0.00	0.98	-0.03	0.71	0.24**	0.00	0.15	0.05
Trans, comm, utilities	0.33	0.21	-0.09	0.67	0.20	0.30	0.26	0.17	0.09	0.48	0.01	0.87	0.11	0.27	0.14	0.17
Wholesale, repair	-0.11	0.65	-0.27	0.20	0.13	0.51	0.48*	0.01	0.07	0.49	-0.04	0.60	0.14	0.10	0.24**	0.00
Retail, hotel, restaurants	-0.01	0.95	-0.01	0.94	0.34*	0.05	0.38*	0.02	0.01	0.88	-0.00	0.96	0.29**	0.00	0.19*	0.01
Informatic and communication	-	-	-	-	-	-	-	-	-0.10	0.31	0.01	0.87	0.25**	0.00	0.21*	0.01
Finance, insurance, real estate	0.32	0.24	-0.28	0.21	0.44*	0.03	0.44*	0.03	0.14	0.23	-0.06	0.55	0.21*	0.03	0.37**	0.00
Business services	-0.00	0.98	-0.13	0.48	0.21	0.21	0.42*	0.01	0.15	0.11	-0.04	0.62	0.30**	0.00	0.34**	0.00
Administrative services	-	-	-	-	-	-	-	-	0.02	0.83	-0.02	0.77	0.27**	0.00	0.28*	0.00
Health, education, social services	-0.15	0.51	-0.13	0.52	0.31*	0.09	0.52**	0.00	0.02	0.77	-0.04	0.58	0.39**	0.00	0.15*	0.04
Consumer services	-0.10	0.64	-0.02	0.92	0.26	0.16	0.28	0.12	-0.08	0.42	-0.06	0.49	0.28**	0.00	0.10	0.27
Shut down bus < 12 months	-0.01	0.96	-0.01	0.89	0.02	0.87	0.32	0.00	0.25**	0.00	-0.06	0.25	-0.12*	0.01	0.28**	0.00
Constant	0.58*	0.02	-0.67**	0.00	0.18	0.38	-0.06	0.78	0.60**	0.00	-0.50**	0.00	-0.03	0.75	-0.58**	0.00
Number of observations	2,566		2,566		2,566		2,566		9,138		9,138		9,138		9,138	
Loglikelihood	-916		-1,254		-1,622		-1,566		-3,843		-5,394		-5,781		-5,825	
Prob > chi-squared	0.00		0.03		0.00		0.00		0.00		0.00		0.00		0.00	

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than secondary); work status (not working); currently non-entrepreneur; and not shut down business in the past 12 months. In the estimation, we included country and year dummies. Robust standard errors are estimated. The recent data involved two more sectors. *p < 0.1; **p < 0.01.

Table 4-14. Probit estimates of nascent entrepreneurs, exact replication and extension 2

Variable	Exact replication (2001-2006)								Extension 2 (71 countries)							
	Y=Suskill		Y=Fearfail		Y=Opport		Y=Knowent		Y=Suskill		Y=Fearfail		Y=Opport		Y=Knowent	
	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z
Female	-0.20**	0.00	0.09	0.20	-0.05	0.40	-0.17**	0.00	-0.12**	0.00	0.10**	0.00	-0.03*	0.02	-0.08**	0.00
Hh income - middle 33% income	0.02	0.78	-0.15	0.09	0.11	0.18	0.02	0.77	0.06**	0.00	-0.02	0.10	0.08**	0.00	0.08**	0.00
Hh income - upper 33% income	0.06	0.55	-0.05	0.52	0.15	0.07	0.16*	0.05	0.08**	0.00	-0.05**	0.00	0.16**	0.00	0.21**	0.00
Education - secondary	0.11	0.34	-0.04	0.68	-0.02	0.76	0.02	0.78	0.16**	0.00	-0.07**	0.00	-0.07**	0.00	0.08**	0.00
Education - post-secondary	0.06	0.58	-0.00	0.98	-0.04	0.67	0.00	0.97	0.28**	0.00	-0.06*	0.01	-0.04*	0.06	0.23**	0.00
Education - graduate	0.26*	0.03	0.12	0.24	-0.15	0.13	0.21*	0.04	0.36**	0.00	0.01	0.77	-0.00	0.95	0.34**	0.00
Work status - working	0.15	0.15	-0.16	0.09	0.12	0.15	0.26**	0.00	0.01	0.63	-0.03*	0.07	-0.01	0.59	0.16**	0.00
Work status - retired/student	0.02	0.89	-0.22	0.21	0.12	0.45	-0.06	0.68	-0.07*	0.07	-0.12**	0.00	0.00	0.99	0.07*	0.02
Age 25-34	0.35**	0.00	0.01	0.91	0.08	0.41	0.02	0.84	0.19**	0.00	-0.00	0.89	-0.01	0.48	0.08**	0.00
Age 35-44	0.39**	0.00	-0.02	0.80	0.12	0.24	-0.11	0.31	0.24**	0.00	0.03	0.14	-0.06**	0.00	0.00	0.96
Age 45-54	0.29*	0.02	-0.00	0.96	-0.07	0.48	-0.31**	0.00	0.29**	0.00	0.04*	0.06	-0.14**	0.00	-0.07**	0.00
Age 55-64	0.46**	0.00	0.04	0.74	0.05	0.67	-0.28*	0.03	0.30**	0.00	-0.01	0.59	-0.16**	0.00	-0.16**	0.00
Sector:																
Mining, construction	0.34	0.27	0.10	0.65	0.38	0.07	0.50*	0.01	0.27**	0.00	-0.00	0.98	0.00	0.95	0.08*	0.03
Manufacturing	-0.32	0.24	0.15	0.49	-0.13	0.53	0.22	0.26	0.20**	0.00	-0.02	0.56	0.14**	0.00	0.03	0.23
Trans, comm, utilities	0.04	0.87	-0.00	0.98	0.09	0.65	0.32	0.12	0.14**	0.00	0.06	0.16	0.03	0.47	0.02	0.63
Wholesale, repair	-0.07	0.78	-0.08	0.70	0.12	0.55	0.66**	0.00	0.22**	0.00	-0.00	0.84	0.13**	0.00	0.08*	0.01
Retail, hotel, restaurants	-0.20	0.41	0.13	0.49	0.31	0.09	0.50**	0.00	0.14**	0.00	-0.01	0.72	0.14**	0.00	0.05*	0.03
Informatic and communication	-	-	-	-	-	-	-	-	0.11*	0.01	0.03	0.40	0.10*	0.01	0.15**	0.00
Finance, insurance, real estate	0.07	0.80	-0.09	0.71	0.45*	0.04	0.49*	0.02	0.20**	0.00	-0.08*	0.09	0.05	0.24	0.13**	0.00
Business services	-0.22	0.38	0.04	0.83	0.17	0.36	0.47**	0.00	0.24**	0.00	-0.04	0.27	0.10**	0.00	0.19**	0.00
Administrative services	-	-	-	-	-	-	-	-	0.15**	0.00	-0.02	0.58	0.12**	0.00	0.10*	0.01
Health, education, social services	-0.35	0.18	0.04	0.84	0.29	0.14	0.57**	0.00	0.14**	0.00	-0.02	0.41	0.17**	0.00	0.03	0.30
Consumer services	-0.34	0.19	0.08	0.70	0.24	0.22	0.34	0.07	-0.01	0.72	-0.04	0.41	0.05	0.24	0.05	0.28
Shut down bus < 12 months	-0.01	0.91	-0.03	0.76	-0.11	0.32	0.34**	0.00	0.21**	0.00	-0.01	0.64	-0.01	0.49	0.16**	0.00
Constant	0.78**	0.00	-0.73**	0.00	0.38	0.10	-0.21	0.36	0.48**	0.00	-0.51**	0.00	0.31**	0.00	-0.34**	0.00
Number of observations	1,771		1,771		1,771		1,771		43,296		43,296		43,296		43,296	
Loglikelihood	-686		-897		-1,121		-1,098		-18,473		-24,873		-26,533		-27,389	
Prob > chi-squared	0.00		0.03		0.00		0.00		0.00		0.00		0.00		0.00	

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than secondary); work status (not working); and not shut down business in the past 12 months. In the estimation, we included country and year dummies. Robust standard errors are estimated. *p < 0.1; **p < 0.01.

Table 4-15. Economy-specific probit estimates for suskill, extension 2

Variable	Factor-driven economies		Factor-driven economies (in transition)		Efficiency-driven economies		Efficiency-driven economies (in transition)		Innovation-driven economies	
	Y=Suskill		Y=Suskill		Y=Suskill		Y=Suskill		Y=Suskill	
	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z
Female	0.05	0.30	-0.09	0.12	-0.12**	0.00	-0.17**	0.00	-0.16**	0.00
Hh income - middle 33% income	0.09	0.16	0.07	0.32	0.09*	0.01	0.04	0.22	0.05	0.12
Hh income - upper 33% income	0.26**	0.00	0.02	0.73	0.10**	0.00	0.02	0.47	0.09*	0.01
Education - secondary	0.10	0.15	0.04	0.52	0.12**	0.00	0.08*	0.02	0.08	0.10
Education - post-secondary	0.24**	0.00	0.07	0.34	0.25**	0.00	0.18**	0.00	0.20**	0.00
Education - graduate	0.63*	0.02	0.41*	0.02	0.36**	0.00	0.23**	0.00	0.25**	0.00
Work status – working	-0.05	0.45	0.10	0.19	0.00	0.81	0.01	0.63	0.05	0.20
Work status – retired/student	-0.03	0.83	0.17	0.23	-0.05	0.46	-0.11	0.13	-0.05	0.48
Age 25-34	0.18*	0.01	0.18*	0.02	0.16**	0.00	0.17**	0.00	0.30**	0.00
Age 35-44	0.15	0.05	0.15	0.08	0.26**	0.00	0.20**	0.00	0.36**	0.00
Age 45-54	0.03	0.71	0.12	0.23	0.31**	0.00	0.23**	0.00	0.49**	0.00
Age 55-64	0.08	0.45	-0.01	0.90	0.27**	0.00	0.35**	0.00	0.45**	0.00
Sector:										
Mining, construction	0.26	0.17	0.04	0.65	0.26**	0.00	0.10	0.23	0.33**	0.00
Manufacturing	0.38**	0.00	0.17	0.49	0.35**	0.00	0.01	0.86	0.08	0.32
Trans, comm, utilities	0.94**	0.00	0.33	0.98	0.11	0.25	-0.07	0.40	0.17	0.13
Wholesale, repair	0.24*	0.01	0.08	0.70	0.30**	0.00	0.12	0.12	0.14	0.12
Retail, hotel, restaurants	0.20**	0.00	-0.01	0.49	0.26**	0.00	0.01	0.81	0.04	0.53
Informatic and communication	0.24	0.34	-0.10	0.49	0.21*	0.03	0.03	0.71	0.01	0.87
Finance, insurance, real estate	0.64	0.09	0.10	0.71	0.11	0.36	0.34**	0.00	0.04	0.62
Business services	0.28	0.23	0.27	0.83	0.26**	0.00	0.09	0.26	0.21*	0.01
Administrative services	0.22	0.44	0.28	0.49	0.14	0.16	-0.01	0.84	0.15	0.11
Health, education, social services	0.19	0.10	0.12	0.84	0.27**	0.00	-0.02	0.73	0.06	0.39
Consumer services	0.00	0.97	-0.06	0.70	0.02	0.84	-0.12	0.21	-0.09	0.34
Shut down bus < 12 months	-0.08	0.34	0.20**	0.00	0.16**	0.00	0.27**	0.00	0.32**	0.00
Constant	1.04**	0.00	0.18	0.31	1.27**	0.00	0.95**	0.00	0.50**	0.00
Number of observations		3,695		2,974		12,036		13,440		11,151
Loglikelihood		-1,312		-1,200		-5,208		-5,964		-4,667
Prob > chi-squared		0.00		0.00		0.00		0.00		0.00

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than a secondary degree); work status (not working); currently non-entrepreneur; not shut down business in the past 12 months. In the estimation, we included country and year dummies. Robust standard errors are estimated. Only nascent entrepreneurs are included. *p < 0.1; **p < 0.01.

Table 4-16. Economy-specific probit estimates for fear of failure, extension 2

Variable	Factor-driven economies		Factor-driven economies (in transition)		Efficiency-driven economies		Efficiency-driven economies (in transition)		Innovation-driven economies	
	Y= fearfail		Y= fearfail		Y= fearfail		Y= fearfail		Y= fearfail	
	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z
Female	0.07	0.13	0.09*	0.08	0.14**	0.00	0.09**	0.00	0.10**	0.00
Hh income - middle 33% income	-0.06	0.26	-0.03	0.53	-0.02	0.48	-0.07*	0.01	0.01	0.60
Hh income- upper 33% income	-0.13*	0.04	-0.03	0.58	-0.06*	0.05	-0.06*	0.04	-0.02	0.38
Education-secondary	-0.00	0.93	0.01	0.83	-0.05	0.11	0.01	0.75	-0.09*	0.02
Education - post-secondary	-0.04	0.56	0.05	0.44	-0.06*	0.09	0.03	0.38	-0.04	0.30
Education - graduate	0.18	0.33	0.13	0.32	0.06	0.39	0.10	0.08	0.00	0.94
Work status- working	-0.06	0.36	0.06	0.35	-0.02	0.53	-0.03	0.43	-0.08*	0.02
Work status - retired/student	-0.19	0.13	-0.10	0.39	-0.08	0.23	-0.11	0.09	-0.15*	0.03
Age 25-34	-0.16**	0.00	-0.04	0.48	0.02	0.50	-0.01	0.75	0.03	0.40
Age 35-44	-0.09	0.18	0.03	0.65	0.11**	0.00	-0.02	0.44	0.04	0.33
Age 45-54	0.05	0.52	0.08	0.36	0.15**	0.00	-0.04	0.22	0.03	0.41
Age 55-64	-0.11	0.30	0.00	0.99	0.07	0.16	-0.01	0.70	-0.05	0.35
Sector:										
Mining, construction	0.30*	0.04	0.13	0.34	-0.12	0.15	-0.02	0.77	-0.02	0.73
Manufacturing	-0.06	0.45	0.00	0.99	-0.01	0.76	-0.01	0.78	-0.06	0.39
Trans, comm, utilities	-0.24	0.17	0.30	0.05	0.11	0.20	0.08	0.31	-0.06	0.48
Wholesale, repair	-0.21*	0.02	0.05	0.66	-0.00	0.97	-0.02	0.74	0.01	0.82
Retail, hotel, restaurants	0.06	0.33	0.16	0.08	-0.04	0.38	-0.05	0.34	-0.02	0.70
Informatic and communication	0.46*	0.01	0.23	0.17	0.08	0.36	-0.11	0.20	0.02	0.79
Finance, insurance, real estate	-0.09	0.75	0.22	0.29	-0.01	0.91	-0.10	0.26	-0.17	0.05
Business services	0.14	0.44	0.05	0.74	0.02	0.75	-0.12	0.11	-0.07	0.30
Administrative services	0.14	0.55	-0.21	0.30	-0.10	0.29	-0.02	0.73	-0.01	0.86
Health, education, social services	-0.04	0.65	0.04	0.70	-0.04	0.56	-0.07	0.27	-0.03	0.65
Consumer services	0.12	0.64	0.04	0.83	-0.16	0.18	-0.03	0.72	-0.06	0.45
Shut down bus < 12 months	-0.06	0.41	0.06	0.32	0.06	0.11	-0.08*	0.04	-0.01	0.70
Constant	-0.64**	0.00	-0.73**	0.00	-0.94**	0.00	0.12	0.28	-0.46**	0.00
Number of observations	3,695		2,974		12,036		13,440		11,151	
Loglikelihood	-1,913		-1,741		-6,997		-7,614		-6,519	
Prob > chi-squared	0.00		0.00		0.00		0.00		0.00	

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than a secondary degree); work status (not working); currently non-entrepreneur; and not shut down business in the past 12 months. In the estimation, we included country and year dummies. Robust standard errors are estimated. Only nascent entrepreneurs are included.

*p < 0.1; **p < 0.01.

Table 4-17. Economy-specific probit estimates for opportunity evaluation, extension 2

Variable	Factor-driven economies		Factor-driven economies (in transition)		Efficiency-driven economies		Efficiency-driven economies (in transition)		Innovation-driven economies	
	Y= Opport		Y= Opport		Y= Opport		Y= Opport		Y= Opport	
	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z
Female	-0.02	0.65	-0.09*	0.08	-0.02	0.42	-0.03	0.19	-0.03	0.14
Hh income- middle 33% income	0.04	0.48	0.01	0.75	0.09**	0.00	0.07*	0.01	0.11**	0.00
Hh income -upper 33% income	0.00	0.90	0.29**	0.00	0.13**	0.00	0.18**	0.00	0.20**	0.00
Education -secondary	0.06	0.37	-0.07	0.26	-0.07*	0.01	-0.02	0.39	-0.04	0.32
Education - post-secondary	0.13	0.09	-0.08	0.21	-0.10**	0.00	-0.00	0.89	0.09*	0.02
Education -graduate	-0.39*	0.04	0.26	0.05	-0.07	0.33	0.02	0.59	0.10*	0.05
Work status - working	-0.10	0.14	0.00	0.98	-0.00	0.93	0.08*	0.02	-0.08*	0.03
Work status- retired/student	0.15	0.29	-0.11	0.35	-0.04	0.54	0.12*	0.06	-0.07	0.31
Age 25-34	0.05	0.41	-0.06	0.34	-0.04	0.23	-0.07*	0.03	0.11*	0.01
Age 35-44	0.09	0.19	0.04	0.56	-0.13**	0.00	-0.14**	0.00	0.05	0.23
Age 45-54	0.08	0.38	-0.09	0.27	-0.16**	0.00	-0.22**	0.00	-0.06	0.15
Age 55-64	-0.03	0.73	-0.25*	0.02	-0.06	0.20	-0.25**	0.00	-0.12*	0.02
Sector:										
Mining, construction	0.04	0.80	0.11	0.40	-0.04	0.61	0.06	0.34	0.09	0.23
Manufacturing	0.11	0.25	0.10	0.33	0.10	0.07	0.28**	0.00	0.17*	0.02
Trans, comm, utilities	0.00	0.97	0.02	0.86	0.04	0.60	0.07	0.33	0.13	0.15
Wholesale, repair	0.16	0.09	0.05	0.67	0.15*	0.01	0.17*	0.01	0.18*	0.02
Retail, hotel, restaurants	-0.07	0.31	-0.02	0.81	0.14**	0.00	0.25**	0.00	0.26**	0.00
Informatic and communication	0.57*	0.02	-0.45**	0.00	0.11	0.17	0.10	0.18	0.28**	0.00
Finance, insurance, real estate	-0.22	0.47	-0.01	0.95	-0.10	0.30	0.15*	0.08	0.21*	0.01
Business services	0.04	0.81	0.10	0.48	-0.01	0.87	0.16*	0.02	0.25**	0.00
Administrative services	0.03	0.89	0.08	0.64	0.16*	0.07	0.23**	0.00	0.18*	0.02
Health, education, social services	-0.01	0.90	0.11	0.31	0.11*	0.07	0.21**	0.00	0.34**	0.00
Consumer services	-0.18	0.55	-0.34	0.08	-0.09	0.37	0.19*	0.02	0.21*	0.01
Shut down bus < 12 months	0.06	0.39	0.03	0.63	0.00	0.91	-0.05	0.17	-0.05	0.27
Constant	1.16**	0.00	0.28*	0.07	0.48**	0.00	0.48**	0.00	-0.01	0.86
Number of observations	3,695		2,974		12,036		13,440		11,151	
Loglikelihood	-1,668		-1,827		-7,380		-8,508		-6,962	
Prob > chi-squared	0.00		0.00		0.00		0.00		0.00	

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than a secondary degree); work status (not working); currently non-entrepreneur; and not shut down business in the past 12 months. In the estimation, we included country and year dummies. Robust standard errors are estimated. Only nascent entrepreneurs are included. *p < 0.1; **p < 0.01.

Table 4-18. Economy-specific probit estimates for entrepreneurial network, extension 2

Variable	Factor-driven economies		Factor-driven economies (in transition)		Efficiency-driven economies		Efficiency-driven economies (in transition)		Innovation-driven economies	
	Y= Knowent		Y= Knowent		Y= Knowent		Y= Knowent		Y= Knowent	
	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z
Female	-0.13**	0.00	-0.13**	0.00	-0.08**	0.00	-0.05*	0.02	-0.06**	0.00
Hh income - middle 33% income	0.00	0.93	0.12*	0.03	0.07*	0.01	0.07*	0.01	0.08**	0.00
Hh income -upper 33% income	-0.02	0.70	0.22**	0.00	0.26**	0.00	0.19**	0.00	0.19**	0.00
Education - secondary	0.09	0.18	0.14*	0.02	0.13**	0.00	0.20**	0.00	0.05	0.21
Education - post-secondary	0.13*	0.07	0.31**	0.00	0.28**	0.00	0.27**	0.00	0.21**	0.00
Education - graduate	0.46*	0.04	0.51**	0.00	0.43**	0.00	0.38**	0.00	0.26**	0.00
Work status - working	0.16*	0.01	0.20**	0.00	0.11**	0.00	0.14**	0.00	0.25**	0.00
Work status - retired/student	0.27*	0.04	0.17	0.14	-0.01	0.83	0.03	0.54	0.11	0.10
Age 25-34	0.13*	0.04	-0.02	0.68	0.05*	0.08	0.09**	0.00	0.11**	0.00
Age 35-44	-0.01	0.80	0.11	0.14	0.00	0.87	-0.03	0.38	-0.02	0.57
Age 45-54	0.06	0.44	0.00	0.96	-0.07*	0.06	-0.06	0.10	-0.11*	0.01
Age 55-64	0.02	0.80	-0.05	0.65	-0.06	0.21	-0.18**	0.00	-0.25**	0.00
Sector:										
Mining, construction	-0.05	0.74	0.04	0.72	0.07	0.37	0.11	0.10	0.26**	0.00
Manufacturing	-0.03	0.75	0.10	0.30	0.03	0.57	0.08	0.17	0.12*	0.09
Trans, comm, utilities	0.08	0.67	0.17	0.26	0.05	0.52	0.05	0.52	0.07	0.39
Wholesale, repair	-0.15	0.10	0.01	0.92	0.05	0.41	0.19**	0.00	0.23**	0.00
Retail, hotel, restaurants	-0.16*	0.01	0.11	0.18	0.05	0.32	0.14*	0.01	0.17**	0.00
Informatic and communication	-0.21	0.34	0.34*	0.04	0.19*	0.02	0.27**	0.00	0.17*	0.02
Finance, insurance, real estate	-0.14	0.62	-0.02	0.88	0.08	0.43	0.19*	0.03	0.27**	0.00
Business services	-0.40*	0.03	0.04	0.75	0.19*	0.02	0.29**	0.00	0.28**	0.00
Administrative services	-0.20	0.41	0.36*	0.04	0.10	0.27	0.13	0.08	0.21*	0.00
Health, education, social services	-0.32**	0.00	0.17	0.12	-0.04	0.49	0.16**	0.00	0.13*	0.05
Consumer services	0.20	0.53	0.08	0.64	0.07	0.50	0.19*	0.02	0.05	0.48
Shut down bus < 12 months	0.04	0.55	-0.01	0.85	0.23**	0.00	0.15**	0.00	0.28**	0.00
Constant	1.47**	0.00	-0.60**	0.00	-0.01	0.85	0.31*	0.01	-0.52**	0.00
Number of observations	3,695		2,974		12,036		13,440		11,151	
Loglikelihood	-1,809		-1,890		-7,746		-8,698		-7,055	
Prob > chi-squared	0.00		0.00		0.00		0.00		0.00	

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than a secondary degree); work status (not working); currently non-entrepreneur; and not shut down business in the past 12 months. In the estimation, we included country and year dummies. Robust standard errors are estimated. Only nascent entrepreneurs are included. Results of extension 2. *p < 0.1; **p < 0.01.

4.6 Discussion

4.6.1 Explaining the gender gap in entrepreneurial propensity

For generalisation, extension, and to measure women's entrepreneurial propensity, we reran exactly the same analysis as that conducted by KMS. Consequently, we entered influential variables into the recursive, simultaneous-equations bivariate probit model proposed by Evans and Schwab (1995). Regarding the propensity to pursue an entrepreneurial opportunity, this study considers the possible endogeneity of (suskill), (opport), (fearfail), and (knowent), along with possible biases from omitted factors. As this chapter reports in Table 4-19, the dependent variables are (suskill) and (nascent entrepreneurship) in this model. We check whether there are significant differences regarding the gender dummy in the equation for nascent entrepreneurship. Although we conduct the same analysis for all four perceptual variables, we display only the results of (suskill) because it is the only variable for which we did not find any significant differences. This result is along the same line as the probit estimates on nascent entrepreneurship, which demonstrated (suskill) having the strongest correlation. The gender disparity is substantially weakened in all other three models.

We observe that the error terms have a bivariate standard cumulative distribution with covariance ρ and that they are independent of one observation to another. Thus, we conducted a model employed by KMS. The high correlation between (suskill) and (nascent) shows that the stronger an individual's belief in his or her knowledge and skills to undertake a new business is, the greater the plausibility of the individual being a nascent entrepreneur. To control this effect, we used the same simultaneous bivariate probit model as that used by KMS. To investigate gender differences, we ran the model, including endogenous dummy variables, with simultaneous equation models introduced by Heckman (1977) and later by Green (1998). This model enables us to study the omitted variables' impact that might be associated with (suskill) and (nascent) simultaneously. We presumed the error terms are a normally distributed term. If ρ is equal to 0, it indicates that the error terms of the equations are not correlated and that the bivariate probit model outperforms the individual models. If ρ is significantly different from zero, it implies that in individual equations, escaping omitted variables biases the model.

Since endogenous variables appear on the right-hand side in one of the equations, the model is recursive (Evans and Schwab, 1995; Kassouf and Hoffmann, 2006). Hence, similarly to chapter 3, we used two variables in x_2 , which we did not include in x_1 . Since (closebus) and (knowent) may indirectly affect (suskill), we included both in x_2 . In the estimated method, there was a correlation between (knowent) and (closebus) with (suskill), which could be associated

with omitted variables that indicate an association with exogenous factors. The results of extension 2 demonstrate a highly significant coefficient of 0.59 for (closebus) and 0.47 for (knowent) in the single equation probit model (see Table 4-19). Moreover, an individual probit model for Prob [nascent=1 | x1] displays (knowent) and (closebus) are not correlated with errors of the equation.

Our extension results documented in Table 4-19 show that the negative gender gap disappeared and that women have slightly higher entrepreneurial propensity (extension 1: 0.04, extension 2: 0.01) than men. Moreover, the economy-specific analysis shows a significant gender gap in women's favour in 4 out of 5 economy types (see Table 4-20). Going from innovation-driven (0.02) to factor-driven countries (0.05), we observe an increase in women entrepreneurship. However, the gap in entrepreneurial capability perceptions (suskill) is still highly significant (extension 1: -0.27, extension 2: -0.23), although this gender disparity is much larger in innovation-driven economies (-0.29) than in factor-driven economies (-0.13). This result emphasises that although the gender gap in entrepreneurial capability perception is still significant, it decreases over time. The results also show that women are less confident about their entrepreneurial knowledge and skills even when we control for observed and omitted variables.

For further investigations, we conducted the same analysis for (knowent), (fearfail) and (opportunity). The gender gap linked to opportunity recognition, knowing an entrepreneur and fear of failure remained highly significant, although this gap is not as substantial as the differences regarding perceptions toward entrepreneurial capabilities. The economy-specific analysis also reached the same results for skill, opportunity, fear of failure, and entrepreneurial network, although their weight varies in different economies (see Tables 4-20 and 4-21). The correlation of error terms is significant and negative in both extensions. This negative direction shows that omitted variables have a significant negative impact on entrepreneurial skills' perception. There are several potential explanations for the puzzling effects of skills on entrepreneurial propensity. Unwritten social rules may expect women to spend more time with family, and thus, women have more family obligations (Roomi et al., 2009; Tsai et al., 2016). Second, we think that the advance of equality in more developed economies may weaken women's entrepreneurial propensity because they have the same chances in job markets (Tsai et al., 2016). The extension analysis indicates that women in innovation-driven countries are significantly less confident about their skills (e.g., Japan, Norway, Singapore, and France) than in factor-driven countries (e.g., Nigeria, Uganda, Angola, and the Philippines). In accordance,

women in factor-driven countries have significantly higher opportunity perceptions for self-employment than women in developed countries.

Another explanation for this indirect effect of opportunity perception could be the differences between "necessity" and "opportunity" entrepreneurship (Block and Sandner, 2009; Malach Pines et al., 2010; Block and Wagner, 2010; Block et al., 2015). In line with previous studies, our results emphasise that women in developing countries have higher entrepreneurial capability perception. This fact may be caused by "push" factors (Allen et al., 2007; Malach, Pines et al., 2010; Klyver et al., 2013). However, we should consider the effect of context when we study "necessity-based" entrepreneurship (Puente et al., 2019). For example, the environment can influence women's entrepreneurial activities by demonstrating entrepreneurship as a stereotyped male domain (Tsai et al., 2016; Giménez and Calabrò, 2018; Shahriar, 2018), which affects women's access to the entrepreneurial network (Bosma, 2013) or the perceived financial obstacles (Roper and Scott, 2009; Verheul et al., 2012). Moreover, environmental contexts and gender stereotypes may affect human capital, such as an individual's field of study (Bosma, 2013). We could not observe this in our data, but it may affect women's entrepreneurial propensity.

The extension analysis confirmed that gender differences in entrepreneurial propensity could result from disparities in individuals' perceptions of their entrepreneurial capabilities. Consequently, the gender gap in (suskill) may not be interpreted through omitted variables, such as the individual's field of study. The point is that among all perceptions, skill perception had the most significant positive effect on (nascent) in the equation. In line with past literature, the individuals' confidence in their entrepreneurial skills is an essential factor to clarify the gender gap in entrepreneurial propensity (Brush et al., 2017). We also recognise the negative direction of ρ , which points out that overlooked variables have a combined impact on the individuals' entrepreneurial capability perception, even though in reverse directions.

Table 4-19. Recursive simultaneous bivariate probit model, all studies

Variable	Results of KMS (2001-2006)				Exact replication (2001-2006)				Extension 1 (2011-2016)				Extension 2 (71 countries)			
	Equation for nascent		Equation for suskill		Equation for nascent		Equation for suskill		Equation for nascent		Equation for suskill		Equation for nascent		Equation for suskill	
	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z
Female	0.00	0.99	-0.31**	0.00	0.00	0.99	-0.31**	0.00	0.04**	0.00	-0.27**	0.00	0.01**	0.00	-0.23**	0.00
Hh income - middle 33%	-0.05**	0.01	0.05**	0.00	-0.04**	0.00	0.04**	0.00	-0.08**	0.00	0.01*	0.03	-0.01*	0.04	0.02**	0.00
Hh income- upper 33%	-0.06**	0.00	0.15**	0.00	-0.05**	0.00	0.15**	0.00	-0.12**	0.00	0.06**	0.00	-0.00	0.44	0.05**	0.00
Education- secondary	-0.01	0.51	0.14**	0.00	-0.01	0.51	0.13**	0.00	-0.03*	0.00	0.15**	0.00	-0.05**	0.00	0.12**	0.00
Education - post-secondary	-0.03	0.19	0.24**	0.00	-0.03	0.19	0.24**	0.00	-0.06**	0.00	0.28**	0.00	-0.07**	0.00	0.26**	0.00
Education - graduate	-0.02	0.47	0.27**	0.00	-0.01	0.46	0.26**	0.00	-0.05*	0.01	0.38**	0.00	-0.07**	0.00	0.33**	0.00
Work status - working	0.12**	0.00	0.11**	0.00	0.11**	0.00	0.10**	0.00	0.15**	0.00	-0.01*	0.02	0.26**	0.00	0.06**	0.00
Work status - retired/student	-0.23**	0.00	-0.07**	0.00	-0.23**	0.00	-0.06**	0.00	-0.19**	0.00	-0.17**	0.00	-0.16**	0.00	-0.16**	0.00
Age 25-34	-0.10**	0.00	0.27**	0.00	-0.10**	0.00	0.27**	0.00	-0.14**	0.00	0.25**	0.00	-0.03**	0.00	0.17**	0.00
Age 35-44	-0.15**	0.00	0.36**	0.00	-0.14**	0.00	0.35**	0.00	-0.18**	0.00	0.32**	0.00	-0.09**	0.00	0.23**	0.00
Age 45-54	-0.24**	0.00	0.36**	0.00	-0.23**	0.00	0.35**	0.00	-0.23**	0.00	0.33**	0.00	-0.16**	0.00	0.23**	0.00
Age 55-64	-0.33**	0.00	0.32**	0.00	-0.32**	0.00	0.31**	0.00	-0.31**	0.00	0.28**	0.00	-0.21**	0.00	0.18**	0.00
Fear of failure (fearfail) - yes	-0.13**	0.00	-0.33**	0.00	-0.12**	0.00	-0.32**	0.00	-0.05**	0.00	-0.30**	0.00	-0.03**	0.00	-0.29**	0.00
Opportunity perception (opport) - yes	0.22**	0.00	0.31**	0.00	0.22**	0.00	0.31**	0.00	0.18**	0.00	0.17**	0.00	0.12**	0.00	0.31**	0.00
Sufficient skill perception (suskill) - yes	1.86**	0.00			1.85**	0.00			1.96**	0.00			1.74**	0.00		
Knowing another entrepreneur (knowent) - yes			0.51**	0.00			0.51**	0.00			0.47**	0.00			0.47**	0.00
Shut down business in past 12 months - yes			0.84**	0.00			0.84**	0.00			0.73**	0.00			0.59**	0.00
Constant	-2.13**	0.00	-0.49**	0.00	-2.20**	0.00	-0.49**	0.00	-2.17**	0.00	-0.35**	0.00	-2.22**	0.00	-0.37**	0.00
Number of observations		95,895				95,895				192,743				562,924		
Loglikelihood		-73,607				-73,606				-149,930				-469,214		
Prob > chi-squared		0.00				0.00				0.00				0.00		
Rho		-0.63**				-0.73**				-0.71**				-0.67**		

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than secondary); work status (not working). In the estimation, we involved country and year dummies. We included individuals classified as nascent or non-entrepreneurs. We eliminated new and established entrepreneurs. Robust standard errors are estimated. *p < 0.1; ** p < 0.01.

Table 4-20. Economy-specific recursive simultaneous bivariate model, extension 2

Variable	Factor driven economies				Factor driven economies (in transition)				Efficiency driven economies				Efficiency driven economies (in transition)				Innovation-driven economies			
	Equation for nascent		Equation for suskill		Equation for nascent		Equation for suskill		Equation for nascent		Equation for suskill		Equation for nascent		Equation for suskill		Equation for nascent		Equation for suskill	
	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z
Female	0.05**	0.00	-0.13**	0.00	0.00	0.83	-0.12**	0.00	0.02*	0.01	-0.14**	0.00	0.02**	0.00	-0.21**	0.00	0.02**	0.00	-0.29**	0.00
Hh income - middle 33%	0.10**	0.00	0.05*	0.01	0.00	0.83	-0.02	0.20	0.04**	0.00	0.05**	0.00	0.00	0.81	0.00	0.69	-0.08**	0.00	0.01**	0.00
Hh income- upper 33%	0.06*	0.02	0.05*	0.01	0.06*	0.02	-0.08**	0.00	0.11**	0.00	0.08**	0.00	0.02*	0.01	0.04**	0.00	-0.14**	0.00	0.06**	0.00
Education- secondary	-0.06*	0.01	0.04*	0.04	-0.08**	0.00	0.13**	0.00	-0.08**	0.00	0.11**	0.00	-0.02	0.08	0.09**	0.00	-0.03**	0.00	0.16**	0.00
Education - post-secondary	-0.14**	0.00	0.14**	0.00	-0.10**	0.00	0.25**	0.00	-0.09**	0.00	0.22**	0.00	-0.06**	0.00	0.24**	0.00	-0.04**	0.00	0.30**	0.00
Education - graduate	-0.37**	0.00	0.22**	0.00	-0.14*	0.01	0.44**	0.00	-0.07*	0.01	0.28**	0.00	-0.08**	0.00	0.29**	0.00	-0.02	0.16	0.38**	0.00
Work status - working	0.42**	0.00	0.16**	0.00	0.52**	0.00	0.19**	0.00	0.27**	0.00	0.17**	0.00	0.23**	0.00	0.08**	0.00	0.13**	0.00	-0.02**	0.00
Work status - retired/student	-0.20**	0.00	-0.18**	0.00	-0.04	0.24	-0.07**	0.00	-0.14**	0.00	-0.14**	0.00	-0.14**	0.00	-0.20**	0.00	-0.23**	0.00	-0.17**	0.00
Age 25-34	0.02	0.32	0.08**	0.00	0.07**	0.00	0.05*	0.02	-0.04**	0.00	0.14**	0.00	-0.02	0.05	0.18**	0.00	-0.13**	0.00	0.25**	0.00
Age 35-44	-0.03	0.20	0.09**	0.00	-0.01	0.56	0.02	0.30	-0.06**	0.00	0.17**	0.00	-0.09**	0.00	0.23**	0.00	-0.19**	0.00	0.34**	0.00
Age 45-54	-0.10**	0.00	0.01	0.72	-0.04	0.25	-0.01	0.49	-0.14**	0.00	0.13**	0.00	-0.15**	0.00	0.23**	0.00	-0.26**	0.00	0.36**	0.00
Age 55-64	-0.04	0.34	-0.05	0.11	0.03	0.42	-0.07*	0.01	-0.18**	0.00	0.03**	0.00	-0.24**	0.00	0.20**	0.00	-0.32**	0.00	0.31**	0.00
Fear of failure (fearfail) - yes	0.04	0.05	-0.22**	0.00	0.00	0.84	-0.17**	0.00	-0.01	0.25	-0.30**	0.00	0.01	0.21	-0.36**	0.00	-0.09**	0.00	-0.25**	0.00
Opportunity perception (opport) - yes	0.18**	0.00	0.57**	0.00	-0.02	0.33	0.45**	0.00	0.02*	0.01	0.46**	0.00	0.09**	0.00	0.30**	0.00	0.21**	0.00	0.19**	0.00
Sufficient skill perception (suskill)- yes	1.54**	0.00			1.55**	0.00			1.64**	0.00			1.74**	0.00			1.99**	0.00		
Knowing another entrepreneur (knowent) - yes			0.46**	0.00			0.37**	0.00			0.46**	0.00			0.49**	0.00			0.48**	0.00
Shut down business in past 12 months - yes			0.26**	0.00			0.47**	0.00			0.50**	0.00			0.59**	0.00			0.75**	0.00
Constant	-2.82**	0.00	0.24**	0.00	-1.82**	0.00	-0.11*	0.01	-2.35**	0.00	0.37**	0.00	-2.29**	0.00	-0.41**	0.00	-2.14**	0.00	-0.39**	0.00
Number of observations		27,642				26,617				113,460				157,421					237,784	
Loglikelihood		-23,852				-24,063				-100,166				-136,325					-182,417	
Prob > chi-squared		0.00				0.00				0.00				0.00					0.00	
Rho		-0.81**				-0.81**				-0.78**				-0.82**					-0.91**	

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than secondary); work status (not working). In the estimation, we involved country and year dummies. We contained respondents that categorised as nascent or non-entrepreneurs. We eliminated new and established entrepreneurs. Robust standard errors are estimated. *p < 0.1; ** p < 0.01.

Table 4-21. Economy-specific gender effects, extension 2

Economy	Equation for nascent		Equation for suskill		Equation for nascent		Equation for fearfail		Equation for nascent		Equation for opport		Equation for nascent		Equation for knowent		Total sample
	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z	
Factor-driven economies	0.05**	0.00	-0.13**	0.00	0.00	0.89	0.01	0.53	0.02	0.20	-0.05**	0.00	0.00	0.84	-0.11**	0.00	27,642
Factor-driven economies (in transition)	0.00	0.83	-0.12**	0.00	-0.07**	0.00	0.06**	0.00	-0.04*	0.02	0.00	0.81	-0.05*	0.01	-0.09**	0.00	26,617
Efficiency-driven economies	0.02*	0.01	-0.14**	0.00	-0.08**	0.00	0.14**	0.00	-0.03**	0.00	0.01	0.09	-0.04**	0.00	-0.10**	0.00	113,460
Efficiency-driven economies (in transition)	0.02**	0.00	-0.21**	0.00	-0.12**	0.00	0.14**	0.00	-0.06**	0.00	0.00	0.76	-0.08**	0.00	-0.06**	0.00	157,421
Innovation-driven economies	0.02**	0.00	-0.29**	0.00	-0.03**	0.00	0.14**	0.00	-0.09**	0.00	-0.08**	0.00	-0.14**	0.00	-0.05**	0.00	237,784

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than secondary); work status (not working); and not shut down business in the past 12 months. Economy-specific gender effects are included in the recursive simultaneous bivariate probit model. Estimation contained country and year dummies. Robust standard errors are estimated. *p < 0.1; ** p < 0.01.

Table 4-22 shows our simultaneous bivariate probit model for all countries in our sample. In all 17 countries, females were less confident about their entrepreneurial knowledge and skills in extension 1. This finding indicates that the gender disparity in entrepreneurial perceptions appears in all countries with various sociocultural environments. Although gender differences for nascent entrepreneurship become negligible in 13 out of 17 countries, women in Finland are not as likely as men to start businesses. However, the findings of extension 2 indicate that in 68 out of 71 countries, women are more confident than men in their entrepreneurial capabilities (Philippines, Indonesia, and Peru). Moreover, women are more likely than men to start a business in 14 out of 71 countries¹⁰. Nevertheless, in 10 other countries¹¹, women are less likely to start a business than men. With these results, we can argue that environmental differences and their impact on individual perceptions play an indisputable role in women's business ownership, while women have similar entrepreneurial inclinations in some countries.

Table 4-22. Country-specific gender effects, extension 2

Country	Female coefficient in equation for nascent entrepreneurs (nascent)		Female coefficient in equation for sufficient skill perception (suskill)		Total sample N
	β	$P > z $	β	$P > z $	
Algeria	-0.09	0.19	-0.09*	0.02	3,772
Angola	-0.06	0.39	-0.01	0.78	1,529
Argentina	0.01	0.68	-0.12**	0.00	5,175
Australia	0.09	0.12	-0.40**	0.00	3,951
Austria	0.05	0.27	-0.29**	0.00	5,170
Barbados	-0.00	0.91	-0.14**	0.00	2,899
Belgium	0.08	0.22	-0.35**	0.00	4,839
Bosnia and Herzegovina	-0.13*	0.03	-0.34**	0.00	5,637
Botswana	0.02	0.55	-0.18**	0.00	4,535
Brazil	0.25**	0.00	-0.12**	0.00	22,097
Burkina Faso	-0.13**	0.00	0.02	0.61	2,955
Cameroon	-0.00	0.84	-0.10*	0.05	3,042
Canada	0.07	0.13	-0.31**	0.00	4,817
Chile	0.08**	0.00	-0.19**	0.00	22,019
China	-0.00	0.97	-0.21**	0.00	12,516
Colombia	0.02	0.25	-0.15**	0.00	21,562
Croatia	-0.12*	0.01	-0.38**	0.00	7,666
Denmark	0.13	0.18	-0.52**	0.00	3,523
Ecuador	0.02	0.43	-0.01	0.73	5,934
Egypt	0.04	0.61	-0.46**	0.00	3,842
El Salvador	0.02	0.66	-0.04	0.47	2,421
Estonia	-0.07	0.21	-0.31**	0.00	4,553
Finland	-0.12*	0.03	-0.17**	0.00	6,544
France	-0.02	0.68	-0.41**	0.00	6,305
Germany	0.00	0.87	-0.29**	0.00	15,907
Greece	0.08	0.09	-0.24**	0.00	7,644
Guatemala	0.02	0.58	-0.11**	0.00	7,281
Hungary	-0.02	0.71	-0.47**	0.00	7,405

¹⁰ These countries are the United States, Brazil, Chile, India, Indonesia, Malaysia, Mexico, the Philippines, Sweden, Switzerland, Thailand, Uganda, Puerto Rico, and Vietnam.

¹¹ Finland, Croatia, Latvia, Lithuania, Taiwan, Slovenia, Turkey, Macedonia, Bosnia and Herzegovina, and Burkina Faso.

Country	Female coefficient in equation for nascent entrepreneurs (nascent)		Female coefficient in equation for sufficient skill perception (suskill)		Total sample
	β	P > z	β	P > z	N
India	0.21**	0.00	-0.17**	0.00	11,386
Indonesia	0.20**	0.00	0.06*	0.04	10,702
Iran	-0.07*	0.06	-0.21**	0.00	12,413
Ireland	0.00	0.86	-0.42**	0.00	7,371
Israel	0.05	0.39	-0.38**	0.00	4,191
Italy	-0.06	0.36	-0.25**	0.00	5,444
Jamaica	-0.00	0.97	-0.05	0.24	4,267
Japan	-0.16	0.12	-0.54**	0.00	4,550
Kazakhstan	-0.03	0.69	-0.11*	0.04	2,234
Latvia	-0.20**	0.00	-0.27**	0.00	5,232
Lithuania	-0.15*	0.02	-0.41**	0.00	4,314
Luxembourg	0.07	0.34	-0.36**	0.00	3,003
Macedonia	-0.21**	0.00	-0.26**	0.00	4,449
Malaysia	0.26**	0.00	-0.04	0.22	9,976
Mexico	0.07*	0.01	-0.02	0.32	10,424
Netherlands	0.08	0.10	-0.43**	0.00	7,970
Nigeria	-0.07	0.09	-0.06	0.26	3,746
Norway	-0.06	0.34	-0.44**	0.00	6,029
Panama	0.04	0.20	-0.06*	0.02	9,537
Peru	-0.00	0.92	0.06*	0.06	6,249
Philippines	0.33**	0.00	0.16**	0.00	4,480
Poland	-0.05	0.37	-0.48**	0.00	6,597
Portugal	-0.01	0.78	-0.25**	0.00	5,994
Puerto Rico	0.12*	0.01	-0.31**	0.00	5,324
Romania	0.00	0.89	-0.34**	0.00	5,820
Russia	0.01	0.80	-0.14**	0.00	7,858
Singapore	0.06	0.28	-0.20**	0.00	5,079
Slovakia	-0.06	0.24	-0.43**	0.00	6,793
Slovenia	-0.15*	0.04	-0.31**	0.00	6,017
South Africa	0.01	0.74	-0.17**	0.00	14,229
South Korea	-0.00	0.96	-0.36**	0.00	5,732
Spain	0.01	0.37	-0.18**	0.00	61,471
Sweden	0.12*	0.03	-0.49**	0.00	5,542
Switzerland	0.14*	0.02	-0.39**	0.00	6,012
Taiwan	-0.20**	0.00	-0.17**	0.00	8,155
Thailand	0.13**	0.00	-0.17**	0.00	8,551
Trinidad and Tobago	0.07	0.15	-0.18**	0.00	3,949
Turkey	-0.09**	0.00	-0.22**	0.00	16,853
Uganda	0.14*	0.02	-0.03	0.62	2,635
United Kingdom	0.06*	0.06	-0.36**	0.00	15,607
United States	0.17**	0.00	-0.32**	0.00	11,644
Uruguay	-0.01	0.69	-0.25**	0.00	5,789
Vietnam	0.16*	0.01	-0.16**	0.00	3,878

Note. Country-specific gender effects are in the recursive simultaneous bivariate probit model.

4.6.2 Implications

Perceptual variables are a confirmed responsible driver of gender disparities in entrepreneurship (Noguera et al., 2013; Shinnar et al., 2012; Koellinger et al., 2013; Dileo and Pereiro, 2019). Based on institutional theory and by extending the work of KMS, we attempted to assess how perceived entrepreneurial perceptions influence women's entrepreneurship and how these impacts are linked to a country's level of development. By using a diverse institutional context to conduct the same analysis as that conducted by KMS, we investigated the role of individual and perceptual variables in raising and reducing gender disparities in entrepreneurial propensity. First, we investigated gender differences in perceived entrepreneurial capability, entrepreneurial networks, fear of failure, and opportunity evaluation in the same 17 countries as KMS but for the years 2011 to 2016. Consistent with KMS and past literature, we identified that perceived entrepreneurial perceptions are critical factors for explaining disparities in entrepreneurial propensity (Arenius and Minniti 2005; Koellinger et al., 2007; Dileo and Pereiro, 2019). We further found that although the weight of gender disparity in perceptions varies significantly across economies with different levels of development, it is a global circumstance affecting women's entrepreneurship. Indeed, in line with KMS, when we considered perceptual variables, the revealing value of education, age, household income and work status decreased significantly. Consistent with our replication results, we found no support for equality in survival chances; therefore, we argue that the lower rate of women's entrepreneurial behaviour is not only due to their lower propensity to undertake businesses but also due to disparities in the firms' survival chances across genders. Our results show that men have higher survival chances than women in both our extension studies (1.2 in extension 1 and 1.1 in extension 2). More precisely, gender differences in survival chances across countries with different stages of development show that institutional factors condition survival chances (Box et al., 2018).

Based on institutional theory (North, 1990), we argue that formal and informal institutions differ across nations. Therefore, by conducting the same analysis across 71 countries, we argue further that women's perceived entrepreneurial perceptions are more critical in developed economies. Our analysis shows that women in developing economies are more likely to undertake businesses. In developed economies with a more favourable institutional context for women, women have a lower level of perceived entrepreneurial capability, entrepreneurial networks, opportunity evaluation, and a stronger belief that fear of failure confines them from undertaking a business. As the weight of disparities in perceptions is more consequential in developed economies than in the others, it is thus possible that women in these countries

perceive these obstacles' importance differently (Shinnar et al., 2012). This is consistent with the argument that the advance of equality in developed economies may weaken women's entrepreneurship because of their more equivalent possibilities in the job markets in these societies (Klyver et al., 2013; Tsai et al., 2016). It is also possible that women in less developed institutional contexts found that entrepreneurship could enable them to be financially more independent; therefore, despite the high-perceived entrepreneurial barriers, women in these societies have other motivations (Shinnar et al., 2012) to engage in entrepreneurial activities. In other words, higher gender inequality, such as women's higher unpaid family obligations, may "push" them into entrepreneurial activities (Cromie, 1987; Wu et al., 2019).

Although the cultural values' and stereotypes' effects on women's entrepreneurship are irrefutable (Gupta et al., 2014; Cabrera and Mauricio, 2017), our interpretation of the findings is that because of the motivational differences between "opportunity" and "necessity" entrepreneurs, the gender gap in entrepreneurship cannot be understood appropriately without taking into account "necessity" and "opportunity" business ownership (van der Zwan et al., 2016). Past researchers reached an agreement on the greater possibility of women's entrepreneurial engagement because of the necessities rather than opportunities, especially in less developed economies (Allen et al., 2007; Malach Pines et al., 2010). Belda and Cabrer-Borrás (2018) identified that in Spain, after separating "necessity" and "opportunity" entrepreneurs, the percentage of female "necessity" entrepreneurs is higher than that of male entrepreneurs. In particular, the institutions' role in the rate of necessity or opportunity entrepreneurship is indubitable (Fuentelsaz et al., 2015). In some cases, the necessity effect may outweigh the stereotypes' negative impact, or meeting individual needs might influence women's entrepreneurial perceptions. Therefore, in line with Shinnar et al. (2012), this research gives an indication of the indisputable role of culture and its effect on entrepreneurship across countries. We further argue that women's interactions with their surrounding institutions influence their entrepreneurial propensity. However, we also observe that surrounding institutions influence men's entrepreneurial propensity, but the effects vary across genders. Our interpretation of this finding is that environmental signals regarding entrepreneurship differ in various institutional contexts and that individuals in various countries or even regions (Wyrwich et al., 2016) may interpret signals differently. Thus, cross-cultural qualitative approaches could enable us to lead comprehensive investigations of interactions between institutions and perceptual variables that shape women's entrepreneurial propensity.

4.6.3 Limitations and future directions

Our findings encourage new research directions. First, we made important headway by conducting the institutional perspective on women's perceptions of entrepreneurship. The findings are particularly generalizable through various institutions. Detecting the processes that shape the perceptions could provide insights into women's cognitive mechanisms towards entrepreneurship. In doing so, future investigations could examine the effects of formal and informal institutions that convey the strong impression they play a role in women's perceptions of entrepreneurship (Gimenez-Jimenez et al., 2020). We could assume that the effects of stereotypes and cultural issues will significantly decline if there is a needfulness to undertake a business. Hence, our findings stress the possibility of women's social and personal circumstances motivating or discouraging them from entrepreneurial behaviour (Shahriar, 2018). Second, developed countries were over-represented in our sample. Further research should include more developing economies and improve the findings' accuracy. Considering the current investigations' overlook of women entrepreneurship in less developed economies (e.g., Ahl and Nelson, 2015; Pettersson et al., 2017; Wang, 2019; Cochran, 2019; Cukier and Chavoushi, 2020), analysis in these economies could accelerate our understanding about women entrepreneurship and the moderating effect of institutional contexts.

Third, while observed women's entrepreneurial propensity is higher in developing economies, women's firm survival chances are higher in developed economies (Global Entrepreneurship Monitor, 2016). Thus, future research could assess the influence of perceptions considering firm survival chances across countries. Fourth, this research was cross-sectional, which means we are unable to investigate the relationships over time. Thus, one possible direction of advancement is using a cross-country longitudinal study to explain the tangled relationships between women's entrepreneurial perceptions, institutional contexts, and individual-level factors. Fifth, our results clearly show that omitted variables affect women's entrepreneurial propensity. Prior research underlined, for example, the importance of the field of study (Leoni and Falk, 2010), financial support (van der Zwan et al., 2016) or family entrepreneur (Greene et al., 2013), which are not included in our analysis.

To enhance women's business ownership with functional interventions and to positively advocate women's entrepreneurial perceptions, policymakers need to design distinctive programs (Malach Pines et al., 2010) concerning the environment (Estrin et al., 2013; Schmutzler et al., 2019), legal and regulatory elements (Armour and Cumming, 2008), cultural matters and female's social position (Noguera et al., 2013). In doing so, it is critical that

entrepreneurship is presented as a "gender-neutral" occupation in social media (Shahriar, 2018) or educational systems.

Changing or removing fundamental obstacles that obstruct women to undertake businesses is achievable if policymakers consider women's surrounding institutions. Thus, to guide policymakers practically, far more research on the relationship between perceptual factors and formal and informal institutional context is needed. This research is a small attempt to bring attention to the link between entrepreneurial perceptions, institutions, and women's entrepreneurial propensity. Further analysis must step further and examine which aspects of the institutional environment shape perceptions towards entrepreneurship.

4.7 Conclusion

In this study, we extended the study of KMS to women's entrepreneurship. We focused on the influence of perceptual variables on women's entrepreneurial propensity and explored the role of a country's level of development in shaping perceptual variables. The findings suggest that women's higher fear of failure and their lower level of entrepreneurial networks, perceived entrepreneurial capability, and opportunity evaluation play an important role in causing women's lower propensity to own businesses. We further found evidence for the higher explanatory power of entrepreneurial perceptions compared to that of individual-level factors, such as age, education, household income and work status. Based on institutional theory (North, 1990), we utilised a sample of 372,069 respondents in extension 1 and of 1,029,807 individuals across 17 and 71 countries in the period 2011 to 2016 in extension 2. As a country's level of development grows, we observe disparities in entrepreneurial perceptions, and therefore, we find that entrepreneurial propensity increases. Our findings support prior research (Wyrwich et al., 2016; Brush et al., 2017; Gimenez-Jimenez et al., 2020; Meoli et al., 2020) and advance our understanding of women entrepreneurship. More importantly, we show the critical importance of enhancing our knowledge about interactions between women's entrepreneurial perceptions and their particular surrounding institutional contexts.

These insights enlarge and deepen our understanding of women entrepreneurship drivers, display some new directions, and bring forth inconclusive arguments about women's entrepreneurial propensity drivers. This study supports a strong argument that women's entrepreneurship cannot be realised without a proper understanding of the determinants of perceived entrepreneurial perceptions and of these perceptions' interactions with surrounding institutions. Finally, although prior scholars increasingly underlined the importance of

perceptions in explaining a large part of gender disparity in entrepreneurship (Koellinger et al., 2013; Noguera et al., 2013; Dileo and Pereiro, 2019), most of the prior investigations focused on nascent (early-stage) entrepreneurship (e.g., Minniti, 2010; Koellinger et al., 2013), and evidence on the link between perceptions and other types of venture creation, such as innovative entrepreneurship, is scarce. Therefore, the following chapter analyses the perceptual factors' effects on women's innovative entrepreneurship and advances our knowledge about the relationship between perceptual variables and women's entrepreneurship.

5 Women's innovative entrepreneurship and institutions

5.1 Introduction

The proliferated research on women's entrepreneurship shows its significant contributions to economic growth (Jennings and Brush 2013; Block et al., 2017). Indeed, when considerations regarding economic development identified women entrepreneurship as a significant driver of economic development, advancing our knowledge about factors that motivate or prevent women from starting a business became crucial (Minniti, 2010). In this context, innovation is essential for higher competitive capability, enhanced earnings, and balanced growth (Wang et al., 2019). Although policy-makers and several researchers frequently use the terms entrepreneurship and innovation reciprocally, it is clear that all businesses are not innovative (Autio et al., 2014). Innovative entrepreneurship presents a new product or service (Audretsch et al., 2012), and it may positively impact the economic growth of its surrounding environment (Autio, 2007; Acs et al., 2008).

Although innovation is one of the most significant drivers of economic development (Wong et al., 2005; Roig-Tierno et al., 2015; Aparicio et al., 2016b; Block et al., 2017; Demartini, 2018), prior investigations have largely overlooked analysing innovation determinants across genders (Autio et al., 2014; Malerba and McKelvey, 2020; Wang and Zhou, 2020). Consequently, our understanding of gender differences toward innovative entrepreneurship is limited (Carrasco, 2014; Strohmeyer et al., 2017). Thus, this chapter attempts to fill this gap by conducting the prior chapter's analysis with a focus on women's innovative entrepreneurship.

The aroused question "Why is innovation among men entrepreneurs higher than that among women" presumes that men entrepreneurs are more innovative than their women counterparts. Moreover, it differentiates between entrepreneurs and the level of innovation they offer to the economy (Koellinger, 2008). With this in view, several studies analysed innovation disparities across genders; however, there is no consensus on the definition of innovation (Davidsson, 2004; Koellinger, 2008; Baregheh et al., 2009). Moreover, the entrepreneurs' performance and the type of entrepreneurship result from the interaction with other players within their surrounding institutional context (Malerba and McKelvey, 2020). As stated by the Global Innovation Index (Dutta, 2012), innovation is a joint result of institutions, infrastructure

and market, human capital, and business eradication (Schott and Sedaghat, 2014). "It is a country's institutions that create and disseminate new knowledge and channel it to efficient uses" (Acs et al., 2014), particularly in the case of women (Carrasco, 2014). In fact, institutional contexts are one of the key players in the individuals' decisions to take steps towards entrepreneurship (Anokhin and Schulze, 2009). Nevertheless, the interactions between individual-level factors and the governing role of contexts in explaining innovative entrepreneurship are underexplored (Autio et al., 2014).

In addition, prior scholars increasingly underlined the importance of perceptions in explaining a large part of the gender disparity in entrepreneurship (Koellinger et al., 2013; Noguera et al., 2013; Dileo and Pereiro, 2019). However, most of the previous investigations focused on nascent (early-stage) entrepreneurship (e.g., Minniti, 2010; Koellinger et al., 2013), and the evidence on the relationship between perceptions and innovative entrepreneurship is scant. This inadvertence is critical because the distinction between innovative and imitative entrepreneurship is crucial (Koellinger, 2008; Darnihamedani et al., 2018), particularly when we investigate women's entrepreneurship.

In this context, drawing on the institutional approach (North, 1990; 2005), the present chapter attempts to investigate the relationship between entrepreneurial perceptions and innovative entrepreneurship. Our empirical evidence is based on the GEM data adult population surveys from 2011 to 2016, which contain a large sample of entrepreneurs from 71 countries. By using the institutional perspective, this study aims to advance our knowledge and provide empirical evidence of the disparities in women's and men's innovative entrepreneurship. We argue that women's innovation arises from continuous interactions between perceptual and institutional processes. With this study, we contribute to the existing research in several ways. This investigation relates to the literature on innovative entrepreneurship (Koellinger, 2008; Autio et al., 2014; Barasa et al., 2017; Jabeen et al., 2019) and women's self-employment (Klyver et al., 2013; Schlaegel and Koenig, 2014; Urban and Kujinga, 2017; Gimenez-Jimenez et al., 2020). It advances the current literature through the implied theoretical approach for analysing innovative entrepreneurship by adopting the institutional perspective and incorporating perceptual factors. Specifically, we are concerned about how the countries' development stage influences the relationship between entrepreneurial perceptions and women's innovative entrepreneurship. This is important because prior scholars indicated that particular institutional characteristics, including the countries' economic development level, could influence individual factors (Wennekers et al., 2005; Klyver et al., 2013). The remainder of this chapter is organised in the following way: Section 2 is devoted to the literature and

hypotheses on innovation, women's entrepreneurship and perceptual factors. Section 3 explains our data, measures and methods. The results of the empirical study are explained in section 4, and finally, section 5 contains the discussion and the conclusion.

5.2 Literature and hypotheses

5.2.1 Innovative entrepreneurship and women's perceptions

Innovation facilitates worldwide recognition for small and medium businesses and thus enables them to approach new and larger markets (Bodolica and Spraggon, 2014). More importantly, women entrepreneurship develops significantly, making considerable contributions to innovative entrepreneurship, job creation, and economic growth (Block et al., 2017). Therefore, the relationship between gender and innovative entrepreneurship recently drew scholars' attention (Strohmeyer et al., 2017; Jabeen et al., 2019). In this connection, despite the large consensus on perceptual variables' explanatory power for gender disparities in entrepreneurship (Noguera et al., 2013; Koellinger et al., 2013; Dileo and Pereiro, 2019), our knowledge of the relationship between perceptual factors and women's innovative entrepreneurship is still lacking.

"Innovation is a subjective concept", and the market perspective entitles businesses as imitative (non-innovative) or innovative (Koellinger, 2008; Minniti and Lévesque, 2010; Sahut and Peris-Ortiz, 2014; Mrożewski and Kratzer, 2017; Block et al., 2017). Urbano and Alvarez (2014) investigated the relationship between cultural-cognitive factors and being a successful entrepreneur and found that supportive institutional contexts, higher entrepreneurial skills, and lower fear of entrepreneurial failure positively affect entrepreneurial success. Perceptions such as opportunity recognition, confidence in one's entrepreneurial knowledge and skills, and fear of failure are essential factors in explaining entrepreneurship (Arenius and Minniti, 2005; Koellinger et al., 2013; Noguera et al., 2013). Indeed, creating a new business is a personal decision that demands one's belief in the presence of good business opportunities (Minniti, 2010). Business opportunities are one of the key drivers of innovation and entrepreneurship (Hechavarría and Welter, 2015; Mrożewski and Kratzer, 2017; Jabeen et al., 2019) that are either created by the entrepreneur (Schumpeter, 1934) or - if already existing - perceived and recognised (Kirzner, 1973). In this connection, self-confidence positively (Koellinger, 2008) influences entrepreneurial innovation, while fear of failure does it in a negative sense (Arabiyat et al., 2019).

Another consideration is that whereas entrepreneurial contacts play an important role in securing vital resources including finance (Brush, 2006) or legal knowledge (Armour and Cumming, 2008), which can influence the type of innovation (Carrasco, 2014), women's access to these contacts is limited. Their higher family obligations (Roomi et al., 2009; Tsai et al., 2016) or stereotypes' perception (del Mar Fuentes-Fuentes et al., 2017) creates a different socialisation experience than for men (Gatewood et al., 2009) and may influence their entrepreneurial networks (Shinnar et al., 2012), particularly in less developed economies (Yunus, 2007). Del Mar Fuentes-Fuentes et al. (2017) find that higher entrepreneurial networks play a significant role in women entrepreneurs' business innovation.

The literature has established the importance of all perceptual factors mentioned above in explaining individuals' decision to undertake a new business unconcerned about innovative entrepreneurship (e.g., Shinnar et al., 2012; Camelo-Ordaz et al., 2016; Schmutzler et al., 2019) or institutional contexts (e.g., Camelo-Ordaz et al., 2016). Thus, we formulate the following hypothesis:

H1: Women's higher level of entrepreneurial perceptions is positively related to the likelihood of becoming an innovative entrepreneur.

5.2.2 Institutions and innovative entrepreneurship

On the one hand, institutions may shape entrepreneurs' perceptions and influence their action (Malerba and McKelvey, 2020), as well as the types of entrepreneurial activities (Block et al., 2017; Bosma et al., 2018). Motivations that steer individuals toward business ownership are surrounded by institutional factors (North 1990; 2005; Sørensen, 2007b; Thébaud, 2015). For instance, prior research suggested that institutions with a high-quality regulatory process positively influence innovative activities (Boudreaux, 2017). Therefore, the institutional perspective can be an effective approach to understand the interactions between institutional contexts and innovative entrepreneurship (Aparicio et al., 2016a; Urbano et al., 2016). In accordance with Klyver et al. (2013), we believe institutional theory provides a unique perspective for scholars to question general assumptions around women's entrepreneurial activities. However, prior investigations did not examine how institutional contexts influence perceptual factors within the innovation area. Moreover, most of the studies focus on nascent entrepreneurship as a dependant variable, and they rule out established enterprises (e.g., Thébaud, 2015; Yoon et al., 2018).

On the other hand, countries at a different development stage can be characterised by a particular kind of formal (e.g., laws and regulations) and informal (e.g., norms, role models, and beliefs) institutions that influence women's entrepreneurship innovativeness (Carrasco, 2014). For instance, economies with higher general levels of gender equality showed a larger gender gap in nascent entrepreneurship (Klyver et al., 2013). The importance of institutional contexts in developing or limiting entrepreneurial activities is evident (Zahra et al., 2014), and various studies investigate innovative entrepreneurship. However, most studies consider conducting investigations in innovation-driven economies (e.g., Lukeš, 2013; Thébaud, 2015; del Mar Fuentes-Fuentes et al., 2017; Strohmeyer et al., 2017; Velilla and Ortega, 2020; Fritsch and Wyrwich, 2018) and innovative entrepreneurship investigations in developing countries are scant (Jabeen et al., 2019). Despite the significant contribution of these studies, the conclusions have restricted the implications for innovative entrepreneurship in factor-driven economies based on the conflicting characteristics of innovative entrepreneurship in these countries (Barasa et al., 2017). Thus, prior scholars suggested that interactions between institutional contexts and entrepreneurship needed further analysis to advance the understandings of these interactions in developing and developed economies (Alvarez and Urbano, 2011).

This study, drawing upon institutional theory (North, 1990), investigates the relationship between perceptual factors and innovative entrepreneurship in a cross-country context with different development stages. Prior scholars indicated that institutional characteristics, including the country's development stage, impact individual factors (Wennekers et al., 2005). Therefore, women's surrounding context can condition their decisions towards entrepreneurship. In this context, Klyver et al. (2013) showed that women in more developed economies with higher gender equality at the national level present higher gender disparity in nascent entrepreneurship. They argued that the focus of developed economies is to create equal opportunities in job markets and that governments' formal supports are not considering women's self-employment. In spite of the significant contribution of their study, the conclusions confined to nascent entrepreneurs. Thus, to advance our understanding regarding women entrepreneurship, we argue that women's perception toward innovative entrepreneurship differs across countries with different development levels. This leads us to the following hypothesis:

H2: The greater the country-level economy development, the fewer women choose innovative entrepreneurship.

5.3 Data, measures, and method

5.3.1 Data

We used individual-level data from the adult population surveys of the Global Entrepreneurship Monitor (GEM). The dataset covers various countries and a random sample of a minimum 2,000 of respondents in each participant country (Reynolds et al., 2005). Our empirical analysis is based on the adult population data from 2011 to 2016. The investigations include a final sample of 47,197 innovative entrepreneurs from 71 countries. Some countries have not contributed in all years, whereas others contributed in all six years. We excluded the observations with missing data for the included variables.

5.3.2 Measures

We adopted a question from the GEM's 2011 to 2016 Adult Population Survey to extract information on innovative entrepreneurship: (1): "Will all, some, or none of your potential customers consider this product or service new and unfamiliar?" Those who answered "all" or "some" are coded as innovative entrepreneurs. We also adopted GEM survey questions to obtain information on self-confidence, fear of failure, entrepreneurial networks, opportunity evaluation, prior entrepreneurial experience, and socio-factors, such as level of education, age, household income, and work status.

The dependent variable *innovative entrepreneur* equals one if the person is coded as an innovative entrepreneur, otherwise zero.

Following prior investigations (Langowitz and Minniti, 2007; Koellinger et al., 2013; Camelo-Ordaz et al., 2016), the four perceptual factors are measured as binary variables. Entrepreneurial self-efficacy equals one if the respondents consider themselves to have the essential ability, knowledge, and experience to undertake a business, and otherwise, it takes zero value. Knowing an entrepreneur takes value one if respondents positively answer the question, "do you personally know someone who started a business in the past 2 years?" and zero otherwise. Opportunity recognition takes the value one if the respondents expect good business opportunities in the last 6 months in their residence area, and it takes zero otherwise. Fear of failure equals one if individuals declare there is a likelihood that fear of failure stops them from starting a business, and zero otherwise. The prior entrepreneurial experience would take the value one if respondents reported that they closed down a business in the last 12 months following the questionnaire, and otherwise zero. To find the participants' gender, we define the

value of zero for men and one for women. Following prior studies (Langowitz and Minniti, 2007; Koellinger et al., 2013; Schmutzler et al., 2019), we included socioeconomic variables such as age, education, work status, and household income which could influence entrepreneurial activities.

Lastly, at the country level, we included the development level based on the World Economic Forum's classification (Schwab and Sala-i-Martin, 2016). It classifies countries from factor-driven to innovation-driven economies. Factor-driven versus innovation-driven ranges from zero to five, where zero indicates the less developed and five the most developed economies.

5.4 Results

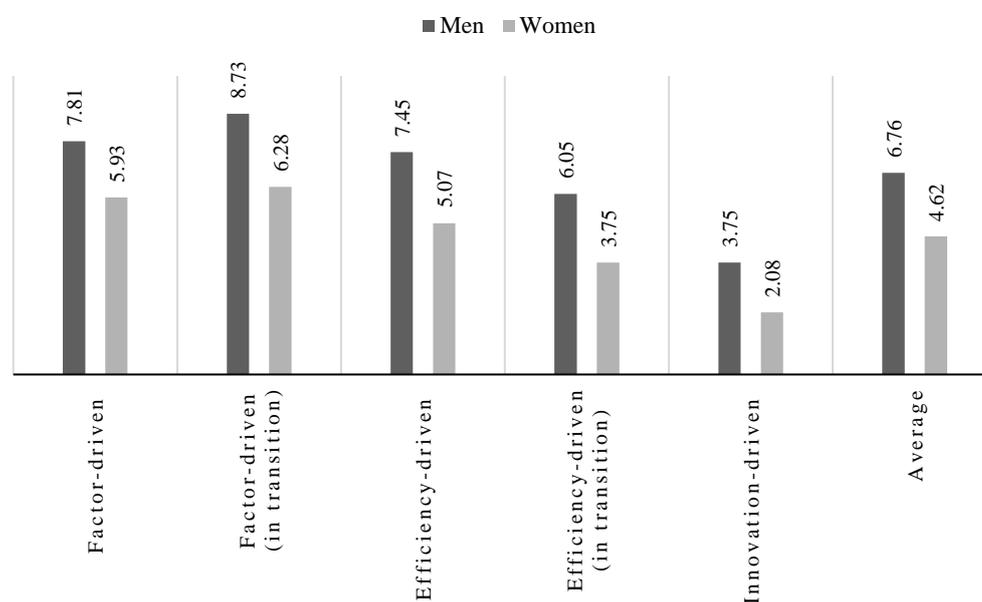
5.4.1 Descriptive findings

Table 5-1 demonstrates the descriptive statistics at the economy stage, according to the World Economic Forum's categorisation of countries' level of development (Schwab and Sala-i-Martin, 2016). While innovation-driven economies are overrepresented, our sample involved data from 71 countries, and the sample is gender balance heterogeneous. Figure 1 shows the innovativeness in each economy by gender. In all types of economies, considerably more men than women are involved in innovation entrepreneurship, and on average, the ratio of men to women is 1.8. Going from factor-driven to innovation-driven economies, we observe a significant increase in gender disparities (see Figure 5-1).

Table 5-2 shows perceptual disparities across genders in innovative entrepreneurship. It reveals that all innovative women entrepreneurs in our sample are less confident than men in their entrepreneurial skills and knowledge. Moreover, they have a higher fear of business failure, and their entrepreneurial networks are smaller than their men counterparts. Whereas Table 2 shows that the perception of opportunity evaluation is equal across genders, Table 5-3 reveals that recognition of business opportunities is almost equal only in innovation-driven economies and efficiency-driven economies (in transition). In factor-driven economies and efficiency-driven economies, men perceived higher business opportunities, while women in these economies are as confident as or even more confident than men in their entrepreneurial capabilities. Women in efficiency-driven economies and innovation-driven economies have significantly lower confidence in their entrepreneurial skills and knowledge.

Table 5-1. Distribution of the included countries by level of economic development

	Factor-driven economies	Factor-driven economies (in transition)	Efficiency-driven economies	Efficiency-driven economies (in transition)	Innovation-driven economies
Countries	Burkina Faso, Cameroon, India, Nigeria, Uganda, Vietnam	Algeria, Angola, Botswana, Iran, Philippines	Bosnia and Herzegovina, China, Colombia, Ecuador, Egypt, El Salvador, Guatemala, Indonesia, Jamaica, Macedonia, Peru, Romania, South Africa, Thailand	Argentina, Barbados, Brazil, Chile, Croatia, Estonia, Hungary, Kazakhstan, Latvia, Lithuania, Malaysia, Mexico, Panama, Poland, Russia, Slovakia, Turkey, Uruguay	Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Israel, Italy, Japan, Luxembourg, Netherlands, Norway, Portugal, Puerto Rico, Singapore, Slovenia, South Korea, Spain, Sweden, Switzerland, Taiwan, Trinidad and Tobago, United Kingdom, United States
Frequencies (total)	50,550 (5%)	52,501 (5.1%)	185,793 (18%)	283,327 (27.5%)	457,692 (44.4%)
Frequencies (innovative entrepreneurs)	3,317 (7%)	3,146 (6.7%)	13,584 (28.8%)	16,271 (34.5%)	10,879 (23%)

Figure 5-1. Innovative entrepreneurs as a percentage of the adult population

Note. Economy averages 2011-2016

Table 5-2. Perceptual disparities across genders in innovative entrepreneurs

Suskill (yes)		Fearfail (yes)		Opport (yes)		Knowent (yes)		N
Men (%)	Women (%)	Men (%)	Women (%)	Men (%)	Women (%)	Men (%)	Women (%)	
87	84	25	29	68	68	69	65	36,170

Note. Gender disparities in perceptions are significant at >99% confidence according to a chi2-test.

Table 5-3. Perceptual disparities across genders at the different levels of economies

	Suskill (yes)		Fearfail (yes)		Opport (yes)		Knowent (yes)		N
	Men (%)	Women (%)	Men (%)	Women (%)	Men (%)	Women (%)	Men (%)	Women (%)	
Factor-driven economies	87	87	32	34	78	76	81	78	2,787
Factor-driven economies (in transition)	87	89	33	35	71	75	73	67	2,152
Efficiency-driven economies	85	82	25	31	72	70	65	60	11,272
Efficiency-driven economies (in transition)	88	84	23	25	64	65	67	65	12,408
Innovation-driven economies	87	83	25	30	65	64	71	68	7,551

Note. Gender disparities in perceptions are significant at >99% confidence according to a chi2-test.

5.4.2 Gender and innovative entrepreneurship

Hypothesis 1 is tested in Table 5-4 (model 2). The table represents the empirical findings of probit estimates on innovative entrepreneurship. Model 1 tested the effects of four individual factors, including respondents' age, education, income, and work status. Including only individual-level factors shows that women are significantly less considering starting an innovative business compared to men (-0.12). It also shows that individuals with higher education and higher household income are more likely to start an innovative business. Finally, older people are less likely to undertake an innovative business.

Whereas previous research found the higher explanatory power of perceptual than individual variables (Koelliger et al., 2013), we included fear of failure, opportunity recognition, entrepreneurial skills, and knowing an entrepreneur's perceptions in model 2. When we included perceptual factors, the gender disparity became significantly smaller (from -0.12 in model 1 to -0.05 in model 2). Thus, supporting hypothesis 1, we find in model 2 that perceptual variables, particularly the perception of skills with the highest coefficient (0.59), are highly correlated with innovative entrepreneurship.

Klyver et al. (2013) identified a significant relationship between women's involvement in entrepreneurship and countries' development stages. Thus, in model 3, we included the development stage, as stated in the World Economic Forum. This model clearly shows the effect of stage of development on innovative entrepreneurship. We hypothesised that fewer women are likely to start an innovative business than men when country-level economic development increases. Therefore, to investigate whether the gender disparity in innovative entrepreneurship

varies across different contexts, we conducted the same analyses (model 3) in different economies (see Table 5-5). Supporting hypothesis 2, we identify the gender gap strengthen significantly when the country-level economic development increases. Therefore, the higher gender disparity for women in innovation-driven countries (-0.11) compared to efficiency-driven economies (-0.08) supports hypothesis 2.

Considering that our dependant variable has three ordered levels (innovative, imitative, and non-entrepreneurs), we use ordered probit analysis, a common statistical technique for analysing ordinal dependant variables (e.g., Shinnar et al., 2018; Puente et al., 2019). Table 5-6 demonstrates the marginal effects of model 3 and shows that a significant difference exists between not only entrepreneurs and non-entrepreneurs ($y=2$) but also between imitative ($y=1$) and innovative ($y=0$) entrepreneurs. Table 5-6 shows that whereas the gender disparity regarding innovative entrepreneurship is in women's favour in efficiency-driven and innovation-driven economies, it is in men's favour for imitative entrepreneurship.

Table 5-4. Probit estimates on innovative entrepreneurship

Variable	Model 1	Model 2	Model 3
Female	-0.12***	-0.05***	-0.06***
HH income - middle 33% income	0.04***	0.00	0.00
HH income - upper 33% income	0.18***	0.08***	0.07***
Education - some secondary	-0.08***	-0.00	0.04***
Education - secondary	-0.02*	0.05***	0.11***
Education - post-secondary	0.06***	0.13***	0.24***
Education - graduate	0.10***	0.15***	0.31***
Work status - working	0.38***	0.30***	0.32***
Work status - retired/student	-0.26***	-0.24***	-0.22***
Age 25-34	-0.02**	-0.04***	-0.03***
Age 35-44	-0.11***	-0.12***	-0.08***
Age 45-54	-0.22***	-0.20***	-0.14***
Age 55-64	-0.33***	-0.28***	-0.21***
D stage-factor-driven (in transition)	-	-	0.03*
D stage-efficiency-driven	-	-	0.21***
D stage-efficiency-driven (in transition)	-	-	0.12***
D stage-innovation-driven	-	-	-0.25***
Fear of failure (fearfail) - yes	-	-0.15***	-0.14***
Opportunity perception (opport) - yes	-	0.35***	0.33***
Sufficient skill perception (suskill) - yes	-	0.59***	0.58***
Knowing an entrepreneur (knowent) - yes	-	0.34***	0.34***
Constant	-1.80***	-2.51***	-2.61***
Number of observations	666,633	666,633	666,633
Pseudo R ²	0.04	0.13	0.14
Prob > chi2	0.00	0.00	0.00

Notes. Reference variables are the following: male; household income (lowest 33%); education (less than a secondary degree); work status (not working); age (18-64); development stage (factor-driven economies); and sector (agriculture, forest, hunting, fishing). In the estimation, country and year dummies are included.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Table 5-5. Economy-specific probit estimates on innovative entrepreneurship

Variable	Factor-driven economies		Factor-driven economies (in transition)		Efficiency-driven economies		Efficiency-driven economies (in transition)		Innovation-driven economies	
	β	P > z	β	P > z	β	P > z	β	P > z	β	P > z
Female	-0.02	0.18	0.03	0.13	-0.01	0.19	-0.08***	0.00	-0.11***	0.00
Hh income - middle 33% income	0.13***	0.00	-0.05	0.07	0.13***	0.00	-0.01	0.40	-0.08***	0.00
Hh income - upper 33% income	0.27***	0.00	-0.03	0.20	0.25***	0.00	0.07***	0.00	-0.10***	0.00
Education - some secondary	0.10**	0.00	0.00	0.97	-0.03	0.06	0.08	0.00	-0.03	0.36
Education - secondary	0.25***	0.00	-0.01	0.72	0.00	0.82	0.20***	0.00	-0.01	0.62
Education - post-secondary	0.26***	0.00	0.09*	0.01	0.12***	0.00	0.33***	0.00	0.18***	0.00
Education - graduate	0.36***	0.00	0.09	0.14	0.24***	0.00	0.27***	0.00	0.34***	0.00
Work status - working	0.34***	0.00	0.67***	0.00	0.43***	0.00	0.31***	0.00	0.10***	0.00
Work status - retired/student	-0.29***	0.00	0.00	0.95	-0.19***	0.00	-0.29***	0.00	-0.27***	0.00
Age 25-34	0.05	0.06	0.01	0.72	-0.07***	0.00	0.00	0.89	-0.14***	0.00
Age 35-44	0.00	0.81	-0.06	0.05	-0.11***	0.00	-0.03*	0.04	-0.21***	0.00
Age 45-54	-0.07*	0.04	-0.03	0.43	-0.20***	0.00	-0.09***	0.00	-0.26***	0.00
Age 55-64	-0.03	0.38	-0.04	0.36	-0.30***	0.00	-0.15***	0.00	-0.36***	0.00
Fear of failure (fearfail) - yes	0.15***	0.00	-0.02	0.32	-0.13***	0.00	-0.18***	0.00	-0.22***	0.00
Opportunity perception (opport) -yes	0.25***	0.00	0.36***	0.00	0.32***	0.00	0.30***	0.00	0.38***	0.00
Sufficient skill perception (suskill) - yes	0.36***	0.00	0.42***	0.00	0.50***	0.00	0.62***	0.00	0.62***	0.00
Knowing another entrepreneur (knowent) - yes	0.32***	0.00	0.24***	0.00	0.24***	0.00	0.33***	0.00	0.44***	0.00
Shut down business in past 12 months - yes	0.31***	0.00	0.48***	0.00	0.30***	0.00	0.38***	0.00	0.39***	0.00
Constant	-2.76***	0.00	-2.73***	0.00	-2.41***	0.00	-2.60***	0.00	-2.49***	0.00
Number of observations	39,420		32,799		140,173		185,981		268,260	
Pseudo R ²	0.09		0.13		0.12		0.14		0.16	
Loglikelihood	-9,111		-6,884		-34,304		-38,961		-28,635	
Prob > chi2	0.00		0.00		0.00		0.00		0.00	

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than a secondary degree). In the estimation, country and year dummies are included. We involved only participants classified as nascent entrepreneurs or non-entrepreneurs. Robust standard error estimates. All observers are included (Imitative and non-entrepreneurs=0; Innovative entrepreneurs=1). * p < 0.05; ** p < 0.01; *** p < 0.001.

Table 5-6. Economy-specific marginal effects of robust ordered probit model

Variable	Factor-driven economies			Factor-driven economies (in transition)			Efficiency-driven economies			Efficiency-driven economies (in transition)			Innovation-driven economies		
	Y=0	Y=1	Y=2	Y=0	Y=1	Y=2	Y=0	Y=1	Y=2	Y=0	Y=1	Y=2	Y=0	Y=1	Y=2
Female	-0.001	-0.001	0.003	0.000	0.001	0.000	0.005***	-0.002***	-0.003***	0.010***	-0.004***	-0.006***	0.007***	-0.004***	-0.003***
Hh income-middle 33%	0.014***	0.019***	-0.034	-0.008***	-0.011***	-0.008***	-0.020***	0.008***	0.012***	0.000	-0.000	-0.000	0.004***	-0.002***	-0.001***
Hh income-upper 33%	0.022***	0.028***	-0.051	-0.008***	-0.011***	-0.008***	-0.042***	0.016***	0.026***	-0.010***	0.004***	0.006***	0.004***	-0.002***	-0.001***
Education-some secondary	-0.006**	-0.008**	0.014	0.005	0.007*	0.005	0.008**	-0.003**	-0.005**	-0.013***	0.005***	0.008***	0.005**	-0.002**	-0.002**
Education-secondary	0.003	0.005	-0.009	0.000	0.001	0.000	0.006*	-0.002*	-0.003*	-0.021***	0.008***	0.013***	0.002	-0.001	-0.001
Education-post secondary	0.002	0.003	-0.005	0.010***	0.013***	0.010***	-0.010***	0.004***	0.006***	-0.036***	0.014***	0.022***	-0.007***	0.004***	0.003***
Education- graduate	0.009	0.011	-0.021	0.009*	0.012*	0.009*	-0.030***	0.011***	0.019***	-0.024***	0.009***	0.015***	-0.016***	0.008***	0.007***
Work status - working	0.038***	0.054***	-0.092	0.057***	0.073***	0.057***	-0.063***	0.025***	0.037***	-0.041***	0.017***	0.024***	-0.006***	0.003***	0.003***
Work status-retired/student	-0.021***	-0.031***	0.052	-0.007*	-0.009*	-0.007*	0.039***	-0.016***	-0.023***	0.033***	-0.014***	-0.019***	0.017***	-0.009***	-0.007***
Age 25-34	0.005**	0.007**	-0.013	0.005**	0.007**	0.005**	0.008***	-0.003***	-0.005***	-0.002	0.000	0.001	0.007***	-0.003***	-0.003***
Age 35-44	-0.001	-0.001	0.003	-0.002	-0.003	-0.002	0.015***	-0.006***	-0.009***	0.003	-0.001	-0.002	0.011***	-0.006***	-0.004***
Age 45-54	-0.007***	-0.011**	0.018	-0.004	-0.005	-0.004	0.030***	-0.012***	-0.018***	0.013***	-0.005***	-0.007***	0.015***	-0.008***	-0.006***
Age 55-64	-0.011***	-0.015***	0.026	-0.005	-0.007	-0.005	0.042***	-0.017***	-0.024***	0.024***	-0.010***	-0.014***	0.021***	-0.011***	-0.009***
Fear of failure-yes	0.006***	0.008***	-0.014	-0.006***	-0.009***	-0.006***	0.027***	-0.010***	-0.016***	0.024***	-0.009***	-0.014***	0.015***	-0.008***	-0.007***
Opportunity perception-yes	0.028***	0.038***	-0.066	0.027***	0.035***	0.027***	-0.055***	0.021***	0.033***	-0.042***	0.016***	0.026***	-0.029***	0.015***	0.013***
Sufficient skill perception- yes	0.041***	0.058***	-0.100	0.036***	0.049***	0.036***	-0.099***	0.038***	0.060***	-0.091***	0.035***	0.055***	-0.050***	0.026***	0.023***
Knowing an entrepreneur- yes	0.036***	0.049***	-0.085	0.020***	0.027***	0.020***	-0.049***	0.019***	0.030***	-0.051***	0.020***	0.031***	-0.033***	0.017***	0.015***
Shut down business in past 12 months-yes	0.030***	0.035***	-0.065	0.053***	0.056***	0.053***	-0.070***	0.025***	0.045***	-0.066***	0.024***	0.042***	-0.035***	0.018***	0.017***
Number of observations	39,420	39,420	39,420	32,799	32,799	32,799	140,173	140,173	140,173	185,981	185,981	185,981	268,260	268,260	268,260
Pseudo R ²	0.09	0.09	0.09	0.12	0.12	0.12	0.11	0.11	0.11	0.12	0.12	0.12	0.15	0.15	0.15
Prob > chi2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than a secondary degree). In the estimation, we included country and year dummies. Robust standard errors are estimated. All observations are included (non-entrepreneurs=0; imitative entrepreneurs=1; innovative entrepreneurs=2).

*p < 0.05; **p < 0.01; ***p < 0.001.

For further analysis and finding the influence of selecting a sector, we included the business sector and ran probit models on innovative entrepreneurs. Table A-8 shows the sectorial distribution of innovative entrepreneurs across genders. Table 5-7 shows that individuals' selection of a particular sector can not explain the gender disparity in innovative entrepreneurship.

Table 5-7. Economy-specific probit estimates of innovative entrepreneurs

Variable	Factor-driven economies	Factor-driven economies (in transition)	Efficiency-driven economies	Efficiency-driven economies (in transition)	Innovation-driven economies
Female	-0.11***(0.00)	0.00(0.80)	-0.05**(0.00)	-0.14****(0.00)	-0.09****(0.00)
Hh income - middle 33% income	0.14****(0.00)	0.05(0.22)	0.16****(0.00)	0.02(0.27)	-0.02(0.30)
Hh income - upper 33% income	0.31****(0.00)	0.04(0.25)	0.22****(0.00)	0.05*(0.01)	-0.03(0.15)
Education - some secondary	0.18****(0.00)	-0.11(0.08)	0.00(0.77)	0.23****(0.00)	0.00(0.90)
Education - secondary	0.43****(0.00)	-0.02(0.70)	0.15****(0.00)	0.44****(0.00)	-0.01(0.80)
Education - post-secondary	0.59****(0.00)	0.13*(0.03)	0.31****(0.00)	0.72****(0.00)	0.20***(0.00)
Education - graduate	0.64****(0.00)	0.30***(0.00)	0.47****(0.00)	0.70****(0.00)	0.41****(0.00)
Work status - working	-0.33****(0.00)	-0.09(0.09)	-0.21****(0.00)	-0.34****(0.00)	-0.39****(0.00)
Work status - retired/student	-0.25*(0.01)	0.21*(0.03)	0.07(0.22)	-0.21****(0.00)	0.00(0.91)
Age 25-34	0.04(0.27)	-0.00(0.97)	-0.15****(0.00)	-0.05*(0.03)	-0.16****(0.00)
Age 35-44	0.12****(0.00)	0.01(0.81)	-0.14****(0.00)	-0.00(0.71)	-0.23****(0.00)
Age 45-54	0.07(0.18)	0.09(0.12)	-0.16****(0.00)	0.00(0.91)	-0.18****(0.00)
Age 55-64	0.19****(0.00)	0.03(0.68)	-0.23****(0.00)	0.03(0.31)	-0.19****(0.00)
Fear of failure- yes	0.37****(0.00)	0.07(0.05)	-0.04*(0.01)	-0.07****(0.00)	-0.04*(0.03)
Opportunity perception -yes	-0.03(0.39)	0.28****(0.00)	0.25****(0.00)	0.18****(0.00)	0.22****(0.00)
Sufficient skill perception - yes	-0.06(0.20)	0.16***(0.00)	0.03(0.09)	0.13****(0.00)	-0.00(0.91)
Knowing another entrepreneur - yes	0.11***(0.00)	0.13****(0.00)	-0.03(0.08)	0.07****(0.00)	0.12****(0.00)
Shut down business in past 12 months-yes	0.20****(0.00)	0.26****(0.00)	0.15****(0.00)	0.26****(0.00)	0.15****(0.00)
Sector:					
Mining, construction	-0.08(0.54)	0.06(0.51)	0.33****(0.00)	0.12*(0.01)	0.06(0.34)
Manufacturing	0.18***(0.00)	-0.02(0.77)	0.58****(0.00)	0.34****(0.00)	0.53****(0.00)
Trans, comm, utilities	-0.11(0.36)	-0.10(0.38)	0.24****(0.00)	0.08(0.12)	0.13(0.05)
Wholesale, repair	0.02(0.86)	0.15(0.08)	0.40****(0.00)	0.25****(0.00)	0.22****(0.00)
Retail, hotel, restaurants	0.02(0.21)	0.10(0.13)	0.30****(0.00)	0.30****(0.00)	0.41****(0.00)
Informatic and communication	0.09(0.26)	0.36***(0.00)	0.61****(0.00)	0.49****(0.00)	0.66****(0.00)
Finance, insurance, real estate	0.03(0.50)	0.01(0.94)	0.43****(0.00)	0.15*(0.02)	0.01(0.77)
Business services	0.42(0.00)	0.18(0.10)	0.65****(0.00)	0.20****(0.00)	0.29****(0.00)
Administrative services	-0.07(0.61)	0.00(0.98)	0.45****(0.00)	0.33****(0.00)	0.27****(0.00)
Health, education, social services	0.12*(0.03)	0.10(0.21)	0.46****(0.00)	0.07(0.13)	0.37****(0.00)
Consumer services	0.46****(0.00)	0.34*(0.02)	0.60****(0.00)	0.38****(0.00)	0.51****(0.00)
Constant	-0.96****(0.00)	-1.13****(0.00)	-0.76****(0.00)	-0.86****(0.00)	-0.56****(0.00)
Number of observations	8,747	6,132	24,694	26,674	20,922
Loglikelihood	-4,742.74	-3,582.54	-15,981.97	-17,111.45	-12,628.217
Prob > chi2	0.00	0.00	0.00	0.00	0.00

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than a secondary degree); work status (not working); currently non-entrepreneur; and not shut down business in the past 12 months. Estimation included country and year dummies. Standard errors in parentheses. The recent data involved two more sectors. All observations are included (Imitative and non-entrepreneurs=0; Innovative entrepreneurs=1). *p < 0.05; **p < 0.01; ***p < 0.001.

To conduct a rigorous test, we applied the recursive simultaneous-equations bivariate probit model (Evans and Schwab, 1995). Koellinger et al. (2013) used this model for evaluating the association between entrepreneurial perceptions and nascent entrepreneurship. This model considers omitted variables' influence on innovative and perceived entrepreneurial capability simultaneously. Table 5-8 shows that whereas gender disparity in perceived entrepreneurial capability is still significant, gender disparity among innovative entrepreneurs became in

women's favour. The findings suggest that perceptual variables and particularly skill perception are helpful in explaining gender disparity in innovative entrepreneurship and show that if women believe in their entrepreneurial capabilities, there are more likely than men to start an innovative business. We conducted the same analysis for all four perceptual variables, but we displayed only the results of perceived entrepreneurial capability because it was the only variable for which we found the gender differences in women's favour in the innovative entrepreneurship's equation.

In order to investigate whether the results of the recursive simultaneous-equations bivariate probit model vary across different contexts, we conducted the same analyses in different economies (see Table 5-9). The findings show that women in innovation-driven economies have a higher chance to start innovative businesses than women in efficiency-driven economies.

Table 5-8. Recursive simultaneous bivariate probit model

Variable	Equation for innovation		Equation for suskill	
	β	P > z	β	P > z
Female	0.02***	0.00	-0.22***	0.00
HH income - middle 33%	-0.00	0.41	0.02***	0.00
HH income- upper 33%	0.03***	0.00	0.08***	0.00
Education - some secondary	-0.01	0.31	0.12***	0.00
Education- secondary	-0.01	0.26	0.19***	0.00
Education - post-secondary	0.00	0.48	0.31***	0.00
Education - graduate	0.04**	0.00	0.38***	0.00
Work status - working	0.18***	0.00	0.17***	0.00
Work status - retired/student	-0.10***	0.00	-0.17***	0.00
Age 25-34	-0.09***	0.00	0.19***	0.00
Age 35-44	-0.17***	0.00	0.27***	0.00
Age 45-54	-0.25***	0.00	0.28***	0.00
Age 55-64	-0.31***	0.00	0.24***	0.00
Fear of failure (fearfail) - yes	0.03***	0.00	-0.34***	0.00
Opportunity perception (opport) - yes	0.11***	0.00	0.33***	0.00
Sufficient skill perception (suskill)- yes	1.70***	0.00		
Knowing another entrepreneur (knowent) - yes			0.50***	0.00
Shut down business in past 12 months - yes			0.57***	0.00
Constant	-2.50***	0.00	-0.48***	0.00
Number of observations		666,633		
Log pseudolikelihood		-508,959		
Prob > chi-squared		0.00		
/athrho		-0.84***		
Rho		-0.69		

Notes. Reference variables are the following: male; household income (lowest 33%); education (less than a secondary degree); work status (not working); age (18-24); and development stage (factor-driven economies). In the estimation, we involved country and year dummies. *p < 0.05; **p < 0.01; ***p < 0.001.

Table 5-9. Economy-specific recursive simultaneous bivariate probit model

Variable	Factor-driven economies		Factor-driven economies (in transition)		Efficiency-driven economies		Efficiency-driven economies (in transition)		Innovation-driven economies	
	Equation for innovative	Equation for suskill	Equation for innovative	Equation for suskill	Equation for innovative	Equation for suskill	Equation for innovative	Equation for suskill	Equation for innovative	Equation for suskill
	β	β	β	β	β	β	β	β	β	β
Female	0.00	-0.06***	0.00	-0.10***	0.02**	-0.13***	0.01	-0.20***	0.04***	-0.31***
Hh income - middle 33%	0.03	0.07***	-0.00	-0.01	0.03**	0.06***	0.01	0.01	-0.07***	0.02**
Hh income- upper 33%	0.15***	0.10***	0.04	-0.04*	0.09***	0.13***	0.06***	0.08***	-0.09***	0.09***
Education- some secondary	0.09**	0.14***	-0.07	0.08**	-0.02	0.11***	-0.01	0.09***	-0.06	0.16***
Education- secondary	0.09**	0.14***	-0.10**	0.17***	0.00	0.16***	-0.01	0.14***	-0.10**	0.29***
Education - post-secondary	0.10**	0.17***	0.01	0.26***	0.05**	0.26***	-0.04*	0.27***	-0.05	0.42***
Education - graduate	0.15*	0.22**	0.14*	0.43***	0.04	0.33***	-0.04	0.33***	0.01	0.49***
Work status - working	0.21***	0.31***	0.35***	0.31***	0.23***	0.27***	0.19***	0.19***	0.01	0.09***
Work status - retired/student	-0.20***	-0.14***	0.01	-0.06*	-0.08**	-0.14***	-0.12***	-0.20***	-0.17***	-0.18***
Age 25-34	-0.03	0.13***	0.00	0.07***	-0.08***	0.15***	-0.07***	0.20***	-0.20***	0.26***
Age 35-44	-0.10***	0.15***	-0.06	0.04*	-0.13***	0.20***	-0.16***	0.27***	-0.32***	0.38***
Age 45-54	-0.14***	0.08**	-0.04	0.01	-0.20***	0.18***	-0.24***	0.29***	-0.40***	0.43***
Age 55-64	-0.09*	0.00	-0.05	-0.02	-0.25***	0.08***	-0.31***	0.26***	-0.47***	0.38***
Fear of failure (fearfail) - yes	0.23***	-0.29***	0.06**	-0.20***	0.04***	-0.32***	0.06***	-0.42***	-0.04***	-0.31***
Opportunity perception (opport) - yes	-0.00	0.54***	0.01	0.46***	0.03*	0.48***	0.08***	0.30***	0.22***	0.21***
Sufficient skill perception (suskill) - yes	1.56***		1.52***		1.62***		1.73***		1.90***	
Knowing another entrepreneur (knowent) - yes		0.45***		0.39***		0.48***		0.52***		0.52***
Shut down business in past 12 months - yes		0.35***		0.43***		0.47***		0.57***		0.74***
Constant	-3.27***	0.03	-2.34***	-0.27***	-2.90***	0.27***	-2.68***	-0.51***	-2.29***	-0.52***
Number of observations	39,420		32,799		140,173		185,981		268,260	
Log pseudolikelihood	-28,567		-25,647		-114,435		-146,552		-191,082	
Prob > chi-squared	0.00		0.00		0.00		0.00		0.00	
/athrho	-0.93***		-0.87***		-0.82***		-0.87***		-0.89***	
rho	-0.73		-0.70		-0.68		-0.70		-0.71	

Notes. Reference variables are the following: male; age (18-24); household income (lowest 33%); education (less than a secondary degree); and work status (not working). In the estimation, country and year dummies are included. All observations are included (Imitative and non-entrepreneurs=0; Innovative entrepreneurs=1). Robust standard errors are estimated.*p < 0.05; **p < 0.01; ***p < 0.001.

5.5 Discussion and conclusion

5.5.1 Discussion of main results

Within the women's entrepreneurship research area, this research arises because of the importance of innovation for the businesses' better sustainability and growth. Based on institutional theory (North, 1995), we examined how entrepreneurial perceptions shape disparities in entrepreneurial innovativeness across genders and how these perceptions depend on a country's development level. This study reviewed prior investigations on women's innovative entrepreneurship, with particular emphasis on the perceptual variables' impact, and developed two hypotheses that were empirically tested based on GEM data from 71 countries.

We found that gender disparity in innovative entrepreneurship is connected with the gender difference in perceptions, and this connection is influenced by the development level of the country in which women are embedded. More specifically, we found that women have a lower perception of their entrepreneurial capability, lower opportunity recognition, and a lower level of entrepreneurial networks. Moreover, they have a higher fear of failure than men. This finding is consistent with Koellinger et al. (2013), who found that perceptual variables explain a large part of gender disparities in entrepreneurship. These disparities were, however, stronger in more developed economies. In fact, we found that a higher development level of a country is negatively connected with women's innovative entrepreneurship. Indeed, when going from factor-driven economies to innovation-driven economies, women's confidence toward innovation, the evaluation of business opportunities and entrepreneurial networks decreases. This finding supports the results of Klyver et al. (2013), who demonstrated a negative association between a country's development level and women's business ownership.

Although in line with prior research (Koellinger et al., 2007; Dileo and Pereiro, 2019), our findings affirmed the considerable gender disparity in perceptual factors, they indicate that if women had the same confidence as men in their entrepreneurial knowledge and skills, they would be even more likely to start an innovative business. More developed institutions often establish more equivalent possibilities in job markets, and female employees are offered employee advantages, such as parental leave or day-care services for children (Klyver et al., 2013; Tsai et al., 2016). In contrast, women in less developed economies not only do not have equal chances at job markets but are also confronted with disparities in family responsibilities (Carrasco, 2014). Thus, although women in less developed economies perceive high-entrepreneurial barriers, they may have other motivations (Shinnar et al., 2012) to engage in innovative entrepreneurship. For example, prior investigations observed that lower

entrepreneurial perceptions, such as fear of failure, had no impact on necessity entrepreneurs in particular institutions (Sahasranamam and Sud, 2016).

More specifically, this chapter shows that the economy's development level moderates the effect of perceptual factors on women's entrepreneurship. Although one might prioritise the likelihood that women in developed economies might have a higher level of gender parity in owning businesses (Cheraghi et al., 2019), our findings show that higher economic development negatively affects women's innovative entrepreneurship. Lower gender disparities in less developed economies could result from higher imitation opportunities in these economies. Imitative business ideas can be considered innovative in another environment. Therefore, in developing nations, women have higher imitation chances or are inspired by innovative business ideas from more developed economies (Darnihamedani et al., 2018). This lower gender disparity in self-employment could be the result of lower women's employment chances (Dileo and Pereiro, 2019; Amorós et al., 2019), lower wages (Dileo and Pereiro, 2019) and a higher need for independency (Shinnar et al., 2012), which are factors that could push women in less developed countries to engage in entrepreneurial activities.

Moreover, women in developed economies have self-actualisation sources other than entrepreneurship; therefore, they are less motivated to undertake businesses (Solesvik et al., 2019). However, due to higher economic hindrances or the limited financial access that women may experience in less developed countries, these women may undertake very small businesses (Dileo and Pereiro, 2019). Thus, the causes of gender disparity in developed and developing economies are different (Sarfaraz et al., 2014).

5.5.2 Contributions and implications

The understandings about entrepreneurship innovation across genders are under research, particularly in the context of developing countries. Thus, this study contributes to the literature in several areas.

First, as women's entrepreneurship research tends to concentrate on sociodemographic and individual factors, this study extends the research subject by being alert to the idea that the women's decision towards innovative entrepreneurship is an outcome of their interactions with surrounding institutional contexts. Therefore, we studied innovative female entrepreneurs and attempted to understand the influence of the perceptual factors and the development stage of the country in which these entrepreneurs are embedded. The findings contribute to the literature

on innovation and provide insight into the factors influencing women's decisions regarding entrepreneurship innovation.

Second, this research extends the current knowledge about women's business ownership and the value of entrepreneurial perceptions for innovative entrepreneurship. Particularly, we show that perceived entrepreneurial capability has the most significant influence on women's innovative entrepreneurship, and we reveal the ways in which the women's skills perception can impact their innovative activities. This finding supports prior scholars' results in the entrepreneurship area (Roper and Scott, 2009; Curado et al., 2011). In this regard, prior investigations have shown that women's perceived entrepreneurial barriers, such as access to entrepreneurial networks (Bosma, 2013) or to financing for a business (Verheul et al., 2012; Marlow and Swail, 2014; Brixiová and Kangoye, 2016; Guzman and Kacperczyk, 2019), are higher than those of men. Therefore, we contribute to the growing body of research, which elucidates that the individuals' confidence in their entrepreneurial abilities is essential for clarifying gender disparities in entrepreneurship (Brush et al., 2017). For instance, future research could examine whether perceived barriers to access funding could stop women from starting innovative businesses.

Moreover, prior research recognised stereotypes as barriers to women's entrepreneurship (Bosma, 2013; Gupta et al., 2014). It would be interesting to investigate the influence of formal and informal institutions on women's innovative activities, as institutions clearly play a role in women's entrepreneurship perceptions (Gimenez-Jimenez et al., 2020). Thus, we suggest that further investigations should analyse the different types of processes through which informal institutions, such as stereotypes, affect women's innovative entrepreneurial activities. Although the prior research has extensively examined the impact of formal (Puffer et al., 2010; Lee et al., 2011; Goltz et al., 2015) and informal (Webb et al., 2020; Gimenez-Jimenez et al., 2020) institutional contexts, relatively little is known about the complete process by which they affect women's perceptions of innovative entrepreneurial activities.

Although our findings show that overall human capital, such as education or work status, does not explain a significant portion of the gender disparity in innovative entrepreneurship, in line with Koellinger et al. (2013), we argue that human capital probably influences women's perceptions of entrepreneurship. In this regard, prior research showing that human capital affects women's decisions to engage in innovative activities (BarNir, 2012) suggests that the governments' support for enhancing women's human capital can encourage women to start innovative businesses.

Based on our findings, to support women's innovative entrepreneurial activities, we suggest the need for government interventions that consider women's entrepreneurial perceptions in their surrounding context. To develop women's perceptions (Noguera et al., 2013) of innovative entrepreneurial activities, the governments need to design distinctive programs (Malach Pines et al., 2010) concerning the environment (Schmutzler et al., 2019), legal and regulatory features (Armour and Cumming, 2008), cultural factors and women's social position. Our findings show that this research is a small step that attempts to call attention to the different institutional contexts in which women's perceptions of innovative entrepreneurial activities are shaped. Considering that ongoing research largely ignores women's innovative activities in developing countries (e.g., BarNir, 2012; Thébaud, 2015; del Mar Fuentes-Fuentes et al., 2017; Strohmeyer et al., 2017; Demartini, 2018; Fritsch and Wyrwich, 2018; Owalla et al., 2020), investigations in these countries could advance our knowledge about women's innovative entrepreneurship and the moderating effect of contexts. Particularly, considering the essential role of innovation in firms' growth and sustainability (Schumpeter, 1934; Alsos et al., 2013; Barasa et al., 2017), understanding women's innovativeness in different institutional contexts is justifiable. Thus, our findings offer the insight that when investigating women's innovative activities, cross-national studies should consider the countries' development level.

5.5.3 Limitations

Despite its contributions to women's entrepreneurship literature and innovative entrepreneurship, this research has some limitations that need to be taken into account. Its findings are based on cross-sectional data over the period 2011 to 2016, and thus we could not identify a strong causal link between women's innovative business activities and the other factors. Future investigations with longitudinal designs could follow female entrepreneurs and determine whether and in which direction women's perceptions change over time and the interactions with a country's development stage. Our analysis' cross-sectional nature also rules out assessing other longitudinal influences such as firms' survival chances of innovative women entrepreneurs.

Second, we measured women's entrepreneurial perceptions with self-reported measures where, one may argue, women tend to underestimate their capabilities, whereas men overestimate them (Strohmeyer et al., 2017). For example, due to fewer entrepreneurial networks and business opportunities, women may underestimate their entrepreneurial opportunities (Bhagavatula et al., 2010; Camelo-Ordaz et al., 2016). Moreover, for measuring

ventures' innovativeness, we also counted on a self-reported question. Nevertheless, utilising these measures is common for conducting empirical studies within entrepreneurship and innovation areas (e.g., Urbano et al., 2016; Darnihamedani et al., 2018; Amorós et al., 2019). In this regard, we call future investigations for replicating our results with non-self-reported data.

Our findings show that other omitted factors may be associated with women's decision to start an innovative business. Unobserved factors may affect innovative entrepreneurship and overemphasise the importance of perceptual variables that is indicated by our results. However, this is an issue with most of the analysis conducted on large data sets (e.g., Minniti, 2010; Taylor and Wilson, 2012; Koellinger et al., 2013; Amorós et al., 2019). Future research could investigate the influence of the field of study (Leoni and Falk, 2010), financial support (van der Zwan et al., 2016) or family entrepreneurs (Greene et al., 2013) on women's innovative entrepreneurial activities. These are not included in our analysis.

6 Conclusion

6.1 Summary of main findings

Aggregated facts show that women's contributions to entrepreneurship are appreciably lower than those of men, although the weight of gender disparity differs significantly across nations (Koellinger et al., 2013; Klyver et al., 2013; Brush et al., 2017; Vranceva and Stoyneva, 2020; Gimenez-Jimenez et al., 2020). This gender disparity is a constant fact for nascent (Koellinger et al., 2013) and innovative (Amorós et al., 2019) entrepreneurship. Prior investigations have suggested various key drivers, such as environmental contexts (Shinnar et al., 2012), perceptual factors (Koellinger et al., 2013), biology and testosterone levels (Nicolaou et al., 2018), stereotyped perceptions (Gupta et al., 2014), and disparities in access to financial resources (Gatewood et al., 2009; Guzman and Kacperczyk, 2019), as factors in charge of these disparities. The high number of inconclusive (Shinnar et al., 2012; Camelo-Ordaz et al., 2016) findings on the role of perceptual variables in explaining gender disparities in entrepreneurship represents a considerable gap in the literature. While the individuals' involvement in entrepreneurship is a multi-layered process, investigating the interaction of perceptual variables across various levels is crucial (Boudreaux et al., 2019).

This dissertation had three main objectives. First, by replication and generalisation of the work by KMS (RQ1.1, RQ2.1, RQ3.1, RQ4.1, and RQ5.1), it aimed to investigate the influence of socioeconomic and perceptual variables on women's entrepreneurship. Second, considering the importance of innovation in firms' growth and sustainability (Schumpeter, 1934; Barasa et al., 2017) and the existing gender disparity in innovative entrepreneurship, this research examined the influence of perceptual factors on women's entrepreneurial innovation (RQ1.1, RQ2.1, RQ3.1, RQ4.1, and RQ5.1). Third, based on institutional theory (North, 1990), it attempted to investigate in more depth the disparities across countries and how institutional contexts moderate the relationship between perceptual variables and women's entrepreneurship (RQ2.2, RQ3.2, RQ4.2, and RQ5.2). Table 6-1 presents the research questions described in Chapter 1.2 and summarizes each question's main findings.

Table 6-1. Overview of dissertation findings

Research question	Main finding/s
RQ1.1. What are the effects of perceived perceptual variables on women's entrepreneurial propensity?	<ul style="list-style-type: none"> • Women have lower perceived entrepreneurial capability, entrepreneurial network, opportunity evaluation and higher fear of failure. • Women's perceived entrepreneurial perceptions explain a significant part of their lower entrepreneurial propensity. • Entrepreneurial skill perception had the most significant influence on women's entrepreneurship.
RQ1.2. What are the effects of perceived perceptual variables on women's innovative entrepreneurship?	<ul style="list-style-type: none"> • Women's perceived entrepreneurial perceptions explain a significant part of their lower innovative entrepreneurship. • Women's lower entrepreneurial network, perceived entrepreneurial capability, and perceived opportunity evaluation, and their higher fear of entrepreneurial failure negatively impact innovative entrepreneurship. • Gender disparity in perceived entrepreneurial capability is higher for innovative entrepreneurship compared to nascent entrepreneurship.
RQ1.3. How do country-level institutions influence the relationship between perceptual variables and women's entrepreneurial propensity?	<ul style="list-style-type: none"> • Country-level institutional context moderates the relationship between entrepreneurial perceptions and women's entrepreneurial propensity. • Gender differences in nascent entrepreneurship are higher in more developed economies. • The percentage of gender disparities in having an entrepreneurial network, perceived entrepreneurial capability, opportunity evaluation, and perceived fear of failure varies significantly across nations.
RQ1.4. How do country-level institutions influence the relationship between perceptual variables and women's innovative entrepreneurship?	<ul style="list-style-type: none"> • Country-level institutional context moderates the relationship between entrepreneurial perceptions and women's innovative entrepreneurship. • Gender differences in innovative entrepreneurship are higher in more developed economies.
RQ2.1. To what extent does a country's development stage influence the relationship between entrepreneurial role models' perception and women's entrepreneurial propensity?	<ul style="list-style-type: none"> • Gender disparity in knowing an entrepreneur is higher for women nascent entrepreneurs in less developed economies. • After considering the business sector, gender disparity in knowing an entrepreneur decreased in most of the economies. However, gender disparity regarding ERMs became much smaller in innovation-driven economies compared to factor-driven economies.

Research question	Main finding/s
RQ2.2. To what extent does a country's development stage influence the relationship between entrepreneurial role models' perception and women's innovative entrepreneurship?	<ul style="list-style-type: none"> • Gender disparity in knowing an entrepreneur is higher for women in factor-driven economies (in transition) and efficiency-driven economies.
RQ3.1. To what extent does a country's development stage influence the relationship between perceived entrepreneurial capability and women's entrepreneurial propensity?	<ul style="list-style-type: none"> • Gender disparity in perceived entrepreneurial capability is higher in more developed economies. • Women in less developed economies have a higher perceived entrepreneurial capability, and they show a higher entrepreneurial propensity.
RQ3.2. To what extent does a country's development stage influence the relationship between perceived entrepreneurial capability and women's innovative entrepreneurship?	<ul style="list-style-type: none"> • Gender disparity in perceived entrepreneurial capability is higher in more developed economies.
RQ4.1. To what extent does a country's development stage influence the relationship between perceived opportunity evaluation and women's entrepreneurial propensity?	<ul style="list-style-type: none"> • Gender disparity in opportunity evaluation is lower in efficiency-driven economies. Innovation-driven economies had the highest gender disparity in a good business opportunity evaluation.
RQ4.2. To what extent does a country's development stage influence the relationship between perceived opportunity evaluation and women's innovative entrepreneurship?	<ul style="list-style-type: none"> • Factor-driven economies (in transition) had the highest gender disparity in a good business opportunity evaluation.
RQ5.1. To what extent does a country's development stage influence the relationship between perceived fear of failure and women's entrepreneurial propensity?	<ul style="list-style-type: none"> • Women in efficiency-driven economies had the highest fear of failure toward nascent entrepreneurship.
RQ5.2. To what extent does a country's development stage influence the relationship between perceived fear of failure and women's innovative entrepreneurship?	<ul style="list-style-type: none"> • Women in innovation-driven economies and efficiency-driven economies had the highest fear of failure toward innovative entrepreneurship.

Note. The main findings are based on analysis conducted in Chapter 3, 4 and 5.

This dissertation started by providing a structured overview of the literature on the role models' effects on entrepreneurship (see Chapter 2). The investigation of 86 published journal articles provides a systematic overview of the academic research on the role models' effects on entrepreneurial intentions and behaviour. This chapter indicates that prior research has focused mainly on different types of role models (by whom), the life stage at which (when) role model

exposure occurred, and the context of that exposure. By providing evidence from past literature, this chapter shows that implementing role models in entrepreneurship programs can help foster entrepreneurial activities.

Using the same sample as that used by KMS, which included 236,556 individuals from 17 countries between 2001 and 2006, in women entrepreneurship, Chapter 3 reveals the high explanatory value of perceptual variables compared to that of sociodemographic variables. Furthermore, the findings show that women have lower perceived entrepreneurial capability, lower opportunity evaluation, fewer entrepreneurial networks, and a considerably higher fear of failure. The weight of these factors varies considerably across nations, while they have a universal effect. Further examinations show that the women's lower rate of entrepreneurship is an outcome of their lower propensity to start a business as well as of disparities in the firms' survival chances.

These results are generalised by rerunning the same analysis for a sample of 372,069 individuals from the same countries between 2011 and 2016 (see Chapter 4). The findings still present a significant gender disparity in all perceptual variables, although the differences shrank considerably. However, in contrast to the work of KMS, both studies show that women's lower rate of entrepreneurship is a consequence of their lower propensity to undertake businesses as well as of disparities in the firms' survival chances. Further, employing a large cross-country sample of 1,029,863 individuals from 71 countries, the study reveals that including less developed economies significantly decreases gender disparities in entrepreneurship. In fact, the research found that less developed economies, as measured by the World Economic Forum's classification (Schwab and Sala-i-Martin, 2016) index, positively affect women's perceived entrepreneurial capability and their entrepreneurial propensity.

Finally, Chapter 5 examines the effects of perceptions and the country-level development stage on women's entrepreneurial innovation. Based on a sample of 47,197 innovative entrepreneurs from 71 countries, the chapter's findings show that gender disparity in innovativeness is connected with gender differences in perceptions. This association is influenced by the development level of the country in which women are embedded. In line with Chapters 3 and 4, the findings emphasised that compared to men, women had a lower perception of entrepreneurial capability, lower opportunity recognition, a lower level of entrepreneurial networks, and a higher fear of failure. These disparities were stronger in more developed economies. In fact, this chapter shows that a higher level of a country's development stage is negatively connected with women's innovative entrepreneurship. Going from factor-driven

economies to innovation-driven economies, women's confidence toward innovation, evaluation of business opportunities and entrepreneurial networks decrease significantly.

6.2 Implications for theory and practice

6.2.1 Theoretical implications

The findings of this dissertation contribute to the women's entrepreneurship literature. The findings can be classified into three categories. The first group is women entrepreneurship and the influence of several socioeconomic and perceptual variables. Second, this dissertation contributes to understanding perceptual variables, particularly entrepreneurial role models, and their influence on entrepreneurship. Third, it further contributes to the entrepreneurship literature by highlighting the positive influence of role models on increasing the individuals' awareness of entrepreneurship. Finally, this study increases the current knowledge about women's entrepreneurship, innovative entrepreneurship, and institutional contexts.

Entrepreneurial role model literature

Within the entrepreneurship literature, this dissertation contributes to the role model literature (Schmutzler et al., 2019) in several ways. First, the systematic review of role models and entrepreneurship provides a structured view of the existing research. Additionally, the review provides the seedbed to identify research gaps in current scholarly conversations on entrepreneurial role models and suggests several future research questions.

Second, this dissertation's findings contribute to the ERM literature by demonstrating that exposure to role models conditions entrepreneurial outcomes. More importantly, this study found that the role models' effects depend on by whom, when and in which context the exposure to the role models occurs. In addition, the results underline that the inclusion of mentors and role models in entrepreneurship education, specifically at early ages, may augment entrepreneurial activities. By structuring the evidence from past literature, this research indicates that implementing appropriate role models in entrepreneurial programs could help to encourage women to engage in entrepreneurial activities.

Entrepreneurship education literature

This dissertation also contributes to the entrepreneurship education literature (e.g., Souitaris et al., 2007; Nowiński and Haddoud, 2019) in several ways. First, it extends the literature on entrepreneurship education by highlighting the positive influence of role models on boosting the individuals' awareness of entrepreneurship and their attitudes toward entrepreneurship. In line with the findings on existing entrepreneurship education and role model research (Fellnhöfer and Puumalainen, 2017), the outcomes of this dissertation suggest that including role models in entrepreneurial education programs could enhance entrepreneurial outcomes.

This dissertation, therefore, adds to the body of ongoing research on entrepreneurial role models (Noguera et al., 2013; Brunel et al., 2017) by shedding new light on their importance in stimulating entrepreneurship. In addition, this dissertation's findings from the empirical analysis and the literature review on role models and women entrepreneurship are in line with those from a few prior studies (e.g., Kickul et al., 2008; Noguera et al., 2013). In this context, the findings suggest that as observing entrepreneurial role models could increase the number of women entrepreneurs and as women have lower entrepreneurial networks than men, providing more role models for women is crucial.

Women entrepreneurship

Within the entrepreneurship literature, this dissertation contributes to the women's entrepreneurship literature in two ways. First, for women entrepreneurship, the findings show the strong explanatory value of perceptual variables. The prior research on women's propensity towards entrepreneurship did not examine the institutions' moderating role (Tsai et al., 2016) or conduct investigations in a single country (Camelo-Ordaz et al., 2016). Second, the findings illustrate the institutions' complex and important role in explaining women's entrepreneurship. Consequently, this study addresses prior calls for a comparative study in women's entrepreneurship area by advancing the macroperspective (Boudreaux et al., 2019; Gimenez-Jimenez et al., 2020) and analysing women's perceptions across nations.

In addition, the findings support the idea of women entrepreneurship's multi-layered character (Gimenez-Jimenez et al., 2020). In line with past authors (Gimenez-Jimenez et al., 2020), this research suggests that women's entrepreneurship cannot completely be explained without considering women's interactions with their surrounding institutions. Therefore, the findings provide insights into why women's entrepreneurial propensity and innovativeness

differ around the world. In particular, this research argues that the motivation to undertake a new business differs between "necessity" and "opportunity" women entrepreneurs.

Women's entrepreneurship and institutional contexts

This dissertation also has implications for women and country-level institutional contexts. The findings thus contribute to the field of entrepreneurship (De Clercq et al., 2013; Klyver et al., 2013) by investigating the effect of interactions between individual factors and country-level institutions on women's likelihood of undertaking a new business. The results indicate that although institutional contexts affect men's and women's entrepreneurial propensity, these impacts differ significantly across genders. This finding responds to prior calls for greater consideration of processes between institutional contexts and cognitive factors (Terjesen et al., 2016; Boudreaux et al., 2019). Specifically, this research's findings broaden the literature on institutions and entrepreneurship (Klyver et al., 2013) by emphasising women's interactions with their surrounding institutions, which shape their propensity toward entrepreneurship.

Whereas ongoing research on women entrepreneurship widely overlooks developing economies (e.g., Ahl and Nelson, 2015; Wang, 2019; Cochran, 2019; Cukier and Chavoushi, 2020), by including less developed countries in the sample, this research has contributed to calls for investigations in these countries. Moreover, following prior recommendations (Ahl, 2006), specifically examining the role that a country's level of economic development plays in entrepreneurship (Klyver et al., 2013), this study extends the literature that examines institutions and entrepreneurship (De Clercq et al., 2013). This dissertation found that in more developed economies, women's entrepreneurial activities tend to decrease. This finding suggests that considerably fewer women in more developed economies will be obliged to opt-in to entrepreneurial activities caused by an economic collapse. Higher nascent and innovative entrepreneurial activities in less developed countries can create more entrepreneurial role models that can provide a feedback loop for other women and encourage them to overcome their challenges and undertake a business.

More specifically, this dissertation shows that the economy's development level moderates the impact of perceptions on women's entrepreneurial propensity. In summary, a higher level of economic development negatively influences women's entrepreneurship. Lower gender differences in less developed economies could result from higher imitation opportunities in less developed economies. Imitative business ideas can be considered innovative in another environment. Therefore, in developing nations, women have higher imitation chances or are

inspired by innovative business ideas from more developed economies (Darnihamedani et al., 2018). This lower gender disparity in self-employment could be the result of lower women's employment chances (Dileo and Pereiro, 2019; Amorós et al., 2019), lower wages (Dileo and Pereiro, 2019), and a higher need for independency (Shinnar et al., 2012), which pushes women in less developed countries to engage in entrepreneurial activities. Moreover, women in developed economies have self-actualisation sources other than entrepreneurship; therefore, they are less motivated to undertake businesses (Solesvik et al., 2019). However, due to higher economic hindrances or limited financial access that women may experience in less developed countries, they might undertake very small businesses (Dileo and Pereiro, 2019). Therefore, the causes of gender disparities in developed and developing economies are different (Sarfaraz et al., 2014).

Women's innovative entrepreneurship

Finally, this dissertation contributes to understanding women's innovative entrepreneurship by investigating in two ways the determinants of women's innovative activity. On the one hand, the dissertation's empirical results confirm the high explanatory power of perceptions in elucidating women's innovative entrepreneurship. This finding supports prior investigations of women's entrepreneurship and perceptual factors (Koellinger et al., 2007; 2013; Dileo and Pereiro, 2019). On the other hand, it shows that women's innovative entrepreneurship is associated with a country's specific economic setting. In line with prior studies (Klyver et al., 2013), the empirical analysis shows a negative association between a country's development level and women's entrepreneurship.

6.2.2 Practical implications

Replicating and extending the study of KMS enables an understanding of the perceptions' impact in explaining women's entrepreneurship. Consequently, the findings of this dissertation provide practical implications for educational institutions and policy-makers.

Educational institutions

First, this study underlined that involving role models in entrepreneurial programs might encourage entrepreneurial intentions and activities (Block et al., 2013). Policymakers and educational representatives can benefit from the structured literature of entrepreneurial role

models and should efficiently include them in entrepreneurial programs, especially at early ages. Educational institutions need to be concerned about raising the students' awareness about the accessibility of organisational support systems. Second, in line with prior research (Koellinger et al., 2013; Brush et al., 2017), this study shows that women would be even more likely to start businesses if there were no gender disparity in perceived entrepreneurial capability. Studies have found a positive link between entrepreneurial programs (Peterman and Kennedy, 2003; Solomon et al., 2008; Kolstad and Wiig, 2015; García-Rodríguez et al., 2019) or introducing entrepreneurship as a "gender-neutral" occupation (Gupta et al., 2014) and entrepreneurial activities. Not surprisingly, educational representatives, such as schools, universities and private institutions, could play an important role in increasing entrepreneurial activities. More precisely, to raise perceived entrepreneurial capabilities, they could focus on promoting knowledge and skills linked to entrepreneurship.

Policymakers

A large number of governments have identified the importance of entrepreneurship in economic development and, therefore, forcefully encourage entrepreneurship, particularly women entrepreneurship, as the number of women entrepreneurs is significantly lower than that for men entrepreneurs. However, in line with a recent claim (Ahl and Nelson, 2015), this research argues that women's entrepreneurial activity and financial equality are not a policy priority, whereas creating gender equality in entrepreneurship through evolutionary changes, policies, educational representatives, and media is crucial. This conclusion is consistent with the cross-country study of women's entrepreneurship by Henry et al. (2017), which observed the prior studies' recommendations focused on women's individual-level rather than institutional and systematic barriers.

Therefore, to support women's entrepreneurship with efficient interventions and to positively foster women's entrepreneurial perceptions (Noguera et al., 2013), policy-makers need to design unique programs (Malach Pines et al., 2010) concerning context (Estrin et al., 2013; Schmutzler et al., 2019), laws and rules (Armour and Cumming, 2008), cultural aspects and women's status in society (BarNir et al., 2011). Accordingly, it is decisive that entrepreneurship will be displayed as a "gender-neutral" profession in the media (Shahriar, 2018) or in educational representatives. Changing or removing fundamental impediments that prevent women from starting businesses is a feasible policy if the policy considers women's regional institutions.

To provide practical guidelines for a policy, far more investigations into the relationship between perceptual variables and informal as well as formal institutional contexts are indisputably essential. For example, the positive effects on women's engagement in the labour market, of public expenditures for extended parental leave or for childcare are apparent. Policy-makers should do the following: analyse the institutional contexts; create country-specific policies or even adapt public policies to regional uniqueness (Wyrwich et al., 2016; Schmutzler et al., 2019); reduce obstacles; and motivate women to undertake businesses. In this respect, to improve the policy-makers' guidelines, far more research disentangling the processes between individuals and the institutions' multi-layered factors is crucial.

Women in more developed countries (e.g., Italy, Japan, Belgium, and Germany) had lower confidence in their entrepreneurial capabilities than women in less developed countries, such as Nigeria and Uganda. Policy-makers in more developed countries should focus on raising entrepreneurial competency among women. Knowing about available institutional support in these countries could increase women's propensity to engage in entrepreneurial activities. Although previous literature largely presents women's higher family obligations (Jennings and McDougald, 2007; Roomi et al., 2009; Tsai et al., 2016), legal rules and conditions for starting businesses are equal for both genders. For example, policy-makers could consider women's priorities, raising thus institutional support and creating a condition that attracts more women to entrepreneurial activities (Vracheva and Stoyneva, 2020). In addition, the exposure to role models could decrease fear of failure, increasing women's entrepreneurial self-efficacy (BarNir et al., 2011) and possibly weakening gender stereotypes (Rivera et al., 2007; Abbasiachavari and Moritz, 2020). In doing so, increasing the exposure to entrepreneurial role models in workshops, university courses, and schools could increase women's propensity toward entrepreneurship.

In developing countries, creating more opportunities for women could not only increase the number of women entrepreneurs but also encourage women to start businesses out of opportunity rather than for necessity. Considering the women's lower firm survival chances in these countries (Global Entrepreneurship Monitor, 2016), targeting practical approaches that provoke and maintain new businesses is critical. However, the lack of access to an initial financial resource (Wu et al., 2019) could be another reason preventing many women from starting a business; therefore, providing the initial financial support could probably motivate a number of women to start businesses. Another policy recommendation could be including entrepreneurial programs and involving entrepreneurial role models at early ages to introduce entrepreneurship as a "gender-neutral" occupation to children.

6.3 Limitations and future research avenues

This dissertation has some limitations, which at the same time open directions for future research. First, the findings made an important headway by implementing an institutional perspective on female entrepreneurship. The findings are considerably generalisable through diverse institutions. Nevertheless, revealing processes that form perceptions could profoundly affect women's cognitive mechanisms for starting a business. Future considerations could investigate the impact of formal and informal institutions, which appear to influence women's perceptions of starting businesses (Gimenez-Jimenez et al., 2020). Given the inflexibility of stereotypes in most nations (Gupta et al., 2014), investigating their role in shaping women's perceptions of entrepreneurship could considerably advance our understanding of entrepreneurship. We might hypothesise that the effects of stereotypes and sociocultural challenges will be considerably alleviated if there were an essential need to undertake a business. However, it would be of high interest to understand how these stereotypes influence perceptual variables in various institutional contexts.

The findings highlight that women's individual and social circumstances, which vary considerably across cultures (Reavley and Lituchy, 2008; Ramadani et al., 2013), may motivate or discourage them from starting businesses (Schoon and Duckworth, 2012; Shahriar, 2018). Prior scholars identified that balancing between being an entrepreneur and managing a family is a challenge for women (Jennings and McDougald, 2007). Investigations regarding the institutional factors that condition women's decisions to undertake a venture might be relevant (Klyver et al., 2013). Thus, one imaginable direction of further research could be the use of experimental methods to realise a more comprehensive analysis of the interactions between women's entrepreneurial perceptions and their surrounding institutions.

Although past scholars have expansively investigated the impact of formal (Puffer et al., 2010; Lee et al., 2011; Goltz et al., 2015) and informal (Webb et al., 2020; Gimenez-Jimenez et al., 2020) institutional contexts, the complete process of how they affect perceptions is relatively unknown. In this context, Langowitz and Minniti (2007) constructed the first advancement and focused on cognitive processes between women and their surrounding context. However, disentangling the process through which contextual variables influence perceptions remains to be accomplished. For example, considering the complexity of analysing sociocultural factors (Thornton et al., 2011), qualitative or novel experimental approaches could enable an in-depth investigation of the interactions between contextual variables and women's entrepreneurship and innovation. This dissertation focused on a country's economic level as an

institutional factor. However, future investigations could advance our understandings regarding the level of equality, marital status, tax system, and social norms, which could condition women's self-employment choice. For example, observed women's entrepreneurial activities are higher in less developed economies, while women's firm survival chances are higher in more developed economies (GEM, 2016). Therefore, further studies could explore the impact of perceptions considering firm survival chances across various institutions.

Second, more developed economies are overrepresented in our sample. To enhance the accuracy of the results, future investigations should take a closer look at developing economies. As ongoing investigations often ignore women entrepreneurship in less developed economies (e.g., Ahl and Nelson, 2015; Pettersson et al., 2017; Wang, 2019; Cochran, 2019; Cukier and Chavoushi, 2020), investigations in these countries could foster our understandings about women entrepreneurship and the moderating effects of institutional contexts.

Third, this research utilised the GEM dataset, which is cross-sectional; therefore, this study failed to analyse the relationships over time. Accordingly, one possible further research direction is employing a cross-country longitudinal study to explain the causal relationships between women's perceived entrepreneurial perceptions, individual-level variables, and institutional contexts. It would be appropriate to examine whether the findings of this research are sustained over longer periods.

Another limitation of this analysis is the lack of accuracy in the measures used to examine individual factors. For example, the variable *entrepreneurial role model* is based on a simple construct, which represents a limitation. A positive response to the question "Do you personally know someone who started a business in the past 2 years?" is not a definite confirmation that an individual had a personal connection (Bosma et al., 2012; Wyrwich et al., 2016). However, the specified period of "the last 2 years" might illustrate a personal connection for most of the participants. Moreover, the majority of research did not differentiate between ERMs (e.g., Van Auken et al., 2006; Lafuente and Vaillant, 2013; Nowiński and Haddoud, 2019); thus, examining the impact of different types of entrepreneurial role models could create a well-established scale, particularly when there are different types of role models (e.g., Boissin et al., 2011; Bosma et al., 2012; Laviolette et al., 2012) that influence entrepreneurial outcomes in different ways (e.g., Schoon and Duckworth, 2012; Eesley and Wang, 2017). While previous studies on role models suggest that observing female entrepreneurs may intensify women's entrepreneurial self-efficacy (Dempsey and Jennings, 2014), future research could investigate the effect of similar models.

Nevertheless, further investigation might utilise more precise measures or qualitative interviews to capture more accurate data. The final concern of this research is omitted variables. The results of this dissertation evidently reveal that omitted variables influence women entrepreneurship. Prior authors highlighted other factors, for example, the importance of the field of study (Leoni and Falk, 2010), financial support (van der Zwan et al., 2016) or family entrepreneurship (Greene et al., 2013), which are not involved in this study. Formal institutional factors, such as tax systems (Estrin and Mickiewicz, 2011; Welter et al., 2014), laws and regulations (Armour and Cumming, 2008) might condition the perceptual variables' influence on women's entrepreneurship. More importantly, prior research highlights the significance of access to financial capital (Danis et al., 2011) and venture capital, which were not involved in our analysis. Thus, further studies could investigate the interactions between these formal institutions and women's entrepreneurial propensity.

This research is a tiny step intended to draw attention to the link between entrepreneurial perceptions, women's entrepreneurship, and institutional contexts. Further investigations should step further and question which elements of the institutional environment influence women's entrepreneurial perceptions.

References

A

- Abbasianchavari, A., & Moritz, A. (2020). The impact of role models on entrepreneurial intentions and behavior: a review of the literature. *Management Review Quarterly*, 70 (1), 1-40.
- Acs, Z. J., & Amorós, J. E. (2008). Entrepreneurship and competitiveness dynamics in Latin America. *Small Business Economics*, 31(3), 305-322.
- Acs, Z. J., Autio, E., & Szerb, L. (2014). National systems of entrepreneurship: Measurement issues and policy implications. *Research Policy*, 43(3), 476-494.
- Ahl, H. (2006). Why research on women entrepreneurs needs new directions. *Entrepreneurship Theory and Practice*, 30(5), 595-621.
- Ahl, H., & Marlow, S. (2012). Exploring the dynamics of gender, feminism and entrepreneurship: advancing debate to escape a dead end?. *Organization*, 19(5), 543-562.
- Ahl, H., & Nelson, T. (2015). How policy positions women entrepreneurs: A comparative analysis of state discourse in Sweden and the United States. *Journal of Business Venturing*, 30(2), 273-291.
- Aidis, R., Welter, F., Smallbone, D., & Isakova, N. (2007). Female entrepreneurship in transition economies: the case of Lithuania and Ukraine. *Feminist Economics*, 13(2), 157-183.
- Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behaviour and Human Decision Processes*, 50(2), 179-211.
- Akehurst, G., Simarro, E., & Mas-Tur, A. (2012). Women entrepreneurship in small service firms: motivations, barriers and performance. *The Service Industries Journal*, 32(15), 2489-2505.
- Akerlof, G. A., & Kranton, R. E. (2000). "Economics and Identity." *Quarterly Journal of Economics*, 105(3), 715-53.
- Al-Dajani, H., & Marlow, S. (2010). Impact of women's home-based enterprise on family dynamics: Evidence from Jordan. *International Small Business Journal*, 28(5), 470-486.
- Allen, I. E., Langowitz, N., & Minniti, M. (2007). *Global Entrepreneurship Monitor*. 2006 report on women and entrepreneurship, 3(1), 54-88.

- Alsos, G. A., Hytti, U., & Ljunggren, E. (2013). Gender and innovation: state of the art and a research agenda. *International Journal of Gender and Entrepreneurship*, 5(3), 236-256.
- Alvarez, C., & Urbano, D. (2011). Environmental factors and entrepreneurial activity in Latin America. *Academia Revista Latinoamericana de Administración*, 48, 126-139.
- Amorós, J. E., Ciravegna, L., Mandakovic, V., & Stenholm, P. (2019). Necessity or opportunity? The effects of State fragility and economic development on entrepreneurial efforts. *Entrepreneurship Theory and Practice*, 43(4), 725-750.
- Andersson, L., & Hammarstedt, M. (2011). Transmission of self-employment across immigrant generations: the importance of ethnic background and gender. *Review of Economics of the Household*, 9(4), 555-577.
- Andersson, M., & Larsson, J. P. (2014). Local entrepreneurship clusters in cities. *Journal of Economic Geography*, 16(1), 39-66.
- Anokhin, S., & Schulze, W. S. (2009). Entrepreneurship, innovation, and corruption. *Journal of Business Venturing*, 24(5), 465-476.
- Aparicio, S., Urbano, D., & Audretsch, D. (2016a). Institutional factors, opportunity entrepreneurship and economic growth: Panel data evidence. *Technological forecasting and social change*, 102(C), 45-61.
- Aparicio, S., Urbano, D., & Gómez, D. (2016b). The role of innovative entrepreneurship within Colombian business cycle scenarios: A system dynamics approach. *Futures*, 81, 130-147.
- Arabiyat, T. S., Mdanat, M., Haffar, M., Ghoneim, A., & Arabiyat, O. (2019). The influence of institutional and conducive aspects on entrepreneurial innovation. *Journal of Enterprise Information Management*, 32(3), 366-389.
- Arenius, P., & De Clercq, D. (2005). A network-based approach on opportunity recognition. *Small Business Economics*, 24(3), 249-265.
- Arenius, P., & Minniti, M. (2005). Perceptual variables and nascent entrepreneurship. *Small Business Economics*, 24(3), 233-247.
- Armour, J., & Cumming, D. (2008). Bankruptcy law and entrepreneurship. *American Law and Economics Review*, 10(2), 303-350.
- Audretsch, D. B., Aldridge, T. T., & Sanders, M. (2011). Social capital building and new business formation: A case study in Silicon Valley. *International Small Business Journal*, 29(2), 152-169.
- Audretsch, D. B., Bönte, W., & Mahagaonkar, P. (2012). Financial signaling by innovative nascent ventures: The relevance of patents and prototypes. *Research Policy*, 41(8), 1407-1421.
- Austin, M. J., & Nauta, M. M. (2016). Entrepreneurial role-model exposure, self-efficacy, and women's entrepreneurial intentions. *Journal of Career Development*, 43(3), 260-272.
- Autio, E. (2007). Global entrepreneurship monitor: 2007 global report on high-growth entrepreneurship. *Babson College*.

- Autio, E., & Acs, Z. (2010). Intellectual property protection and the formation of entrepreneurial growth aspirations. *Strategic Entrepreneurship Journal*, 4(3), 234-251.
- Autio, E., Kenney, M., Mustar, P., Siegel, D., & Wright, M. (2014). Entrepreneurial innovation: The importance of context. *Research Policy*, 43(7), 1097-1108.
- Autio, E., Pathak, S., & Wennberg, K. (2013). Consequences of cultural practices for entrepreneurial behaviors. *Journal of International Business Studies*, 44(4), 334-362.
- B**
- Baker, T., Aldag, R., Blair, E. (2003). Gender and entrepreneurial opportunity evaluation. *Frontiers of Entrepreneurship Research*, 23, 689-702.
- Balachandra, L., Briggs, T., Eddleston, K., & Brush, C. (2019). Don't pitch like a girl!: how gender stereotypes influence investor decisions. *Entrepreneurship Theory and Practice*, 43(1), 116-137.
- Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. *Englewood Cliffs*, NJ: Prentice-Hall.
- Bandura, A., & McClelland, D. C. (1977). Social learning theory (Vol. 1). *Prentice Hall: Englewood Cliffs*.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37(2), 122.
- Banerjee, A. V., & Duflo, E. (2007). The economic lives of the poor. *Journal of Economic Perspectives*, 21(1), 141-168.
- BarNir, A., Watson, W. E., & Hutchins, H. M. (2011). Mediation and moderated mediation in the relationship among role models, self-efficacy, entrepreneurial career intention, and gender. *Journal of Applied Social Psychology*, 41(2), 270-297.
- Baron, R. A. (2004). The cognitive perspective: a valuable tool for answering entrepreneurship's basic "why" questions. *Journal of Business Venturing*, 19(2), 221-239.
- Barasa, L., Knobon, J., Vermeulen, P., Kimuyu, P., & Kinyanjui, B. (2017). Institutions, resources and innovation in East Africa: A firm level approach. *Research Policy*, 46(1), 280-291.
- Baregheh, A., Rowley, J., & Sambrook, S. (2009). Towards a multidisciplinary definition of innovation. *Management Decision*, 47(8), 1323-1339.
- BarNir, A. (2012). Starting technologically innovative ventures: reasons, human capital, and gender. *Management Decision*, 50(3), 399-419.
- Bates, T. (1995). Self-employment entry across industry groups. *Journal of Business Venturing*, 10(2), 143-156.
- Becker-Blease, J. R., & Sohl, J. E. (2007). Do women-owned businesses have equal access to angel capital?. *Journal of Business Venturing*, 22(4), 503-521.

- Belda, P. R., & Cabrer-Borrás, B. (2018). Necessity and opportunity entrepreneurs: Survival factors. *International Entrepreneurship and Management Journal*, 14(2), 249-264.
- Bergmann, H., & Sternberg, R. (2007). The changing face of entrepreneurship in Germany. *Small Business Economics*, 28(2-3), 205-221.
- Bettis, R. A., Helfat, C. E., & Shaver, J. M. (2016). The necessity, logic, and forms of replication. *Strategic Management Journal*, 37(11), 2193-2203.
- Bhagavatula, S., Elfring, T., Van Tilburg, A., & Van De Bunt, G. G. (2010). How social and human capital influence opportunity recognition and resource mobilization in India's handloom industry. *Journal of Business Venturing*, 25(3), 245-260.
- Bjerke, B. (2013). About entrepreneurship. *Edward Elgar Publishing*.
- Block, J. H., Fisch, C. O., & Van Praag, M. (2017). The Schumpeterian entrepreneur: a review of the empirical evidence on the antecedents, behaviour and consequences of innovative entrepreneurship. *Industry and Innovation*, 24(1), 61-95.
- Block, J. H., Hoogerheide, L., & Thurik, R. (2013). Education and entrepreneurial choice: An instrumental variables analysis. *International Small Business Journal*, 31(1), 23-33.
- Block, J. H., Kohn, K., Miller, D., & Ullrich, K. (2015). Necessity entrepreneurship and competitive strategy. *Small Business Economics*, 44(1), 37-54.
- Block, J., & Kuckertz, A. (2018). Seven principles of effective replication studies: strengthening the evidence base of management research. *Management Review Quarterly*, 68, 355-359.
- Block, J., & Sandner, P. (2009). Necessity and opportunity entrepreneurs and their duration in self-employment: evidence from German micro data. *Journal of Industry, Competition and Trade*, 9(2), 117-137.
- Block, J. H., & Wagner, M. (2010). Necessity and opportunity entrepreneurs in Germany: characteristics and earnings differentials. *Schmalenbach Business Review*, 62(2), 154-174.
- Block, J. H., & Walter, S. G. (2017). Hofstede's cultural dimensions and modes of entry into entrepreneurship. In Exploring the Entrepreneurial Society. *Edward Elgar Publishing*.
- Blumberg, B. F., & Pfann, G. A. (2016). Roads Leading to Self-Employment: Comparing Transgenerational Entrepreneurs and Self-Made Start-Ups. *Entrepreneurship Theory and Practice*, 40(2), 335-357.
- Bodolica, V., & Spraggon, M. (2014). Managing organisations in the United Arab Emirates: Dynamic characteristics and key economic developments. *Springer*.
- Boissin, J. P., Branchet, B., Delanoë, S., & Velo, V. (2011). Gender's perspective of role model influence on entrepreneurial behavioural beliefs. *International Journal of Business*, 16(2), 182.
- Bönte, W., & Piegeler, M. (2013). Gender gap in latent and nascent entrepreneurship: driven by competitiveness. *Small Business Economics*, 41(4), 961-987.

- Bosma, N. (2013). The Global Entrepreneurship Monitor (GEM) and its impact on entrepreneurship research. *Foundations and Trends in Entrepreneurship*, 9(2).
- Bosma, N., Hessels, J., Schutjens, V., Van Praag, M., & Verheul, I. (2012). Entrepreneurship and role models. *Journal of Economic Psychology*, 33(2), 410-424.
- Boudreaux, C. J., Nikolaev, B. N., & Klein, P. (2019). Socio-cognitive traits and entrepreneurship: The moderating role of economic institutions. *Journal of Business Venturing*, 34(1), 178-196.
- Box, M., & Larsson Segerlind, T. (2018). Entrepreneurial teams, gender, and new venture survival: contexts and institutions. *Sage Open*, 8(2), 1-17.
- Boyd, N. G., & Vozikis, G. S. (1994). The influence of self-efficacy on the development of entrepreneurial intentions and actions. *Entrepreneurship theory and practice*, 18(4), 63-77.
- Brixiová, Z., & Kangoye, T. (2016). Gender and constraints to entrepreneurship in Africa: New evidence from Swaziland. *Journal of Business Venturing Insights*, 5, 1-8.
- Brush, C. G. (2006). Women entrepreneurs: A research overview. *The Oxford handbook of entrepreneurship*.
- Brush, C., Ali, A., Kelley, D., & Greene, P. (2017). The influence of human capital factors and context on women's entrepreneurship: Which matters more?. *Journal of Business Venturing Insights*, 8, 105-113.
- Brush, C. G., De Bruin, A., & Welter, F. (2009). A gender-aware framework for women's entrepreneurship. *International Journal of Gender and entrepreneurship*, 1, 8-24.
- Brunel, O., Laviolette, E. M., & Radu-Lefebvre, M. (2017). Role Models and Entrepreneurial Intention: The Moderating Effects of Experience, Locus of Control and Self-Esteem. *Journal of Enterprising Culture*, 25(02), 149-177.
- Bullough, A., Renko, M., & Myatt, T. (2014). Danger zone entrepreneurs: the importance of resilience and self-efficacy for entrepreneurial intentions. *Entrepreneurship Theory and Practice*, 38(3), 473-499.
- Buunk, A. P., & Gibbons, F. X. (2007). Social comparison: The end of a theory and the emergence of a field. *Organizational Behaviour and Human Decision Processes*, 102(1), 3-21.
- C**
- Cabrera, E. M., & Mauricio, D. (2017). Factors affecting the success of women's entrepreneurship: a review of literature. *International Journal of Gender and Entrepreneurship*, 9(1), 31-65.
- Camelo-Ordaz, C., Diáñez-González, J. P., & Ruiz-Navarro, J. (2016). The influence of gender on entrepreneurial intention: The mediating role of perceptual factors. *BRQ Business Research Quarterly*, 19(4), 261-277.

- Camilli, G., Vargas, S., Ryan, S., & Barnett, W. S. (2010). Meta-analysis of the effects of early education interventions on cognitive and social development. *Teachers College Record*, 112(3), 579-620.
- Capelleras, J. L., Contín-Pilart, I., Martin-Sanchez, V., & Larraza-Kintana, M. (2013). The influence of individual perceptions and the urban/rural environment on nascent entrepreneurship. *Investigaciones Regionales-Journal of Regional Research*, (26), 97-113.
- Capelleras, J. L., Contin-Pilart, I., Larraza-Kintana, M., & Martin-Sanchez, V. (2019). Entrepreneurs' human capital and growth aspirations: The moderating role of regional entrepreneurial culture. *Small Business Economics*, 52(1), 3-25.
- Caputo, R. K., & Dolinsky, A. (1998). Women's choice to pursue self-employment: The role of financial and human capital of household members. *Journal of Small Business Management*, 36(3), 8.
- Carr, J. C., & Sequeira, J. M. (2007). Prior family business exposure as intergenerational influence and entrepreneurial intent: A theory of planned behaviour approach. *Journal of Business Research*, 60(10), 1090-1098.
- Carrasco, I. (2014). Gender gap in innovation: an institutionalist explanation. *Management Decision*, 52(2), 410-424.
- Carroll, G. R., & Mosakowski, E. (1987). The career dynamics of self-employment. *Administrative Science Quarterly*, 32, 570-589.
- Carroll, R. J., Wang, S., Simpson, D. G., Stromberg, A. J., & Ruppert, D. (1998). The sandwich (robust covariance matrix) estimator. Unpublished manuscript.
- Carter, N. and Brush, C. (2005). "Gender", in Gartner, W., Shaver, K., Carter, N. and Reynolds, P. (Eds), *Handbook of Entrepreneurial Dynamics: The Process of Business Creation*, Sage, Thousand Oaks, CA, pp. 12-25.
- Carter, S., Mwaura, S., Ram, M., Trehan, K., & Jones, T. (2015). Barriers to ethnic minority and women's enterprise: Existing evidence, policy tensions and unsettled questions. *International Small Business Journal*, 33(1), 49-69.
- Cetindamar, D., Gupta, V. K., Karadeniz, E. E., & Egrican, N. (2012). What the numbers tell: The impact of human, family and financial capital on women and men's entry into entrepreneurship in Turkey. *Entrepreneurship & Regional Development*, 24(1-2), 29-51.
- Chen, N., Ding, G., & Li, W. (2016). Do negative role models increase entrepreneurial Intentions? The moderating role of self-esteem. *Basic and Applied Social Psychology*, 38(6), 337-350.
- Chen, C. C., Greene, P. G., & Crick, A. (1998). Does entrepreneurial self-efficacy distinguish entrepreneurs from managers?. *Journal of Business Venturing*, 13(4), 295-316.
- Cheraghi, M., Aadsbøll Wickstrøm, K., & Klyver, K. (2019). Life-course and entry to entrepreneurship: embedded in gender and gender-egalitarianism. *Entrepreneurship & Regional Development*, 31(3-4), 242-258.

- Chlosta, S., Patzelt, H., Klein, S. B., & Dormann, C. (2012). Parental role models and the decision to become self-employed: The moderating effect of personality. *Small Business Economics*, 38(1), 121-138.
- Cochran, S. L. (2019). What's Gender Got to Do with It? The Experiences of US Women Entrepreneurship Students. *Journal of Small Business Management*, 57(1), 111-129.
- Contín-Pilart, I., & Larraza-Kintana, M. (2015). Do entrepreneurial role models influence the nascent entrepreneurial activity of immigrants?. *Journal of Small Business Management*, 53(4), 1146-1163.
- Criaco, G., Sieger, P., Wennberg, K., Chirico, F., & Minola, T. (2017). Parents' performance in entrepreneurship as a "double-edged sword" for the intergenerational transmission of entrepreneurship. *Small Business Economics*, 49(4), 841-864.
- Cromie, S. (1987). Motivations of aspiring male and female entrepreneurs. *Journal of Organizational Behavior*, 8(3), 251-261.
- Cukier, W., & Chavoushi, Z. H. (2020). Facilitating women entrepreneurship in Canada: the case of WEKH. *Gender in Management: An International Journal*, 35 (3), 303-318.
- Cullen, J. B., Johnson, J. L., & Parboteeah, K. P. (2014). National rates of opportunity entrepreneurship activity: insights from institutional anomie theory. *Entrepreneurship Theory and Practice*, 38(4), 775-806.
- Cundiff, J. L., Vescio, T. K., Loken, E., & Lo, L. (2013). Do gender–science stereotypes predict science identification and science career aspirations among undergraduate science majors?. *Social Psychology of Education*, 16(4), 541-554.
- Cunha, F., & Heckman, J. (2007). The technology of skill formation. *American Economic Review*, 97(2), 31-47.
- Curado, C., Henriques, L., & Bontis, N. (2011). Intellectual capital disclosure payback. *Management Decision*, 49(7), 1080-1098.
- D**
- Dabic, M., Daim, T., Bayraktaroglu, E., Novak, I., & Basic, M. (2012). Exploring gender differences in attitudes of university students towards entrepreneurship. *International Journal of Gender and Entrepreneurship*, 4, 316–336.
- Dalton, G and F Holdaway (1989). Preliminary findings - entrepreneur study. Working paper, Department of Organization Behaviour, Brigham Young University.
- Danis, W. M., De Clercq, D., & Petricevic, O. (2011). Are social networks more important for new business activity in emerging than developed economies? An empirical extension. *International Business Review*, 20(4), 394-408.
- Darnihamedani, P., Block, J. H., Hessels, J., & Simonyan, A. (2018). Taxes, start-up costs, and innovative entrepreneurship. *Small Business Economics*, 51(2), 355-369.
- Davidsson, P. (1995) Determinants of entrepreneurial intentions, RENT IX Workshop in Entrepreneurship Research, Piacenza, Italy, 23–24 November.

- Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, 18(3), 301-331.
- Davidsson, P. (2004). *Researching entrepreneurship* (Vol. 5). New York: *Springer*.
- Davidsson, P., & Wiklund, J. (1997). Values, beliefs and regional variations in new firm formation rates. *Journal of Economic Psychology*, 18(2-3), 179-199.
- Davis, P. J. (2012). The global training deficit: the scarcity of formal and informal professional development opportunities for women entrepreneurs. *Industrial and Commercial Training*, 44, 19-25.
- De Bruin, A., Brush, C. G., & Welter, F. (2007). Advancing a framework for coherent research on women's entrepreneurship. *Entrepreneurship Theory and Practice*, 31(3), 323-339.
- De Clercq, D., & Arenius, P. (2006). The role of knowledge in business start-up activity. *International Small Business Journal*, 24(4), 339-358.
- De Clercq, D., Lim, D. S., & Oh, C. H. (2013). Individual-level resources and new business activity: The contingent role of institutional context. *Entrepreneurship Theory and Practice*, 37(2), 303-330.
- Del Mar Fuentes-Fuentes, M., Bojica, A. M., Ruiz-Arroyo, M., & Welter, F. (2017). Innovativeness and business relationships in women-owned firms: The role of gender stereotypes. *Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration*, 34(1), 63-76.
- Demartini, P. (2018). Innovative female-led startups. Do women in business underperform?. *Administrative Sciences*, 8(4), 70.
- Dempsey, D., & Jennings, J. (2014). Gender and entrepreneurial self-efficacy: a learning perspective. *International Journal of Gender and Entrepreneurship*, 6(1), 28-49.
- DeTienne, D. R., & Chandler, G. N. (2007). The role of gender in opportunity identification. *Entrepreneurship Theory and Practice*, 31(3), 365-386.
- De Vita, L., Mari, M., & Poggesi, S. (2014). Women entrepreneurs in and from developing countries: Evidences from the literature. *European Management Journal*, 32(3), 451-460.
- Dileo, I., & Pereiro, T. G. (2019). Assessing the impact of individual and context factors on the entrepreneurial process. A cross-country multilevel approach. *International Entrepreneurship and Management Journal*, 15(4), 1393-1441.
- Díaz-García, M. C., & Jiménez-Moreno, J. (2010). Entrepreneurial intention: the role of gender. *International Entrepreneurship and Management Journal*, 6(3), 261-283.
- Diegoli, R. B., & Gutierrez, H. S. M. (2018). Teachers as Entrepreneurial Role Models: The Impact of a Teachers Entrepreneurial Experience and Student Learning Styles in Entrepreneurial Intentions. *Journal of Entrepreneurship Education*, 21(1), 1-11.
- Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J., & Wagner, G. G. (2011). Individual Risk Attitudes: Measurement, Determinants and behavioral Consequences. *Journal of the European Economic Association*, 9 (3), 522-550.

- Dohse, D., & Walter, S. G. (2012). Knowledge context and entrepreneurial intentions among students. *Small Business Economics*, 39(4), 877-895.
- Douglas, E. J., & Shepherd, D. A. (2002). Self-employment as a career choice: Attitudes, entrepreneurial intentions, and utility maximization. *Entrepreneurship Theory and Practice*, 26(3), 81-90.
- Driga, O., Lafuente, E., & Vaillant, Y. (2009). Reasons for the relatively lower entrepreneurial activity levels of rural women in Spain. *Sociologia Ruralis*, 49(1), 70-96.
- Dutta, S., & Lanvin, B. (2012). *The global innovation index 2012*. Stronger innovation linkages for global.
- Du Toit, W. F., & Muofhe, N. J. (2011). Entrepreneurial education's and entrepreneurial role models' influence on career choice. *SA Journal of Human Resource Management*, 9(1), 1-15.
- Dyer Jr, W. G., & Handler, W. (1994). Entrepreneurship and family business: Exploring the connections. *Entrepreneurship Theory and Practice*, 19(1), 71-83.
- E**
- Easley, C., & Wang, Y. (2017). Social influence in career choice: Evidence from a randomized field experiment on entrepreneurial mentorship. *Research Policy*, 46(3), 636-650.
- Engle, R. L., Schlaegel, C., & Delanoe, S. (2011). The role of social influence, culture, and gender on entrepreneurial intent. *Journal of Small Business & Entrepreneurship*, 24(4), 471-492.
- Entrialgo, M., & Iglesias, V. (2018). Are the Intentions to Entrepreneurship of Men and Women Shaped Differently? The Impact of Entrepreneurial Role-Model Exposure and Entrepreneurship Education. *Entrepreneurship Research Journal*, 8(1), 1-14.
- Estrin, S., Korosteleva, J., & Mickiewicz, T. (2013). Which institutions encourage entrepreneurial growth aspirations?. *Journal of Business Venturing*, 28(4), 564-580.
- Estrin, S., & Mickiewicz, T. (2011). Institutions and female entrepreneurship. *Small Business Economics*, 37(4), 397.
- Evans, W. N., & Schwab, R. M. (1995). Finishing high school and starting college: Do Catholic schools make a difference?. *The Quarterly Journal of Economics*, 110(4), 941-974.
- F**
- Fagenson, E. A., & Marcus, E. C. (1991). Perceptions of the sex-role stereotypic characteristics of entrepreneurs: women's evaluations. *Entrepreneurship Theory and Practice*, 15(4), 33-48.
- Falck, O., Heblich, S., & Luedemann, E. (2012). Identity and entrepreneurship: do school peers shape entrepreneurial intentions?. *Small Business Economics*, 39(1), 39-59.

- Fellnhofer, K. (2017a). A framework for a teaching toolkit in entrepreneurship education. *International Journal of Continuing Engineering Education and Life Long Learning*, 27(3), 246-261.
- Fellnhofer, K. (2017b). The power of passion in entrepreneurship education: Entrepreneurial role models encourage passion?. *Journal of Entrepreneurship Education*, 20(1), 58-87.
- Fellnhofer, K. (2018). Narratives boost entrepreneurial attitudes: Making an entrepreneurial career attractive?. *European Journal of Education*, 53(2), 218-237.
- Fellnhofer, K., & Puumalainen, K. (2017). Can role models boost entrepreneurial attitudes?. *International Journal of Entrepreneurship and Innovation Management*, 21(3), 274-290.
- Filstad, C. (2004). How newcomers use role models in organizational socialization. *Journal of Workplace Learning*, 16(7), 396-409.
- Fisch, C., and Block, J. (2018). Six tips for your (systematic) literature review in business and management research, *Management Review Quarterly*, 68(2), 103-106.
- Fishbein, M., & Ajzen, I. (2011). Predicting and changing behavior: The reasoned action approach. *Taylor & Francis*.
- Fischer, E.M., Reuber, A.R., & Dyke, L.S. (1993). A theoretical overview and extension of research on sex, gender and entrepreneurship. *Journal of Business Venturing*, 8 (2), 151–168.
- Fornahl, D. (2003). Entrepreneurial activities in a regional context. Cooperation, Networks and Institutions in Regional Innovation Systems. *Cheltenham: Edward Elgar*, 38-57.
- Forsman, J. A., & Barth, J. M. (2017). The effect of occupational gender stereotypes on men's interest in female-dominated occupations. *Sex Roles*, 76(7-8), 460-472.
- Foss, L., Henry, C., Ahl, H., & Mikalsen, G. H. (2019). Women's entrepreneurship policy research: a 30-year review of the evidence. *Small Business Economics*, 53(2), 409-429.
- Fritsch, M., & Wyrwich, M. (2017). The effect of entrepreneurship on economic development—an empirical analysis using regional entrepreneurship culture. *Journal of Economic Geography*, 17(1), 157-189.
- Fritsch, M., & Wyrwich, M. (2018). Regional knowledge, entrepreneurial culture, and innovative start-ups over time and space-an empirical investigation. *Small Business Economics*, 51(2), 337-353.
- Fuentelsaz, L., González, C., Maicas, J. P., & Montero, J. (2015). How different formal institutions affect opportunity and necessity entrepreneurship. *BRQ Business Research Quarterly*, 18(4), 246-258.
- Fuentelsaz, L., Maicas, J. P., & Montero, J. (2018). Entrepreneurs and innovation: The contingent role of institutional factors. *International Small Business Journal*, 36(6), 686-711.

G

- Galloway, L., & Kelly, S. W. (2009). Identifying entrepreneurial potential? An investigation of the identifiers and features of entrepreneurship. *International Review of Entrepreneurship*, 7(4), 1-24.
- García-Rodríguez, F. J., Gutiérrez-Taño, D., & Ruiz-Rosa, I. (2018). Analysis of the potential of entrepreneurship education in young children. *Entrepreneurship Research Journal*, 9(1), 1-9.
- García, M. C. D., & Welter, F. (2013). Gender identities and practices: Interpreting women entrepreneurs' narratives. *International Small Business Journal*, 31(4), 384-404.
- Gatewood, E. J., Brush, C. G., Carter, N. M., Greene, P. G., & Hart, M. M. (2009). Diana: a symbol of women entrepreneurs' hunt for knowledge, money, and the rewards of entrepreneurship. *Small Business Economics*, 32(2), 129-144.
- Geiger, M., & Oranburg, S. C. (2018). Female entrepreneurs and equity crowdfunding in the US: Receiving less when asking for more. *Journal of Business Venturing Insights*, 10 (C), 1-8.
- Geldhof, G. J., Weiner, M., Agans, J. P., Mueller, M. K., & Lerner, R. M. (2014). Understanding entrepreneurial intent in late adolescence: The role of intentional self-regulation and innovation. *Journal of Youth and Adolescence*, 43(1), 81-91.
- Global Entrepreneurship Monitor (2016), "Global report 2016/2017", available at: <https://www.gemconsortium.org/report/gem-2016-2017-global-report> (accessed 13 June 2019).
- Global Entrepreneurship Monitor (2018), "Global report 2017/18", available at: <https://www.gemconsortium.org/report/gem-2017-2018-global-report> (accessed 11 March 2020).
- Gibson, D. E. (2004). Role models in career development: New directions for theory and research. *Journal of Vocational Behaviour*, 65(1), 134-156.
- Giménez, D., & Calabrò, A. (2018). The salient role of institutions in Women's entrepreneurship: a critical review and agenda for future research. *International Entrepreneurship and Management Journal*, 14(4), 857-882.
- Gimenez-Jimenez, D., Calabrò, A., & Urbano, D. (2020). The neglected role of formal and informal institutions in women's entrepreneurship: a multi-level analysis. *Journal of International Entrepreneurship*, 18 (2), 196-226.
- Gnyawali, D. R., & Fogel, D. S. (1994). Environments for entrepreneurship development: key dimensions and research implications. *Entrepreneurship Theory and Practice*, 18(4), 43-62.
- Goltz, S., Buche, M. W., & Pathak, S. (2015). Political empowerment, rule of law, and women's entry into entrepreneurship. *Journal of Small Business Management*, 53(3), 605-626.

- Gonzalez-Alvarez, N., & Solis-Rodriguez, V. (2011). Discovery of entrepreneurial opportunities: a gender perspective. *Industrial Management & Data Systems*, 111(5), 755-775.
- Guzman, J., & Kacperczyk, A. O. (2019). Gender gap in entrepreneurship. *Research Policy*, 48(7), 1666-1680.
- Green, W. (1998). Gender economics courses in liberal arts colleges: *Comment* (No. 98-06, pp. 98-06). Working Papers.
- Greene, F. J., Han, L., & Marlow, S. (2013). Like mother, like daughter? Analyzing maternal influences upon women's entrepreneurial propensity. *Entrepreneurship Theory and Practice*, 37(4), 687-711.
- Guiso L, Pistaferri L, Schivardi, F. (2015). Learning entrepreneurship from other entrepreneurs? (No.w21775). *National Bureau of Economic Research*, Cambridge.
- Gupta, V. K., Goktan, A. B., & Gunay, G. (2014). Gender differences in evaluation of new business opportunity: A stereotype threat perspective. *Journal of Business Venturing*, 29(2), 273-288.
- Gupta, V. K., Turban, D. B., Wasti, S. A., & Sikdar, A. (2009). The role of gender stereotypes in perceptions of entrepreneurs and intentions to become an entrepreneur. *Entrepreneurship theory and practice*, 33(2), 397-417.
- Guzman, J., & Kacperczyk, A. O. (2019). Gender gap in entrepreneurship. *Research Policy*, 48(7), 1666-1680.
- ## H
- Hackett, G., and Betz, N. E. (1981). A self-efficacy approach to the career development of women. *Journal of Vocational Behaviour*, 18(3), 326-339.
- Hamilton, E. (2013). The discourse of entrepreneurial masculinities (and femininities). *Entrepreneurship & Regional Development*, 25(1-2), 90-99.
- Hechavarria, D. M., Renko, M., & Matthews, C. H. (2012). The nascent entrepreneurship hub: goals, entrepreneurial self-efficacy and start-up outcomes. *Small Business Economics*, 39(3), 685-701.
- Hechavarría, D. M., & Welter, C. (2015). Opportunity types, social entrepreneurship and innovation: Evidence from the panel study of entrepreneurial dynamics. *The International Journal of Entrepreneurship and Innovation*, 16(4), 237-251.
- Heckert, T. M., Droste, H. E., Adams, P. J., Griffin, C. M., Roberts, L. L., Mueller, M. A., & Wallis, H. A. (2002). Gender differences in anticipated salary: Role of salary estimates for others, job characteristics, career paths, and job inputs. *Sex roles*, 47(3-4), 139-151.
- Heckman, J. J. (2006). Skill formation and the economics of investing in disadvantaged children. *Science*, 312(5782), 1900-1902.
- Heckman, J. J. (1977). Dummy endogenous variables in a simultaneous equation system (No. w0177). *National Bureau of Economic Research*.

- Heckman, J., Pinto, R., & Savelyev, P. (2013). Understanding the mechanisms through which an influential early childhood program boosted adult behaviour. *American Economic Review*, 103(6), 2052-86.
- Henry, C., Foss, L., & Ahl, H. (2016). Gender and entrepreneurship research: A review of methodological approaches. *International Small Business Journal*, 34(3), 217-241.
- Henry, C., Orser, B., Coleman, S., Foss, L., & Welter, F. (2017). Women's entrepreneurship policy: a 13-nation cross-country comparison. In *Entrepreneurial Ecosystems and Growth of Women's Entrepreneurship*. Edward Elgar Publishing, A 13, 244-278.
- Hessels, J., Grilo, I., Thurik, R., & van der Zwan, P. (2011). Entrepreneurial exit and entrepreneurial engagement. *Journal of Evolutionary Economics*, 21(3), 447-471.
- Hickie, J. (2011). The development of human capital in young entrepreneurs. *Industry and Higher Education*, 25(6), 469-481.
- Hoffmann, A., Junge, M., & Malchow-Møller, N. (2015). Running in the family: parental role models in entrepreneurship. *Small Business Economics*, 44(1), 79-104.
- Hofstede, G.H. (1980), *Culture's Consequences: International Differences in Work-related Values*, Beverly Hills, California, USA, *Sage Publications Inc*, 1980: 157-158.
- Hofstede, G., Hofstede, G. J., & Minkov, M. (2005). *Cultures and organizations: Software of the mind* (Vol. 2). *New York: Mcgraw-hill*.
- Holienka, M., Jančovičová, Z., & Kovačičová, Z. (2016). Drivers of women entrepreneurship in Visegrad countries: GEM evidence. *Procedia-Social and Behavioral Sciences*, 220, 124-133.
- Holtz-Eakin, D., Joulfaian, D., & Rosen, H. S. (1994). Sticking it out: Entrepreneurial survival and liquidity constraints. *Journal of Political economy*, 102(1), 53-75.
- Huber, P. J. (1967). The behavior of maximum likelihood estimates under nonstandard conditions. *In Proceedings of the fifth Berkeley symposium on mathematical statistics and probability*, 1(1), 221-233.
- Hughes, K. D., Jennings, J. E., Brush, C., Carter, S., & Welter, F. (2012). Extending women's entrepreneurship research in new directions. *Entrepreneurship Theory and Practice*, 36(3), 429-442.
- Hundt, C., & Sternberg, R. (2016). Explaining new firm creation in Europe from a spatial and time perspective: A multilevel analysis based upon data of individuals, regions and countries. *Papers in Regional Science*, 95(2), 223-257.
- Huyghe, A., & Knockaert, M. (2015). The influence of organizational culture and climate on entrepreneurial intentions among research scientists. *The Journal of Technology Transfer*, 40(1), 138-160.

J

- Jabeen, F., Faisal, M. N., Al Matroushi, H., & Farouk, S. (2019). Determinants of innovation decisions among Emirati female-owned small and medium enterprises. *International Journal of Gender and Entrepreneurship*, 11(4), 408-434.
- Jaén, I., & Liñán, F. (2013). Work values in a changing economic environment: the role of entrepreneurial capital. *International Journal of Manpower*, 34(8), 939-960.
- Jamali, D. (2009). Constraints and opportunities facing women entrepreneurs in developing countries. *Gender in Management: An International Journal*, 24(4), 232–251.
- Javadian, G., & Singh, R. P. (2012). Examining successful Iranian women entrepreneurs: an exploratory study. *Gender in Management: An International Journal*, 27(3), 148–164.
- Jennings, J. E., & Brush, C. G. (2013). Research on women entrepreneurs: challenges to (and from) the broader entrepreneurship literature?. *Academy of Management Annals*, 7(1), 663-715.
- Jennings, J. E., & McDougald, M. S. (2007). Work-family interface experiences and coping strategies: Implications for entrepreneurship research and practice. *Academy of Management Review*, 32(3), 747-760.
- Joensuu-Salo, S., Varamäki, E., & Viljamaa, A. (2015). Beyond intentions—what makes a student start a firm?. *Education+ Training*, 57(8/9), 853-873.
- Johnson, R. D., Stone, D. L., & Phillips, T. N. (2008). Relations among ethnicity, gender, beliefs, attitudes, and intention to pursue a career in information technology. *Journal of Applied Social Psychology*, 38(4), 999-1022.
- Jones, M. V., Coviello, N., & Tang, Y. K. (2011). International entrepreneurship research (1989–2009): a domain ontology and thematic analysis. *Journal of business venturing*, 26(6), 632-659.

K

- Kacperczyk, A. J. (2013). Social influence and entrepreneurship: The effect of university peers on entrepreneurial entry. *Organization Science*, 24(3), 664-683.
- Karimi, S., Biemans, H. J., Lans, T., Chizari, M., Mulder, M., & Mahdei, K. N. (2013). Understanding role models and gender influences on entrepreneurial intentions among college students. *Procedia-Social and Behavioural Sciences*, 93, 204-214.
- Karimi, S., JA Biemans, H., Lans, T., Chizari, M., & Mulder, M. (2014). Effects of role models and gender on students' entrepreneurial intentions. *European Journal of Training and Development*, 38(8), 694-727.
- Karimi, S., Biemans, H. J., Naderi Mahdei, K., Lans, T., Chizari, M., & Mulder, M. (2017). Testing the relationship between personality characteristics, contextual factors and entrepreneurial intentions in a developing country. *International Journal of Psychology*, 52(3), 227-240.

- Kassouf, A. L., & Hoffmann, R. (2006). Work-related injuries involving children and adolescents: Application of a recursive bivariate probit model. *Brazilian Review of Econometrics*, 26(1), 105-126.
- Kelley, D., Singer, S., Herrington, M. (2015). 2016 global report. GEM Global Entrepreneurship Monitor, Babson College, Universidad del Desarrollo, Universiti Tun Abdul Razak, Tecnológico de Monterrey, *International Council for Small Business (ICSB)*, Wellesley, MA.
- Kennedy, J., Drennan, J., Renfrow, P., & Watson, B. (2003). The influence of role models on students' entrepreneurial intentions. *Queensland Review*, 10(1), 37-52.
- Kickul, J., Wilson, F., Marlino, D., & Barbosa, S. D. (2008). Are misalignments of perceptions and self-efficacy causing gender gaps in entrepreneurial intentions among our nation's teens?. *Journal of Small Business and Enterprise Development*, 15(2), 321-335.
- Kirkwood, J. (2007). Igniting the entrepreneurial spirit: is the role parents play gendered?. *International Journal of Entrepreneurial Behaviour & Research*, 13(1), 39-59.
- Kirkwood, J., & Tootell, B. (2008). Is entrepreneurship the answer to achieving work-family balance?. *Journal of Management and Organization*, 14(3), 285-302.
- Kirzner, I.M. (1973), Competition and Entrepreneurship, *University of Chicago Press*, Chicago, IL.
- Kirzner, I. M. (1978). Competition and entrepreneurship. Chicago, IL: *University of Chicago Press*.
- Kirzner, I. M. (1979). Perception, opportunity, and profit: Studies in the theory of entrepreneurship, Chicago: *University of Chicago Press*, 142-143.
- Klyver, K., Nielsen, S. L., & Evald, M. R. (2013). Women's self-employment: An act of institutional (dis) integration? A multilevel, cross-country study. *Journal of Business Venturing*, 28(4), 474-488.
- Koellinger, P. (2008). Why are some entrepreneurs more innovative than others?. *Small Business Economics*, 31(1), 21-37.
- Koellinger, P., Minniti, M., & Schade, C. (2007). "I think I can, I think I can": Overconfidence and entrepreneurial behaviour. *Journal of Economic Psychology*, 28(4), 502-527.
- Koellinger, P., Minniti, M., & Schade, C. (2013). Gender differences in entrepreneurial propensity. *Oxford Bulletin of Economics and Statistics*, 75(2), 213-234.
- Koellinger, P., Minniti, M., & Schade, C. (2008). Seeing the world with different eyes: Gender differences in perceptions and the propensity to start a business. Available at SSRN 1115354.
- Kolstad, I., & Wiig, A. (2015). Education and entrepreneurial success. *Small Business Economics*, 44(4), 783-796.

- Kolvereid, L. (1996). Prediction of employment status choice intentions. *Entrepreneurship Theory and Practice*, 21(1), 47-58.
- Krueger Jr, N. F. (2007). What lies beneath? The experiential essence of entrepreneurial thinking. *Entrepreneurship Theory and Practice*, 31(1), 123-138.
- Krueger Jr, N. F., & Brazeal, D. V. (1994). Entrepreneurial potential and potential entrepreneurs. *Entrepreneurship Theory and Practice*, 18(3), 91-104.
- Krueger, N. F., & Carsrud, A. L. (1993). Entrepreneurial intentions: applying the theory of planned behaviour. *Entrepreneurship & Regional Development*, 5(4), 315-330.
- Krueger, N., Liñán, F., & Nabi, G. (2013). Cultural values and entrepreneurship. *Entrepreneurship and Regional Development: An International Journal*, 25(9-10), 703-707.
- Krueger Jr, N. F., Reilly, M. D., & Carsrud, A. L. (2000). Competing models of entrepreneurial intentions. *Journal of Business Venturing*, 15(5-6), 411-432.
- Krumboltz, J. D., Mitchell, A. M., & Jones, G. B. (1976). A social learning theory of career selection. *The Counseling Psychologist*, 6(1), 71-81.
- Kuratko, D. F., Hornsby, J. S., & Naffziger, D. W. (1997). An examination of owner's goals in sustaining entrepreneurship. *Journal of Small Business Management*, 35(1), 24-33.
- L**
- Lafuente, E. M., & Vaillant, Y. (2013). Age driven influence of role-models on entrepreneurship in a transition economy. *Journal of Small Business and Enterprise Development*, 20(1), 181-203.
- Lafuente, E., Vaillant, Y., & Rialp, J. (2007). Regional differences in the influence of role models: Comparing the entrepreneurial process of rural Catalonia. *Regional Studies*, 41(6), 779-796.
- Langowitz, N., & Minniti, M. (2007). The entrepreneurial propensity of women. *Entrepreneurship Theory and Practice*, 31(3), 341-364.
- Langowitz, N., Sharpe, N., & Godwyn, M. (2006). Women's business centers in the United States: Effective entrepreneurship training and policy implementation. *Journal of Small Business & Entrepreneurship*, 19(2), 167-182.
- Langowitz, N., Sharpe, N., & Godwyn, M. (2006). Women's business centers in the United States: Effective entrepreneurship training and policy implementation. *Journal of Small Business & Entrepreneurship*, 19(2), 167-182.
- Laspita, S., Breugst, N., Heblich, S., & Patzelt, H. (2012). Intergenerational transmission of entrepreneurial intentions. *Journal of Business Venturing*, 27(4), 414-435.
- Lavolette, E. M., Radu Lefebvre, M., & Brunel, O. (2012). The impact of story bound entrepreneurial role models on self-efficacy and entrepreneurial intention. *International Journal of Entrepreneurial Behaviour & Research*, 18(6), 720-742.

- Lee, J. (1996). The motivation of women entrepreneurs in Singapore. *Women in Management Review*, 11(2), 18-29.
- Lee, J. H., Sohn, S. Y., & Ju, Y. H. (2011). How effective is government support for Korean women entrepreneurs in small and medium enterprises?. *Journal of Small Business Management*, 49(4), 599-616.
- Leoni, T., & Falk, M. (2010). Gender and field of study as determinants of self-employment. *Small Business Economics*, 34(2), 167-185.
- Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behaviour*, 45(1), 79-122.
- Levy, Y., and Ellis, T.J. (2006). A Systems approach to conduct an effective literature review in support of information systems research. *Informing Science: the International Journal of an Emerging Transdiscipline*, (9), 181-212.
- Lim, D. S., Morse, E. A., Mitchell, R. K., & Seawright, K. K. (2010). Institutional environment and entrepreneurial cognitions: A comparative business systems perspective. *Entrepreneurship Theory and Practice*, 34(3), 491-516.
- Liñán, F., & Chen, Y. W. (2009). Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurship Theory and Practice*, 33(3), 593-617.
- Liñán, F., & Fayolle, A. (2015). A systematic literature review on entrepreneurial intentions: citation, thematic analyses, and research agenda. *International Entrepreneurship and Management Journal*, 11(4), 907-933.
- Liñán, F., Nabi, G., & Krueger, N. (2013). British and Spanish entrepreneurial intentions: A comparative study. *Revista de economía Mundial*, (33), 73-103.
- Liñán, F., & Santos, F. J. (2007). Does social capital affect entrepreneurial intentions?. *International Advances in Economic Research*, 13(4), 443-453.
- Liñán, F., Urbano, D., & Guerrero, M. (2011). Regional variations in entrepreneurial cognitions: Start-up intentions of university students in Spain. *Entrepreneurship and Regional Development*, 23(3-4), 187-215.
- Lindquist, M. J., Sol, J., & Van Praag, M. (2015). Why do entrepreneurial parents have entrepreneurial children?. *Journal of Labor Economics*, 33(2), 269-296.
- Lockwood, P. (2006). "Someone like me can be successful": Do college students need same-gender role models?. *Psychology of Women Quarterly*, 30(1), 36-46.
- Lockwood, P., & Kunda, Z. (1997). Superstars and me: Predicting the impact of role models on the self. *Journal of Personality and Social Psychology*, 73(1), 91-103.
- Lukeš, M. (2013). Entrepreneurs as Innovators: A Multi-Country Study on Entrepreneurs' Innovative Behaviour. *Prague Economic Papers*, 22(1), 72-84.

Lüthje, C., & Franke, N. (2003). The 'making' of an entrepreneur: testing a model of entrepreneurial intent among engineering students at MIT. *R&d Management*, 33(2), 135-147.

M

Maden, C. (2015). A gendered lens on entrepreneurship: Women entrepreneurship in Turkey. *Gender in Management: An International Journal*, 30(4), 312.

Malach Pines, A., Lerner, M., & Schwartz, D. (2010). Gender differences in entrepreneurship. *Equality, diversity and inclusion: An International Journal*, 29(2), 186-198.

Malerba, F., & McKelvey, M. (2020). Knowledge-intensive innovative entrepreneurship integrating Schumpeter, evolutionary economics, and innovation systems. *Small Business Economics*, 54(2), 503-522.

Malmström, M., Voitkane, A., Johansson, J., & Wincent, J. (2020). What do they think and what do they say? Gender bias, entrepreneurial attitude in writing and venture capitalists' funding decisions. *Journal of Business Venturing Insights*, 13 (C), e00154.

Marlow, S. (2002). Women and self-employment: a part of or apart from theoretical construct?. *The International Journal of Entrepreneurship and Innovation*, 3(2), 83-91.

Marlow, S., & Martinez, Dy, A. (2018). Annual review article: Is it time to rethink the gender agenda in entrepreneurship research?. *International Small Business Journal*, 36(1), 3-22.

Marlow, S., & Patton, D. (2005). All credit to men? Entrepreneurship, finance, and gender. *Entrepreneurship theory and practice*, 29(6), 717-735.

Marlow, S., & Swail, J. (2014). Gender, risk and finance: why can't a woman be more like a man?. *Entrepreneurship & Regional Development*, 26(1-2), 80-96.

Marx, D. M., & Goff, P. A. (2005). Clearing the air: The effect of experimenter race on target's test performance and subjective experience. *British Journal of Social Psychology*, 44(4), 645-657.

Marx, D. M., Stapel, D. A., & Muller, D. (2005). We can do it: The interplay of a collective self-construal orientation and social comparisons under threat. *Journal of Personality and Social Psychology*, 88(3), 432-446.

Marx, D. M., Ko, S. J., & Friedman, R. A. (2009). The "Obama effect": How a salient role model reduces race-based performance differences. *Journal of Experimental Social Psychology*, 45(4), 953-956.

Mathews, C. H., & Moser, S. B. (1995). Family background and gender: Implications for interest in small firm ownership. *Entrepreneurship & Regional Development*, 7(4), 365-378.

Matthews, C. H., & Moser, S. B. (1996). A Longitudinal Investigation of the Impact of Family Background. *Journal of Small Business Management*, 34(2), 29-43.

McClelland, D. C. (1965). N achievement and entrepreneurship: A longitudinal study. *Journal of Personality and Social Psychology*, 1(4), 389-392.

- McGowan, P., Cooper, S., Durkin, M., & O'kane, C. (2015). The influence of social and human capital in developing young women as entrepreneurial business leaders. *Journal of Small Business Management*, 53(3), 645-661.
- McMullen, J. S., Bagby, D. R., & Palich, L. E. (2008). Economic freedom and the motivation to engage in entrepreneurial action. *Entrepreneurship Theory and Practice*, 32(5), 875-895.
- Mehtap, S., Pellegrini, M. M., Caputo, A., & Welsh, D. H. (2017). Entrepreneurial intentions of young women in the Arab world. *International Journal of Entrepreneurial Behavior & Research*, 23(6), 880-902.
- Meoli, A., Fini, R., Sobrero, M., & Wiklund, J. (2020). How entrepreneurial intentions influence entrepreneurial career choices: The moderating influence of social context. *Journal of Business Venturing*, 35(3), 105982.
- Miao, Q., Newman, A., Schwarz, G., & Cooper, B. (2018). How Leadership and Public Service Motivation Enhance Innovative Behaviour. *Public Administration Review*, 78(1), 71-81.
- Mickiewicz, T., Nyakudya, F. W., Theodorakopoulos, N., & Hart, M. (2017). Resource endowment and opportunity cost effects along the stages of entrepreneurship. *Small Business Economics*, 48(4), 953-976.
- Millan, J. M., Congregado, E., Roman, C., Van Praag, M., & Van Stel, A. (2014). The value of an educated population for an individual's entrepreneurship success. *Journal of Business Venturing*, 29(5), 612-632.
- Minniti, M. (2005). Entrepreneurship and network externalities. *Journal of Economic Behaviour & Organization*, 57(1), 1-27.
- Minniti, M. (2010). Female entrepreneurship and economic activity. *The European Journal of Development Research*, 22(3), 294-312.
- Minniti, M., & Lévesque, M. (2010). Entrepreneurial types and economic growth. *Journal of Business Venturing*, 25(3), 305-314.
- Minniti, M., & Nardone, C. (2007). Being in someone else's shoes: the role of gender in nascent entrepreneurship. *Small Business Economics*, 28(2-3), 223-238.
- Mitchell, L. K. & Krumboltz, J. D. (1984). Social learning approach to career decision making: Krumboltz's theory. In D. Brown and L. Brooks (Eds.), *Career choice and development*. San Francisco: Jossey-Bass.
- Morales-Alonso, G., Pablo-Lerchundi, I., & Vargas-Perez, A. M. (2016). An Empirical Study on the Antecedents of Knowledge Intensive Entrepreneurship. *International Journal of Innovation and Technology Management*, 13(05), 1-15.
- Mousa, F. T., & Wales, W. (2012). Founder effectiveness in leveraging entrepreneurial orientation. *Management Decision*, 50(2), 305-324.
- Mrożewski, M., & Kratzer, J. (2017). Entrepreneurship and country-level innovation: Investigating the role of entrepreneurial opportunities. *The Journal of Technology Transfer*, 42(5), 1125-1142.

- Mueller, P. (2006). Entrepreneurship in the region: breeding ground for nascent entrepreneurs?. *Small Business Economics*, 27(1), 41-58.
- Mueller, S. (2011). Increasing entrepreneurial intention: effective entrepreneurship course characteristics. *International Journal of Entrepreneurship and Small Business*, 13(1), 55-74.
- Mueller, P. S., Murali, N. S., Cha, S. S., Erwin, P. J., & Ghosh, A. K. (2006). The association between impact factors and language of general internal medicine journals. *Swiss Medical Weekly*, 136(27-28): 441-443.
- Mungai, E., & Velamuri, S. R. (2011). Parental entrepreneurial role model influence on male offspring: Is it always positive and when does it occur?. *Entrepreneurship Theory and Practice*, 35(2), 337-357.
- N**
- Naidu, S., & Chand, A. (2017). National culture, gender inequality and women's success in micro, small and medium enterprises. *Social Indicators Research*, 130(2), 647-664.
- Nanda, R., and Sørensen, J. B. (2010). Workplace peers and entrepreneurship. *Management Science*, 56(7), 1116-1126.
- Nauta, M. M., Epperson, D. L., & Kahn, J. H. (1998). A multiple-groups analysis of predictors of higher level career aspirations among women in mathematics, science, and engineering majors. *Journal of Counseling Psychology*, 45(4), 483-496.
- Nelson, T., Maxfield, S., & Kolb, D. (2009). Women entrepreneurs and venture capital: managing the shadow negotiation. *International Journal of Gender and Entrepreneurship*, 1(1), 57-76.
- Neumeyer, X., Santos, S. C., Caetano, A., & Kalbfleisch, P. (2019). Entrepreneurship ecosystems and women entrepreneurs: a social capital and network approach. *Small Business Economics*, 53(2), 475-489.
- Nicolaou, N., Patel, P. C., & Wolfe, M. T. (2018). Testosterone and tendency to engage in self-employment. *Management Science*, 64(4), 1825-1841.
- Niederle, M., & Vesterlund, L. (2007). Do women shy away from competition? Do men compete too much?. *The Quarterly Journal of Economics*, 122(3), 1067-1101.
- Niittykangas, H., and Tervo, H. (2005). Spatial variations in intergenerational transmission of self-employment. *Regional Studies*, 39(3), 319-332.
- Noguera, M., Alvarez, C., and Urbano, D. (2013). Socio-cultural factors and female entrepreneurship. *International Entrepreneurship and Management Journal*, 9(2), 183-197.
- North, D.C. (1990). Institutions, Institutional Change and Economic Performance. *Cambridge University Press*, Cambridge.
- North D.C. (2005). Understanding the Process of Economic Change. Princeton, NJ. Princeton University Press. *OECD (1998) Fostering Entrepreneurship*. Paris: OECD.

Nowiński, W., and Haddoud, M. Y. (2019). The role of inspiring role models in enhancing entrepreneurial intention. *Journal of Business Research*, 96(C), 183-193.

O

Obschonka, M., Silbereisen, R. K., Schmitt-Rodermund, E., & Stuetzer, M. (2011). Nascent entrepreneurship and the developing individual: Early entrepreneurial competence in adolescence and venture creation success during the career. *Journal of Vocational Behaviour*, 79(1), 121-133.

Obschonka, M., & Stuetzer, M. (2017). Integrating psychological approaches to entrepreneurship: the Entrepreneurial Personality System (EPS). *Small Business Economics*, 49(1), 203-231.

Ogbor, J. O. (2000). Mythicizing and reification in entrepreneurial discourse: Ideology-critique of entrepreneurial studies. *Journal of Management Studies*, 37(5), 605-635.

Owalla, B., Nyanzu, E., & Vorley, T. (2020). Intersections of gender, ethnicity, place and innovation: mapping the diversity of women-led SMEs in the UK. *International Small Business Journal*. ISSN 0266-2426 (In Press)

Ozgen, E., & Baron, R. (2007). Social sources of information in opportunity recognition: Effects of mentors, industry networks, and professional forums. *Journal of Business Venturing*, 22(2), 174-192.

P

Pablo-Lerchundi, I., Morales-Alonso, G., & González-Tirados, R. M. (2015). Influences of parental occupation on occupational choices and professional values. *Journal of Business Research*, 68(7), 1645-1649.

Peterman, N. E., & Kennedy, J. (2003). Enterprise education: Influencing students' perceptions of entrepreneurship. *Entrepreneurship Theory and Practice*, 28(2), 129-144.

Pettersson, K., Ahl, H., Berglund, K., & Tillmar, M. (2017). In the name of women? Feminist readings of policies for women's entrepreneurship in Scandinavia. *Scandinavian Journal of Management*, 33(1), 50-63.

Podsakoff, P. M., Mackenzie, S. B., Bachrach, D. G., & Podsakoff, N. P. (2005). The influence of management journals in the 1980s and 1990s. *Strategic Management Journal*, 26(5), 473-488.

Portes, A. (1998). Social capital: It's origins and applications in contemporary society. *Annual Review of Sociology*, 24(1), 1-24.

Powell, G. N., & Graves, L. M. (2003). Women and men in management. *Thousand Oaks: Sage*.

Pruett, M., Shinnar, R., Toney, B., Llopis, F., & Fox, J. (2009). Explaining entrepreneurial intentions of university students: a cross-cultural study. *International Journal of Entrepreneurial Behaviour & Research*, 15(6), 571-594.

Puente, R., González Espitia, C. G., & Cervilla, M. A. (2019). Necessity entrepreneurship in Latin America: it's not that simple. *Entrepreneurship & Regional Development*, 31(9-10), 953-983.

Puffer, S. M., McCarthy, D. J., & Boisot, M. (2010). Entrepreneurship in Russia and China: The impact of formal institutional voids. *Entrepreneurship Theory and Practice*, 34(3), 441-467.

R

Radu, M., & Loué, C. (2008). Motivational impact of role models as moderated by "ideal" vs. "ought self-guides" identifications. *Journal of Enterprising Culture*, 16(04), 441-465.

Rahman, H., & Day, J. (2014). Involving the entrepreneurial role model: A possible development for entrepreneurship education. *Journal of Entrepreneurship Education*, 17(2), 163-171.

Ramadani, V., Gërguri, S., Dana, L. P., & Tašaminova, T. (2013). Women entrepreneurs in the Republic of Macedonia: waiting for directions. *International Journal of Entrepreneurship and Small Business*, 19(1), 95-121.

Reavley, M. A., & Lituchy, T. R. (2008). Successful women entrepreneurs: A six-country analysis of self-reported determinants of success-more than just dollars and cents. *International Journal of Entrepreneurship and Small Business*, 5(3), 272-296.

Reynolds, P., Bosma, N., Autio, E., Hunt, S., De Bono, N., Servais, I., ... & Chin, N. (2005). Global entrepreneurship monitor: Data collection design and implementation 1998-2003. *Small Business Economics*, 24(3), 205-231.

Rivera, L. M., Chen, E. C., Flores, L. Y., Blumberg, F., & Ponterotto, J. G. (2007). The effects of perceived barriers, role models, and acculturation on the career self-efficacy and career consideration of Hispanic women. *The Career Development Quarterly*, 56(1), 47-61.

Robinson, P. B., Stimpson, D. V., Huefner, J. C., & Hunt, H. K. (1991). An attitude approach to the prediction of entrepreneurship. *Entrepreneurship Theory and Practice*, 15(4), 13-32.

Robinson, S., Neergaard, H., Tanggaard, L., & Krueger, N. F. (2016). New horizons in entrepreneurship education: from teacher-led to student-centered learning. *Education+ Training*, 58(7/8), 661-683.

Roig-Tierno, N., Alcázar, J., & Ribeiro-Navarrete, S. (2015). Use of infrastructures to support innovative entrepreneurship and business growth. *Journal of Business Research*, 68(11), 2290-2294.

Roomi, M. A., Harrison, P., & Beaumont-Kerridge, J. (2009). Women-owned small and medium enterprises in England. *Journal of Small Business and Enterprise Development*, 16, 270-288.

Roper, S., & Scott, J. M. (2009). Perceived financial barriers and the start-up decision: An econometric analysis of gender differences using GEM data. *International Small Business Journal*, 27(2), 149-171.

Rosique-Blasco, M., Madrid-Guijarro, A., & García-Pérez-de-Lema, D. (2016). Entrepreneurial skills and socio-cultural factors: An empirical analysis in secondary education students. *Education+ Training*, 58(7/8), 815-831.

Rouse, J., Treanor, L., Fleck, E., Pathak, S., Goltz, S., & Buche, M. W. (2013). Influences of gendered institutions on women's entry into entrepreneurship. *International Journal of Entrepreneurial Behaviour & Research*, 19(5), 478-502.

S

Saadin, M. N., & Daskin, M. (2015). Perceived desirability, feasibility, and social norms as antecedents on hospitality students' entrepreneurial intention in Malaysia: does gender make a difference?. *International Journal of Entrepreneurship and Small Business*, 25(4), 456-474.

Saeed, S., Muffatto, M., & Yousafzai, S. Y. (2014). Exploring intergenerational influence on entrepreneurial intention: the mediating role of perceived desirability and perceived feasibility. *International Journal of Entrepreneurship and Innovation Management*, 18(2-3), 134-153.

Sahasranamam, S., & Sud, M. (2016). Opportunity and necessity entrepreneurship: A comparative study of India and China. *Academy of Entrepreneurship Journal*, 22(1), 21-40.

Sahut, J. M., & Peris-Ortiz, M. (2014). Small business, innovation, and entrepreneurship. *Small Business Economics*, 42(4), 663-668.

Santos, F. J., Roomi, M. A., & Liñán, F. (2016). About gender differences and the social environment in the development of entrepreneurial intentions. *Journal of Small Business Management*, 54(1), 49-66.

Sarfaraz, L., Faghih, N., & Majd, A. A. (2014). The relationship between women entrepreneurship and gender equality. *Journal of Global Entrepreneurship Research*, 4(1), 1-11.

Scherer, R. F., Adams, J. S., Carley, S. S., and Wiebe, F. A. (1989a). Role model performance effects on development of entrepreneurial career preference. *Entrepreneurship theory and practice*, 13(3), 53-72.

Scherer, R., Adams, J., and Wiebe, F. (1989b). Developing entrepreneurial behaviours: A social learning theory perspective. *Journal of Organizational Change Management*, 2(3), 16-28.

Scherer, R. F., Brodzinski, J. D., & Wiebe, F. (1991a). Examining the relationship between personality and entrepreneurial career preference. *Entrepreneurship & Regional Development*, 3(2), 195-206.

Scherer, R. F., Brodzinski, J. D., Goyer, K. A., and Wiebe, F. A. (1991b). Shaping the desire to become an entrepreneur: Parent and gender influences. *Journal of Business and Entrepreneurship*, 3(1), 47.

- Schlaegel, C., & Koenig, M. (2014). Determinants of entrepreneurial intent: a meta-analytic test and integration of competing models. *Entrepreneurship Theory and Practice*, 38(2), 291-332.
- Schmitt-Rodermund, E. (2004). Pathways to successful entrepreneurship: Parenting, personality, early entrepreneurial competence, and interests. *Journal of Vocational Behavior*, 65(3), 498-518.
- Schmutzler, J., Andonova, V., and Diaz-Serrano, L. (2019). How Context Shapes Entrepreneurial Self-Efficacy as a Driver of Entrepreneurial Intentions: A Multilevel Approach. *Entrepreneurship Theory and Practice*, 43(5), 880-920.
- Schölin, T., Broomé, P., and Ohlsson, H. (2016). Self-employment: the significance of families for professional intentions and choice of company type. *International Journal of Entrepreneurial Behaviour and Research*, 22(3), 329-345.
- Schoon, I., and Duckworth, K. (2012). Who becomes an entrepreneur? Early life experiences as predictors of entrepreneurship. *Developmental Psychology*, 48(6), 1719-1726.
- Schröder, E., Schmitt-Rodermund, E., and Arnaud, N. (2011). Career choice intentions of adolescents with a family business background. *Family Business Review*, 24(4), 305-321.
- Schøtt, T., & Sedaghat, M. (2014). Innovation embedded in entrepreneurs' networks and national educational systems: A global study. *Small Business Economics*, 43(2), 463-476.
- Schumpeter, J. A. (1934). The theory of economic development, translated by Redvers Opie. *Harvard: Economic Studies*, 46, 1600-0404.
- Schmutzler, J., Andonova, V., & Diaz-Serrano, L. (2019). How context shapes entrepreneurial self-efficacy as a driver of entrepreneurial intentions: A multilevel approach. *Entrepreneurship Theory and Practice*, 43(5), 880-920.
- Schwab, K., & Sala-i-Martin, X. (2016, April). The global competitiveness report 2013-2014: Full data edition. *World Economic Forum*.
- Schwarz, E. J., Wdowiak, M. A., Almer-Jarz, D. A., and Breitenacker, R. J. (2009). The effects of attitudes and perceived environment conditions on students' entrepreneurial intent: An Austrian perspective. *Education+ Training*, 51(4), 272-291.
- Scott, J.M. (2009), "Gender and entrepreneurship: a multilevel theory and analysis", *International Journal of Entrepreneurial Behaviour and Research*, 15(4), 386-8.
- Scott, M. G., and Twomey, D. F. (1988). The long-term supply of entrepreneurs: students' career aspirations in relation to entrepreneurship. *Journal of Small Business Management*, 26(4), 5.
- Segal, G., Borgia, D., & Schoenfeld, J. (2005). The motivation to become an entrepreneur. *International Journal of Entrepreneurial Behaviour & Research*, 11(1), 42-57.
- Shahriar, A. Z. M. (2018). Gender differences in entrepreneurial propensity: Evidence from matrilineal and patriarchal societies. *Journal of Business Venturing*, 33(6), 762-779.

- Shane, S., Locke, E. A., & Collins, C. J. (2003). Entrepreneurial motivation. *Human Resource Management Review*, 13(2), 257-279.
- Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), 217-226.
- Shapiro, A., & Sokol, L. (1982). The social dimensions of entrepreneurship. *Encyclopedia of Entrepreneurship*, 72-90.
- Sharma, L., & Madan, P. (2014). Effect of individual factors on youth entrepreneurship—a study of Uttarakhand state, India. *Journal of Global Entrepreneurship Research*, 4(1), 1-17.
- Shinnar, R. S., Giacomini, O., & Janssen, F. (2012). Entrepreneurial perceptions and intentions: The role of gender and culture. *Entrepreneurship Theory and Practice*, 36(3), 465-493.
- Short, J. (2009). The art of writing a review article. *Journal of Management*, 35(6), 1312-1317.
- Singer, S., Amorós, J. E., & Arreola, D. M. (2015). *Global Entrepreneurship Monitor: 2011 global report*. London Business School.
- Sitaridis, I., & Kitsios, F. (2018). Entrepreneurship as a Career Option for Information Technology Students: Critical Barriers and the Role of Motivation. *Journal of the Knowledge Economy*, 10(3), 1133-1167.
- Solesvik, M. Z. (2013). Entrepreneurial motivations and intentions: investigating the role of education major. *Education+ Training*, 55(3), 253-271.
- Solesvik, M., Iakovleva, T., & Trifilova, A. (2019). Motivation of female entrepreneurs: a cross-national study. *Journal of Small Business and Enterprise Development*, 26(5), 684-705.
- Solomon, G., Kickul, J., Wilson, F., Marlino, D., & Barbosa, S. D. (2008). Are misalignments of perceptions and self-efficacy causing gender gaps in entrepreneurial intentions among our nation's teens?. *Journal of Small Business and Enterprise Development*, 15 (2), 321-335.
- Sørensen, J. B. (2007a). Closure and exposure: Mechanisms in the intergenerational transmission of self-employment. *Research in the Sociology of Organizations*, 25(83), 83-124.
- Sørensen, J. B. (2007b). Bureaucracy and entrepreneurship: Workplace effects on entrepreneurial entry. *Administrative Science Quarterly*, 52(3), 387-412.
- Souitaris, V., Zerbinati, S., & Al-Laham, A. (2007). Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources. *Journal of Business Venturing*, 22(4), 566-591.
- Sternberg, R. (2009). Regional dimensions of entrepreneurship. *Foundations and Trends® in Entrepreneurship*, 5(4), 211-340.
- Strohmeier, R., Tonoyan, V., & Jennings, J. E. (2017). Jacks-(and Jills)-of-all-trades: On whether, how and why gender influences firm innovativeness. *Journal of Business Venturing*, 32(5), 498-518.

- Stuetzer, M., Audretsch, D. B., Obschonka, M., Gosling, S. D., Rentfrow, P. J., & Potter, J. (2018). Entrepreneurship culture, knowledge spillovers and the growth of regions. *Regional Studies*, 52(5), 608-618.
- Stuetzer, M., Obschonka, M., Audretsch, D. B., Wyrwich, M., Rentfrow, P. J., Coombes, M., ... & Satchell, M. (2016). Industry structure, entrepreneurship, and culture: An empirical analysis using historical coalfields. *European Economic Review*, 86, 52-72.
- Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review*, 20(3), 571-610.
- Sweida, G. L., & Reichard, R. J. (2013). Gender stereotyping effects on entrepreneurial self-efficacy and high-growth entrepreneurial intention. *Journal of Small Business and Enterprise Development*, 20(2), 296-313.
- T**
- Taylor, M. Z., & Wilson, S. (2012). Does culture still matter?: The effects of individualism on national innovation rates. *Journal of Business Venturing*, 27(2), 234-247.
- Terjesen, S., & Amorós, J. E. (2010). Female entrepreneurship in Latin America and the Caribbean: Characteristics, drivers and relationship to economic development. The *European Journal of Development Research*, 22(3), 313-330.
- Terjesen, S., & Hessels, J. (2009). Varieties of export-oriented entrepreneurship in Asia. *Asia Pacific Journal of Management*, 26(3), 537-561.
- Terjesen, S., Hessels, J., & Li, D. (2016). Comparative international entrepreneurship: A review and research agenda. *Journal of Management*, 42(1), 299-344.
- Thébaud, S. (2015). Business as plan B: Institutional foundations of gender inequality in entrepreneurship across 24 industrialized countries. *Administrative Science Quarterly*, 60(4), 671-711.
- Thornton, P. H., Ribeiro-Soriano, D., & Urbano, D. (2011). Socio-cultural factors and entrepreneurial activity: An overview. *International Small Business Journal*, 29(2), 105-118.
- Tkachev, A., & Kolvereid, L. (1999). Self-employment intentions among Russian students. *Entrepreneurship & Regional Development*, 11(3), 269-280.
- Toledano, N., & Urbano, D. (2008). Promoting entrepreneurial mindsets at universities: a case study in the South of Spain. *European Journal of International Management*, 2(4), 382-399.
- Tominc, P., & Rebernik, M. (2004). The scarcity of female entrepreneurship. *Društvena istraživanja*, 13(4-5), 779-802.
- Tsang, E. W., & Kwan, K. M. (1999). Replication and theory development in organizational science: A critical realist perspective. *Academy of Management Review*, 24(4), 759-780.
- Tsai, K. H., Chang, H. C., & Peng, C. Y. (2016). Refining the linkage between perceived capability and entrepreneurial intention: Roles of perceived opportunity, fear of failure,

and gender. *International Entrepreneurship and Management Journal*, 12(4), 1127-1145.

Tsang, E. W., & Kwan, K. M. (1999). Replication and theory development in organizational science: A critical realist perspective. *Academy of Management Review*, 24(4), 759-780.

U

Urbano, D., & Alvarez, C. (2014). Institutional dimensions and entrepreneurial activity: an international study. *Small Business Economics*, 42(4), 703-716.

Urbano, D., Aparicio, S., & Querol, V. (2016). Social progress orientation and innovative entrepreneurship: an international analysis. *Journal of Evolutionary Economics*, 26(5), 1033-1066.

Urban, B., & Kujinga, L. (2017). The institutional environment and social entrepreneurship intentions. *International Journal of Entrepreneurial Behavior & Research*, 23(4), 638-655.

Urbano, D., Toledano, N., & Ribeiro-Soriano, D. (2011). Socio-cultural factors and transnational entrepreneurship: A multiple case study in Spain. *International Small Business Journal*, 29(2), 119-134.

Uygun, R., & Kasimoglu, M. (2013). The emergence of entrepreneurial intentions in indigenous entrepreneurs: The role of personal background on the antecedents of intentions. *International Journal of Business and Management*, 8(5), 24.

V

Vaillant, Y., & Lafuente, E. (2007). Do different institutional frameworks condition the influence of local fear of failure and entrepreneurial examples over entrepreneurial activity?. *Entrepreneurship and Regional Development*, 19(4), 313-337.

Van Auken, H., Fry, F. L., & Stephens, P. (2006). The influence of role models on entrepreneurial intentions. *Journal of Developmental Entrepreneurship*, 11(02), 157-167.

Van der Zwan, P., Verheul, I., & Thurik, A. R. (2012). The entrepreneurial ladder, gender, and regional development. *Small Business Economics*, 39(3), 627-643.

van der Zwan, P., Thurik, R., Verheul, I., & Hessels, J. (2016). Factors influencing the entrepreneurial engagement of opportunity and necessity entrepreneurs. *Eurasian Business Review*, 6(3), 273-295.

Velilla, J., & Ortega, R. (2020). Providing new products by innovative entrepreneurs in Europe. *Economics and Business Letters*, 9(2), 90-96.

Verheul, I., Thurik, R., Grilo, I., & Van der Zwan, P. (2012). Explaining preferences and actual involvement in self-employment: Gender and the entrepreneurial personality. *Journal of economic psychology*, 33(2), 325-341.

Vracheva, V., & Stoyneva, I. (2020). Does gender equality bridge or buffer the entrepreneurship gender gap? A cross-country investigation. *International Journal of Entrepreneurial Behavior & Research*, 26(8), 1827-1844.

W

- Wagner, J. (2007). What a difference a Y makes-female and male nascent entrepreneurs in Germany. *Small Business Economics*, 28(1), 1-21.
- Walker, J. K., Jeger, M., & Kopecki, D. (2013). The role of perceived abilities, subjective norm, and intentions. *Journal of Entrepreneurship*, 22(2), 181–202.
- Walter, S. G., & Block, J. H. (2016). Outcomes of entrepreneurship education: An institutional perspective. *Journal of Business Venturing*, 31(2), 216-233.
- Wang, Q. (2019). Gender, race/ethnicity, and entrepreneurship: women entrepreneurs in a US south city. *International Journal of Entrepreneurial Behavior & Research*, 25 (8), 1766-1785.
- Wang, W., Cao, Q., Qin, L., Zhang, Y., Feng, T., & Feng, L. (2019). Uncertain environment, dynamic innovation capabilities and innovation strategies: A case study on Qihoo 360. *Computers in Human Behavior*, 95, 284-294.
- Wang, C. K., & Wong, P. K. (2004). Entrepreneurial interest of university students in Singapore. *Technovation*, 24(2), 163-172.
- Wang, R., & Zhou, W. C. (2020). The influence of regional institutional setting on the performance of innovative entrepreneurship. *Chinese Management Studies*, 14(3), 639-659.
- Webb, J. W., Khoury, T. A., & Hitt, M. A. (2020). The influence of formal and informal institutional voids on entrepreneurship. *Entrepreneurship Theory and Practice*, 44(3), 504-526.
- Webster, J., & Watson, R. T. (2002). Analyzing the past to prepare for the future: Writing a literature review. *Management Information Systems Quarterly*, 26(2), 13-23.
- Welsh, D. H., Kaciak, E., & Minialai, C. (2017). The influence of perceived management skills and perceived gender discrimination in launch decisions by women entrepreneurs. *International Entrepreneurship and Management Journal*, 13(1), 1-33.
- Welter, F., Brush, C., & De Bruin, A. (2014). The gendering of entrepreneurship context. Institut für Mittelstandsforschung Bonn (Hrsg.): Working Paper, 1, 14.
- Welter, F., & Smallbone, D. (2011). Institutional perspectives on entrepreneurial behavior in challenging environments. *Journal of Small Business Management*, 49(1), 107-125.
- Welter, F., Smallbone, D., & Isakova, N. B. (Eds.). (2006). Enterprising women in transition economies. *Ashgate Publishing*, Ltd..
- Wennekers, S., Uhlaner, L., & Thurik, R. (2002). Entrepreneurship and its conditions: a macro perspective. *International Journal of Entrepreneurship Education*, 1(1), 25-64.
- Wennekers, S., Van Wennekers, A., Thurik, R., & Reynolds, P. (2005). Nascent entrepreneurship and the level of economic development. *Small Business Economics*, 24(3), 293-309.

- Wheeler, D., McKague, K., Thomson, J., Davies, R., Medalye, J., & Prada, M. (2005). Creating sustainable local enterprise networks. *MIT Sloan Management Review*, 47(1), 33-41.
- White, H. (1982). Maximum likelihood estimation of misspecified models. *Econometrica: Journal of the Econometric Society*, 1-25.
- Wilson, F., Kickul, J., & Marlino, D. (2007). Gender, entrepreneurial self-efficacy, and entrepreneurial career intentions: Implications for entrepreneurship education. *Entrepreneurship Theory and Practice*, 31(3), 387-406.
- Wilson, F., Kickul, J., Marlino, D., Barbosa, S. D. and Griffiths, M. D. (2009). An analysis of the role of gender and S-E in developing female entrepreneurial interest and behaviour. *Journal of Developmental Entrepreneurship*, 14(2),105-119.
- Wohlford, K. E., Lochman, J. E., & Barry, T. D. (2004). The relation between chosen role models and the self-esteem of men and women. *Sex Roles*, 50(7-8), 575-582.
- Wong, P. K., Ho, Y. P., & Autio, E. (2005). Entrepreneurship, innovation and economic growth: Evidence from GEM data. *Small Business Economics*, 24(3), 335-350.
- Wu, J., Li, Y., & Zhang, D. (2019). Identifying women's entrepreneurial barriers and empowering female entrepreneurship worldwide: a fuzzy-set QCA approach. *International Entrepreneurship and Management Journal*, 15(3), 905-928.
- Wyrwich, M. (2015). Entrepreneurship and the intergenerational transmission of values. *Small Business Economics*, 45(1), 191-213.
- Wyrwich, M., Sternberg, R., & Stuetzer, M. (2019). Failing role models and the formation of fear of entrepreneurial failure: a study of regional peer effects in German regions. *Journal of Economic Geography*, 19(3), 567-588.
- Wyrwich, M., Stuetzer, M., & Sternberg, R. (2016). Entrepreneurial role models, fear of failure, and institutional approval of entrepreneurship: A tale of two regions. *Small Business Economics*, 46(3), 467-492.
- Y**
- Yang, S., Kher, R., & Newbert, S. L. (2020). What signals matter for social startups? It depends: The influence of gender role congruity on social impact accelerator selection decisions. *Journal of Business Venturing*, 35(2), 105932.
- Yoon, H. D., Kim, N., Buisson, B., & Phillips, F. (2018). A cross-national study of knowledge, government intervention, and innovative nascent entrepreneurship. *Journal of Business Research*, 84(C), 243-252.
- Yunus, M. (2007). The Nobel peace prize 2006-Nobel lecture. *Law and Business Review of the Americas*, 13(2), 267.
- Z**
- Zahra, S. A., Wright, M., & Abdelgawad, S. G. (2014). Contextualisation and the advancement of entrepreneurship research. *International Small Business Journal*, 32(5), 479-500.

- Zapkau, F. B., Schwens, C., & Kabst, R. (2017). The role of prior entrepreneurial exposure in the entrepreneurial process: a review and future research implications. *Journal of Small Business Management*, 55(1), 56-86.
- Zapkau, F. B., Schwens, C., Steinmetz, H., & Kabst, R. (2015). Disentangling the effect of prior entrepreneurial exposure on entrepreneurial intention. *Journal of Business Research*, 68(3), 639-653.
- Zimmerman, M. A., & Zeitz, G. J. (2002). Beyond survival: Achieving new venture growth by building legitimacy. *Academy of management review*, 27(3), 414-431.

Appendix

Table A-1. Variable definition and unweighted descriptive statistics

Variable (corresponding survey question)	Value	KMS	Exact replication	Extension 1	Extension 2
Gender	Man	46	46	49	50
	Woman	54	54	51	50
Opport (In the next 6 months, there will be good opportunities for starting a business in the area where you live.)	No	23	43	56	52
	Yes	43	23	28	34
	Don't know/missing	34	34	16	14
Suskill (You have the knowledge, skill and experience required to start a new business.)	No	42	42	54	49
	Yes	35	35	43	48
	Don't know/missing	23	23	3	3
Fearfail (Fear of failure would prevent you from starting a new business.)	No	49	49	53	57
	Yes	29	28	44	40
	Don't know/missing	22	23	3	3
Closebus (Shut down business in the last 12 months)	No	90	91	97	95
	Yes	2	2	3	4
	Don't know/missing	8	7	0	1
Workstatus (Present work status of the individual)	Not working	17	17	17	19
	Working	70	70	67	65
	Retired, students	12	12	14	13
	Missing	1	1	2	3
HHIncome (Household income of the individual)	Lowest 33%	37	37	23	26
	Middle 33%	26	26	24	27
	Upper 33%	20	20	28	29
	Missing	17	17	24	18
Education (Educational attainment of the individual)	Less than secondary	30	30	24	27
	Secondary degree	29	29	36	36
	Secondary degree	20	19	33	30
	Post-secondary degree	20	20	6	6
	Post-secondary degree	1	2	1	1
	Grad exp Missing				
Age (What year were you born?)	18-24 years old	11	11	13	16
	25-34 years old	20	19	21	23
	35-44 years old	26	25	23	23
	45-54 years old	23	23	23	21
	55-64 years old	21	21	20	17
Numbers		236,556	236,556	372,069	1,029,863

Note. Relative frequency is in percentage. Global Entrepreneurship Monitor (GEM) data

Table A-2. Global Entrepreneurship Monitor survey participants, Replication study

	2001	2002	2005	2006	Total
Argentina	1,719	1,719	1,746	1,755	6,939
Australia	-	2,709	2,002	1,971	6,682
Belgium	-	3,101	4,047	2,001	9,150
Brazil	-	-	2,000	2,000	4,000
Denmark	1,596	1,925	1,968	10,000	15,489
Finland	1,462	1,434	2,010	2,005	6,911
Germany	5,308	11,262	6,577	4,049	27,196
Ireland	-	-	-	1,961	1,961
Italy	1,724	-	1,793	1,626	5,143
Japan	1,775	1,883	1,931	1,923	7,512
Netherlands	-	2,740	2,706	2,685	8,131
Norway	-	1,534	1,562	1,503	4,599
Singapore	1,078	1,920	3,876	3,883	10,757
Spain	-	-	18,953	28,306	47,259
Sweden	1,820	1,733	1,717	1,747	7,017
United Kingdom	-	12,708	9,167	34,896	56,771
United States	1,603	5,581	1,530	2,325	11,039
Total	18,085	50,250	63,585	104,636	236,556

Note. Global Entrepreneurship Monitor (GEM) survey participants with sociodemographic information by countries and years, the replication study

Table A-3. Variable definition and un-weighted descriptive statistics

Sectors of nascent entrepreneurial activity	Men		Women	
	% of male	N	% of female	N
Agriculture, forest, hunting, fishing	3.9	91	3.1	44
Mining, construction	7.1	168	3.6	51
Manufacturing	7.9	185	7.6	108
Transport, communication, utilities	6.8	161	4.2	59
Wholesale, repair	7.7	182	4.4	62
Retail, hotel, restaurants	21.3	502	29.8	421
Finance, insurance, real estate	6.3	148	3.8	54
Business services	23.8	560	19.4	274
Health, education, social services	7.3	171	12.8	181
Consumer services	7.8	184	11.2	158
Total	100	2,351	100	1,412

Note. Global Entrepreneurship Monitor (GEM) data 2001–2006

Table A-4. Global Entrepreneurship Monitor survey participants, extension 1

	Year of survey						Total
	2011	2012	2013	2014	2015	2016	
Argentina	1,687	1,713	1,867	2,095	2,519	1,679	11,560
Australia	1,622	-	-	1,823	1,770	1,593	6,808
Belgium	1,839	1,546	2,001	2,004	2,022	-	9,412

Table A-4 continues on the next page

Table A-4. Global Entrepreneurship Monitor survey participants, extension 1 (continued)

	Year of survey						Total
	2011	2012	2013	2014	2015	2016	
Brazil	1,999	10,000	10,000	10,000	2,000	2,000	35,999
Denmark	2,015	2,217	-	2,008	-	-	6,240
Finland	2,011	2,038	2,005	2,005	2,007	2,018	12,084
Germany	4,260	4,300	5,996	4,311	3,842	3,944	26,653
Ireland	2,002	2,000	2,002	2,000	2,001	2,004	12,009
Italy	-	2,000	2,052	2,000	2,000	2,045	10,097
Japan	2,004	2,010	2,000	2,006	-	-	8,020
Netherlands	2,861	2,887	2,441	1,836	1,754	1,768	13,547
Norway	2,001	1,999	2,000	2,000	2,000	-	10,000
Singapore	2,000	2,001	1,998	2,004	-	-	8,003
Spain	17,500	21,900	24,600	25,000	24,300	22,000	135,300
Sweden	2,143	1,740	1,837	1,889	3,716	3,666	14,991
United Kingdom	1,650	1,676	9,012	1,572	7,886	8,224	30,020
United States	4,699	4,265	4,266	2,840	2,683	2,573	21,326
Total	52,293	64,292	74,077	67,393	60,500	53,514	372,069

Note. Global Entrepreneurship Monitor (GEM) survey participants with sociodemographic information by countries and years, extension 1

Table A-5. Global Entrepreneurship Monitor survey participants, extension 2

	Year of survey						Total
	2011	2012	2013	2014	2015	2016	
Algeria	3,373	4,984	2,497	-	-	-	10,854
Angola	-	2,493	2,049	2,028	-	-	6,570
Argentina	1,687	1,713	1,867	2,095	2,519	1,679	11,560
Australia	1,622	-	-	1,823	1,770	1,593	6,808
Austria	-	4,548	-	4,554	-	4,582	13,684
Barbados	2,307	2,046	2,311	2,000	2,000	-	10,664
Belgium	1,839	1,546	2,001	2,004	2,022	-	9,412
Bosnia and Herzegovina	2,277	2,001	2,004	2,015	-	-	8,297
Botswana	-	2,003	2,204	2,156	2,200	-	8,563
Burkina Faso	-	-	-	2,850	2,325	2,325	7,500
Brazil	1,999	10,000	10,000	10,000	2,000	2,000	35,999
Cameroon	-	-	-	2,087	2,397	2,413	6,897
Canada	-	-	2,648	2,037	2,933	1,767	9,385
Chile	6,213	1,952	5,760	5,377	5,407	7,961	32,670
China	3,689	3,684	3,634	3,647	3,365	3,513	21,532
Colombia	10,374	6,471	3,400	3,691	3,686	2,069	29,691
Croatia	2,000	2,000	2,000	2,000	2,000	2,000	12,000
Denmark	2,015	2,217	-	2,008	-	-	6,240
Ecuador	-	2,003	1,818	1,834	1,931	1,841	9,427
Egypt	-	2,501	-	-	2,512	2,528	7,541
El Salvador	-	1,905	-	2,014	-	1,753	5,672
Estonia	-	1,721	1,741	2,036	2,002	1,993	9,493
Finland	2,011	2,038	2,005	2,005	2,007	2,018	12,084
France	1,607	3,210	1,567	1,567	-	1,541	9,492
Germany	4,260	4,300	5,996	4,311	3,842	3,944	26,653
Greece	2,000	2,000	2,000	2,000	2,000	2,000	12,000
Guatemala	2,398	-	2,138	2,158	2,181	2,219	11,094
Hungary	2,002	2,000	2,000	2,003	2,000	2,011	12,016

Table A-5 continues on the next page

Table A-5. Global Entrepreneurship Monitor survey participants, extension 2 (continued)

	Year of survey						Total
	2011	2012	2013	2014	2015	2016	
India	-	2,700	3,000	3,360	3,413	3,400	15,873
Indonesia	-	-	4,500	5,520	5,620	3,480	19,120
Iran	3,322	3,178	3,633	3,352	3,234	3,234	20,014
Ireland	2,002	2,000	2,002	2,000	2,001	2,004	12,009
Israel	-	2,005	2,039	-	2,055	2,516	8,615
Italy	-	2,000	2,052	2,000	2,000	2,045	10,097
Jamaica	2,047	2,003	2,246	2,637	-	2,020	10,953
Japan	2,004	2,010	2,000	2,006	-	-	8,020
Kazakhstan	-	-	-	2,099	2,101	2,086	6,286
Latvia	2,000	2,000	2,000	-	2,004	1,625	9,629
Lithuania	2,003	2,003	2,000	2,000	-	-	8,006
Luxembourg	-	-	2,005	2,074	2,016	2,024	8,119
Macedonia	-	2,003	2,000	-	1,998	2,000	8,001
Malaysia	2,053	2,006	2,000	2,000	2,000	2,005	12,064
Mexico	2,511	2,516	2,798	2,587	4,643	5,111	20,166
Netherlands	2,861	2,887	2,441	1,836	1,754	1,768	13,547
Nigeria	2,057	2,651	2,604	-	-	-	7,312
Norway	2,001	1,999	2,000	2,000	2,000	-	10,000
Panama	2,001	1,998	2,004	2,005	2,000	2,015	12,023
Peru	2,010	2,071	2,075	2,078	2,078	2,080	12,392
Philippines	-	-	2,500	2,000	2,000	-	6,500
Poland	2,000	2,003	2,000	2,001	2,000	1,623	11,627
Portugal	2,011	2,001	2,003	2,005	2,005	2,003	12,028
Puerto Rico	-	-	1,610	1,995	1,999	1,998	7,602
Romania	1,739	1,710	2,021	1,998	2,002	-	9,470
Russia	7,500	3,541	2,029	2,001	-	2,007	17,078
Singapore	2,000	2,001	1,998	2,004	-	-	8,003
Slovakia	2,000	2,000	2,007	2,000	2,003	2,000	12,010
Slovenia	2,009	2,010	2,002	2,004	2,009	1,621	11,655
South Africa	2,724	2,655	3,133	3,350	2,765	2,862	17,489
South Korea	2,001	2,000	2,000	-	2,000	2,000	10,001
Spain	17,500	21,900	24,600	25,000	24,300	22,000	135,300
Sweden	2,143	1,740	1,837	1,889	3,716	3,666	14,991
Switzerland	1,612	1,587	1,588	1,895	1,886	2,834	11,402
Taiwan	2,012	2,009	2,007	2,000	2,000	2,000	12,028
Thailand	2,000	3,000	2,362	2,059	3,000	2,693	15,114
Trinidad and Tobago	1,813	1,802	1,787	1,769	-	-	7,171
Turkey	2,401	2,401	32,959	-	-	2,411	40,158
Uganda	-	2,343	2,513	2,112	-	-	6,968
United Kingdom	1,650	1,676	9,012	1,572	7,886	8,224	30,020
United States	4,699	4,265	4,266	2,840	2,683	2,573	21,326
Uruguay	1,658	1,627	1,620	1,616	1,742	1,615	9,878
Vietnam	-	-	2,000	2,000	2,000	-	6,000
Total	136,572	147,995	202,716	154,212	148,677	141,667	1,029,863

Note. Global Entrepreneurship Monitor (GEM) survey participants with sociodemographic information by countries and years, extension 2

Table A-6. Variable definition and unweighted descriptive statistics, 2011-2016

Sectors of nascent entrepreneurial activity	Extension 1 (2011-2016)				Extension 2 (71 countries)			
	Men		Women		Men		Women	
	% of male	N	% of female	N	% of male	N	% of female	N
Agriculture, forest, hunting, fishing	4.1	233	3	108	7.9	1,994	4.6	817
Mining, construction	7.2	404	2	74	6.9	1,756	1.7	290
Manufacturing	7.7	427	9.1	330	9.4	2,420	10.5	1,892
Transport, communication, utilities	3.7	205	1.7	59	4.1	1,067	1.3	240
Wholesale, repair	7.7	425	3	108	10.3	2,645	5.2	956
Retail, hotel, restaurants	25	1,393	36.7	1,318	32.5	8,299	49	8,948
Information and communication	8.2	459	2.9	101	5	1,296	2	346
Finance, insurance, real estate	4.2	236	2.7	94	2.7	688	2	363
Business services	12	671	9.2	331	6.8	1,725	4.9	883
Administrative services	4.8	262	3.5	125	3.7	939	2.6	470
Health, education, social services	10.9	601	22	793	7.9	2,009	14.1	2,561
Consumer services	4.5	245	4.2	154	2.8	694	2.1	389
Total	100	5,561	100	3,595	100	25,532	100	18,155

Note. Variable definition and unweighted descriptive statistics, Global Entrepreneurship Monitor (GEM) data

Table A-7. Global Entrepreneurship Monitor, Innovative entrepreneurs

Country	2011	2012	2013	2014	2015	2016	Total
Algeria	94	75	18	0	0	0	187
Angola	0	229	206	66	0	0	501
Argentina	115	76	42	54	77	56	420
Australia	49	0	0	68	62	59	238
Austria	0	78	0	68	0	116	262
Barbados	3	20	49	52	37	0	161
Belgium	14	22	22	33	49	0	140
Bosnia and Herzegovina	19	26	51	26	0	0	122
Botswana	0	99	81	173	157	0	510
Brazil	21	7	12	80	58	30	208
Burkina Faso	0	0	0	105	154	204	463
Cameroon	0	0	0	137	127	131	395
Canada	0	0	104	91	136	110	441
Chile	1,147	243	840	893	1,072	1,454	5,649
China	344	136	188	268	225	256	1,417
Colombia	1,425	921	599	379	453	194	3,971
Croatia	39	37	43	32	26	35	212
Denmark	39	44	0	26	0	0	109
Ecuador	0	260	237	162	223	135	1,017
Egypt	0	31	0	0	42	61	134
EL Salvador	0	79	0	25	0	43	147
Estonia	0	64	64	34	82	89	333
Finland	15	20	16	22	24	30	127
France	37	49	10	27	0	25	148
Germany	53	75	85	60	50	60	383
Greece	35	19	11	18	22	24	129
Guatemala	124	0	67	196	197	243	827
Hungary	40	40	28	49	33	36	226
India	0	140	60	61	234	208	703
Indonesia	0	0	130	156	350	141	777
Iran	32	27	86	86	97	102	430
Ireland	41	27	33	46	79	77	303
Israel	0	32	62	0	66	62	222
Italy	0	24	16	34	36	32	142
Jamaica	13	208	22	53	0	35	331
Japan	25	27	27	20	0	0	99

Table A-7 continues on the next page

Table A-7. Global Entrepreneurship Monitor, Innovative entrepreneurs (continued)

Country	2011	2012	2013	2014	2015	2016	Total
Kazakhstan	0	0	0	47	40	36	123
Latvia	74	81	74	0	48	48	325
Lithuania	53	27	61	50	0	0	191
Luxembourg	0	0	54	49	65	59	227
Macedonia	0	34	24	0	23	14	95
Malaysia	41	30	38	18	16	12	155
Mexico	43	104	115	116	190	168	736
Netherlands	65	66	49	44	50	38	312
Nigeria	186	259	227	0	0	0	672
Norway	23	23	7	11	10	0	74
Panama	132	49	99	43	72	112	507
Peru	210	139	122	106	121	124	822
Philippines	0	0	192	177	155	0	524
Poland	90	65	59	69	46	40	369
Portugal	27	37	37	45	33	31	210
Puerto Rico	0	0	29	66	44	59	198
Romania	51	61	74	53	81	0	320
Russia	25	23	17	13	0	14	92
Singapore	40	74	66	71	0	0	251
Slovakia	85	63	61	85	71	39	404
Slovenia	11	17	24	33	19	31	135
South Africa	108	81	124	77	89	77	556
South Korea	24	30	26	0	57	47	184
Spain	165	210	156	191	152	133	1,007
Sweden	16	14	23	34	44	39	170
Switzerland	22	18	26	25	37	46	174
Taiwan	87	56	75	76	58	55	407
Thailand	118	128	159	142	97	92	736
Trinidad and Tobago	19	32	37	36	0	0	124
Turkey	79	85	1,409	0	0	252	1,825
Uganda	0	67	54	51	0	0	172
United Kingdom	37	26	91	24	138	169	485
United States	183	178	169	122	77	121	850
Uruguay	67	78	75	79	83	90	472
Vietnam	0	0	150	112	120	0	382

Table A-8. Sectorial distribution of innovative entrepreneurs, 2011-2016

Sectors of nascent entrepreneurial activity	Extension 2 (71 countries)			
	Men		Women	
	% of male	N	% of female	N
Agriculture, forest, hunting, fishing	5.1	973	2.8	347
Mining, construction	6.6	1,262	1.6	197
Manufacturing	10.4	1,987	11.4	1,433
Transport, communication, utilities	4	760	1.4	178
Wholesale, repair	9.7	1,848	5.3	668
Retail, hotel, restaurants	32.3	6,169	49.9	6,295
Information and communication	6.4	1,235	2.3	293
Finance, insurance, real estate	2.7	508	1.8	232
Business services	7.8	1,482	4.9	619
Administrative services	3.8	724	2.8	355
Health, education, social services	8.2	1,578	13.4	1,689
Consumer services	3	568	2.4	309
Total	100	19,094	100	12,615

Note. Variable definition and unweighted descriptive statistics, Global Entrepreneurship Monitor (GEM) data

Curriculum Vitae

Arezou Abbasianchavari

Education

04.2017 - 10.2021	Doctoral candidate in Business Administration, University of Trier <ul style="list-style-type: none"> • Thesis title: Entrepreneurial propensity: the role of gender, perceptions and institutions
04.2009 - 02.2012	MSc in Entrepreneurship Management, University of Tehran <ul style="list-style-type: none"> • Thesis title: Identifying the influence of social and cultural factors on students' entrepreneurial readiness
11.2002 - 11.2006	Bachelor Degree in Drama-Dramatic Literature, Tehran central branch of Islamic Azad University, Tehran <ul style="list-style-type: none"> • Thesis title: Christopher Marlowe and his works

Professional experience

02.2019 - 02.2020	Trier University, Trier, Germany <ul style="list-style-type: none"> • Doctoral researcher • Seminar lecturer for entrepreneurship and innovation management
01.2018 - 12.2018	Trier University, Trier, Germany <ul style="list-style-type: none"> • Employee and doctoral researcher
08.2011 - 07.2016	Academic Centre for Education, Culture and Research (ACECR), Tehran, Iran <ul style="list-style-type: none"> • Head of Industrial and Scientific Documentary Centre • Production manager • Marketing manager
07.2008 - 08.2009	Creativity and entrepreneurship home for children, Tehran, Iran <ul style="list-style-type: none"> • Founder and member of the board • Data insights provider for board's strategic planning process • Coordination manager between branches
06.2005 - 03.2009	Sharif Science and Technology Research Institute (SSTRI), Tehran, Iran <ul style="list-style-type: none"> • Member of board • Development manager • Founder of the first Iranian entrepreneurial magazine for adolescents • Internal manager of the first Iranian entrepreneurship conference