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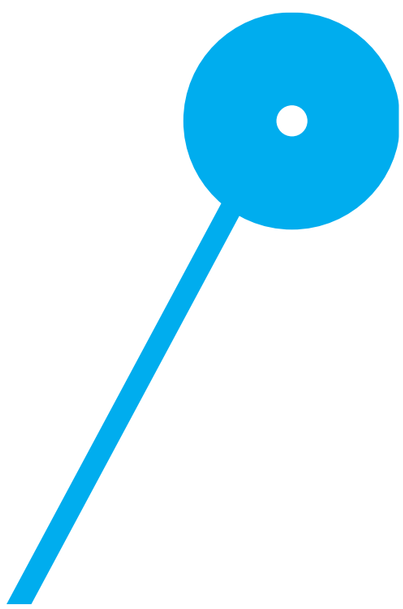
BUSINESS MANAGEMENT AND INTERNATIONALISATION

Business Innovation and Internationalisation in Female Owned Businesses

Diana Catarina Sampaio Machado



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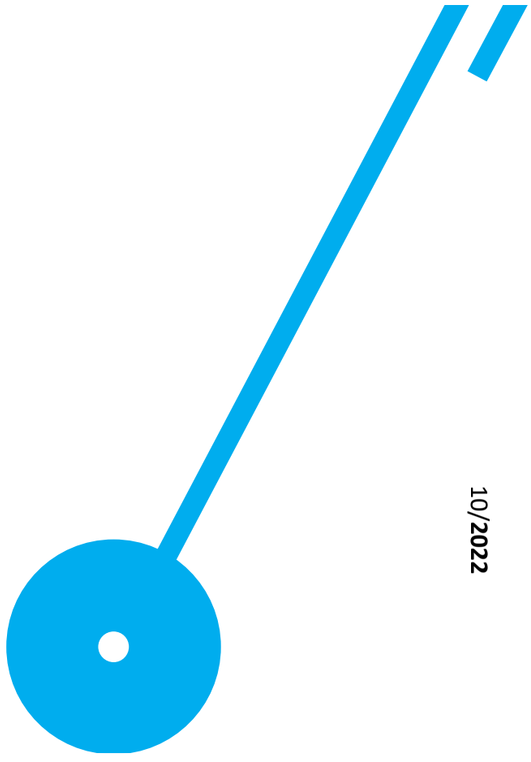

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Diana Catarina Sampaio Machado**. Business Innovation and Internationalisation in Female Owned Businesses**

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Diana Catarina Sampaio Machado

Professor Vítor Braga

Professor Aldina Correia

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Resumo

O empreendedorismo é considerado um dos principais motores do crescimento económico e desenvolvimento, consubstanciando-se no tema de uma vasta quantidade de investigação. Contudo, em muitos casos, a investigação é ampla e não específica do género. As mulheres empreendedoras enfrentam diferentes desafios e barreiras quando comparadas com os homens; por conseguinte, a investigação empresarial específica baseada no género poderia ajudar no desenvolvimento e progresso do empreendedorismo feminino.

A vigente dissertação detém como objetivo principal compreender o impacto do empreendedorismo feminino na inovação e internacionalização de empresas. Adicionalmente, pretende expor como se encontram agrupados os países da Europa e Ásia Central em termos de empreendedorismo feminino.

Para atingir o propósito supracitado, utilizaram-se vários métodos de investigação. Numa primeira parte, recorreu-se a três técnicas multivariadas, nomeadamente, a Análise Fatorial, a Regressão Linear Múltipla e Análise de Clusters, com a finalidade de estudar o impacto do empreendedorismo feminino na inovação e internacionalização de empresas, assim como expor como os países da Europa e Ásia Central se encontram agrupados em termos de empreendedorismo feminino. Numa segunda parte, com o intuito de estudar a relação entre o empreendedorismo feminino, inovação e internacionalização através de uma nova abordagem, colmatando as desvantagens dos métodos quantitativos tradicionais, recorreu-se ao método de análise comparativa qualitativa fuzzy-set (fsQCA).

Os resultados do primeiro artigo sugerem uma relação estatística não significativa entre o empreendedorismo feminino, a inovação e a internacionalização. Os resultados também sugerem que os países da Europa e da Ásia Central podem ser divididos em dois clusters. A diferença entre os dois clusters pode ser justificada pelo papel das mulheres nos países em questão. Globalmente, os resultados do segundo artigo sugerem que o empreendedorismo feminino, por si só, não é uma condição suficiente nem necessária para atingir uma alta internacionalização ou alta inovação. No entanto, os resultados indicam que o empreendedorismo feminino é importante para se alcançar um elevado nível de internacionalização.

A dissertação trata de uma dimensão específica e ainda não reconhecida do empreendedorismo, ou seja, o empreendedorismo feminino. O empreendedorismo não é igual para homens e mulheres e os desafios das mulheres empreendedoras variam em diferentes ambientes e culturas. Neste sentido, a presente dissertação diferencia-se por colmatar a literatura, através de um estudo simultaneamente quantitativo e qualitativo, contribuindo para a consciencialização do papel do género no empreendedorismo, no crescimento económico, na inovação e na internacionalização.

Palavras-Chave: Empreendedorismo; Empreendedorismo Feminino; Inovação; Internacionalização; Europa; Ásia Central

Abstract

Entrepreneurship is considered one of the main drivers of economic growth and development and it is the subject of a vast amount of research. However, in many cases, research is broad and not gender specific. Women entrepreneurs face different challenges and barriers when compared to men; therefore, gender-specific entrepreneurship research could help in the development and advancement of women entrepreneurship.

The main objective of this dissertation is to understand the impact of female entrepreneurship on the innovation and internationalisation of firms. In addition, it aims to expose how the countries of Europe and Central Asia are grouped in terms of female entrepreneurship.

To achieve the above purpose, several research methods were performed. In the first phase, three multivariate techniques were used, namely Factor Analysis, Multiple Linear Regression and Cluster Analysis, to study the impact of female entrepreneurship on the innovation and internationalisation of firms, as well as to show how the countries of Europe and Central Asia are grouped in terms of female entrepreneurship. In a second phase, with the aim of studying the relationship between female entrepreneurship, innovation and internationalisation through a new approach, bridging the disadvantages of traditional quantitative methods, the fuzzy-set qualitative comparative analysis (fsQCA) method was applied.

The results of the first paper suggest a statistically non-significant relationship between female entrepreneurship, innovation, and internationalisation. The results also suggest that European and Central Asia countries can be divided into two clusters. The difference between the two clusters can be justified by the role of women in these countries. Overall, the results of the second paper suggest that female entrepreneurship alone is neither a sufficient nor a necessary condition for achieving high internationalisation or high innovation. However, the results indicate that female entrepreneurship is important for achieving a high level of internationalisation.

This dissertation addresses a specific and yet unrecognised dimension of entrepreneurship, namely female entrepreneurship. Entrepreneurship is not the same for men and women and the challenges faced by women entrepreneurs vary in different environments and cultures. In this sense, this dissertation is distinctive by bridging the literature, through a study that is both quantitative and qualitative, contributing to the awareness of the role of gender in entrepreneurship, economic growth, innovation, and internationalisation.

Keywords: Entrepreneurship; Female Entrepreneurship; Innovation; Internationalisation; Europe; Central Asia.

CHAPTER I

Introduction

Introduction

Entrepreneurship assumes a prominent place in the political and scientific agendas of many countries as a driver of economic growth and competitiveness, becoming the epitome of an economic, but also cultural crisis (e.g., Åstebro & Tåg, 2017; Doran et al., 2018; Ferreira et al., 2019; Guerrero et al., 2020; Serrano-Pascual & Carretero-García, 2022).

According to Serrano-Pascual and Carretero-García (2022), entrepreneurship, nowadays holds a central place in labour and economic thinking. Entrepreneurship has thus become a meta-concept that involves not only purely economic areas, but also plays a key role in the thought and governance of social problems, such as gender inequality (Gawel & Głodowska, 2021; Strawser et al., 2021). One of the most frequent forms this debate adopts, at the international level, is the problematisation of the relationship between entrepreneurship and gender (Serrano-Pascual & Carretero-García, 2022). Gender inequality is a persistent feature in entrepreneurship (Guzman & Kacperczyk, 2019).

According to Jennings and Brush (2013): (i) women are less likely than men to engage in various forms of entrepreneurial activity; (ii) firms run by women tend to be financed at a lower level and by different means than firms run by men and (iii) although there are notable differences in relation to the strategies of female and male firms, few organisational and managerial differences have been documented to date.

Evidence suggests that women have different career outcomes than men working in similar positions and businesses (Ahl, 2006; Akter et al., 2019; Forret & Dougherty, 2004). Nevertheless, it is important to acknowledge the challenges and discrimination that women often face in business, which can be justified by the different cultures and characteristics of countries (Rubio-Bañón & Esteban-Lloret, 2016).

A very important model that has supported much of the research examining the influence of culture on entrepreneurship in a country is developed by Hofstede (1980, 1983, 2003). It should be noted that, although his research does not focus specifically on business creation, the analysis of differences in national cultures is particularly useful. Hofstede (1980, 1983, 2003) developed a theory that explains the cultural differences based on his studies involving over 50 national cultures. According to this author, culture can find its origin in responses to common human problems through six dimensions that differentiate countries, namely: (i) power distance; (2) individualism/collectivism; (3) masculinity/femininity; (4) aversion to uncertainty; (5) long/short-term orientation; and (6) indulgence and constraint.

The influence of these dimensions on entrepreneurship can be exerted both collectively through institutions' awareness of the importance of entrepreneurship, and at the individual level on the characteristics and attitudes of people in each place (Hofstede & McCrae, 2004). One of the dimensions that is related to the attribution of gender roles is the masculinity/femininity dimension. This dimension reflects the importance given to a culture with stereotypically male values, such as assertiveness, ambition, power and materialism and stereotypically female values, such as the emphasis on human relationships. In this sense, according to Rubio-Bañón & Esteban-Lloret (2016), cultures with a high value on the masculinity scale tend to have more pronounced gender differences. Consequently, it is expected that countries with a

masculine orientation, have higher rates of entrepreneurship, while in those where female values prevail there is a greater tendency towards paid employment (Mcgrath et al., 1992; Shane, 1983).

Hechavarría & Brieger (2020), suggest that women entrepreneurs are more likely to engage in entrepreneurship when cultural practices of power distance and within-group collectivism are low, and cultural practices of long-term orientation and uncertainty aversion are high, when compared to male entrepreneurs.

In contrast, studies show that women constitute 50% of the world's population and approximately 40% of the world's workforce (Rudhumbu et al., 2020; Strawser et al., 2021). Therefore, it is not wrong to say that the world today is dependent on female labour, something that is also corroborated by many studies that have been done (e.g., Anambane & Adom, 2018; Berger & Kuckertz, 2016; Brieger et al., 2019; Kalafatoglu & Mendoza, 2017).

Successful experiences around the world demonstrate that women entrepreneurs provide substantial gains in added value to the national product, and promote social equity (Rodrigues et al., 2021).

In this sense, the growing interest by policymakers and academics in the role of women entrepreneurs is due to the positive effects of an increase in the rate of women entrepreneurs generates in the economic conditions and social welfare of a country (Martínez-Rodríguez et al., 2021; Wiklund et al., 2019), both in developed and underdeveloped countries (Rubio-Bañón & Esteban-Lloret, 2016). Specifically, in the case of underdeveloped countries, it is particularly relevant as, it can act as a practical solution to reduce poverty (Doran et al., 2018; Sarfaraz et al., 2014).

As described above, there is a large heterogeneity of the role of women in business in different countries and cultures, and the challenges of women entrepreneurs vary in different environments. In this sense, this dissertation, focuses on the investigation of women entrepreneurs as an independent group, which can contribute to the creation of different business success criteria, satisfaction, as well as an attitude towards management and strategic orientations of firms.

This research holds as an aggregating objective to provide a deeper understanding of the impact of female entrepreneurship on business innovation and internationalisation as well as to expose how the countries of Europe and Central Asia are grouped in terms of female entrepreneurship.

To achieve the above-mentioned objective, the dissertation is divided into 4 fundamental parts. The **First Chapter** presents an introduction to the theme of female entrepreneurship, the objectives, and the structure of this project. In what concerns the **Second Chapter**, given the lack of understanding on the role that female entrepreneurs play in the internationalisation process of firms, a study named "How Female Entrepreneurship may Boost Business Innovation and Internationalisation" is presented, with the aim of providing a deeper understanding of the impact of female entrepreneurship in the internationalisation of firms, as well as, reveal how the countries of Europe and Central Asia are grouped in terms of female entrepreneurship. To achieve this objective, a statistical study was carried out, applying multivariate analysis, through Factor Analysis, Multiple Linear Regression and Cluster Analysis, using SPSS (Statistical Package for the Social Sciences). Regarding the **Third Chapter**,

the aim was to contribute to a better understanding of the relationship between female entrepreneurship, innovation, and internationalisation of firms, through the study "Business Innovation and Internationalisation in Female Owned Businesses: A Fuzzy-set QCA Approach". To achieve the proposed objective, the research was based on the fuzzy-set qualitative comparative analysis method (fsQCA). It is important to mention that in both chapters, a literature review was conducted, which was very important for the study. Finally, the **Fourth Chapter** was presented, where the main conclusions of this study are presented.

CHAPTER II

How Female Entrepreneurship may Boost Business Innovation and Internationalisation

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How Female Entrepreneurship may Boost Business Innovation and Internationalisation

Abstract

Purpose - This study sought to analyse the role female entrepreneurship plays in the internationalisation and innovation process of firms. Additionally, this study aims to contribute to a better understanding of how the countries of Europe and Central Asia are grouped in terms of female entrepreneurship.

Design/methodology/approach - Our analysis used secondary data collected from the Enterprise Surveys - The World Bank database to which multivariate statistical analysis were applied.

Findings - The results suggest a non-significant statistical relationship between female entrepreneurship and internationalisation, which may be explained by high capital access constraints female entrepreneurs face. There are cultural and social barriers that affect the decision of women entrepreneurs to internationalise. Our results also show interdependence between internationalisation and innovation. The results also suggest that the countries of Europe and Central Asia can be divided into two clusters. The difference between the two clusters can be justified by the role of women in the countries concerned.

Originality/value - The originality of this article is related to the analysis of the possible contribution of women entrepreneurship to the internationalisation of firms, which is still an understudied area, because of the exclusion of women entrepreneurs from the market due to the male norms that dominate the socioeconomic contexts.

Practical implications - Additionally, the findings of this research can contribute to the implementation of a strategic policy framework to encourage female entrepreneurship.

Keywords Female Entrepreneurship; Internationalisation; Innovation; Multivariate Statistical Analysis; Europe; Central Asia; Capital Constraints; Cultural Barriers; Social Barriers

Paper type Research paper

1. Introduction

As a result of the ever-changing socio-cultural conditions in the world and the tremendous growth in the number of women-owned businesses, there is a growing interest in research on women entrepreneurship (Brush, 1992; Jafari-Sadeghi et al., 2021; Moreira et al., 2019a; Rosenbaum, 2017).

The social identity (popularity, reputation, value, social recognition, competence, and power of individuals) of female entrepreneurs has enabled them to "break glass ceilings" and emerge as competent entrepreneurs who can succeed in international markets. Hence, favourable policies and in-depth research are needed to recognise and build women's social identities as entrepreneurs and provide a supportive environment that promotes the internationalisation of women's enterprises (Hewapathirana, 2011). Social identities act as self-motivators for women to maintain excellence in quality standards, positive image and venture into innovations. Furthermore, they portray them as reliable entrepreneurs, attracting new customers and building trust with them at the beginning of the internationalisation process of their small businesses (Hewapathirana, 2011).

Women entrepreneurs working in international businesses is a subject that has been studied mainly in recent years (Kalafatoglu & Mendoza, 2017). Nevertheless, according to Moreira et al. (2019) and Kalafatoglu and Mendoza (2017), the literature on the subject is considered limited. Despite the growth trend, there is a lack of understanding about the role that female entrepreneurs play in the internationalisation process of firms.

Additionally, it is important to mention the enormous heterogeneity of the role of women in business in different countries and cultures (Anambane & Adom, 2018; Baughn et al., 2006; Khandelwal & Sehgal, 2018; Verheul et al., 2006). Culture provides multifaceted explanations for differences in female entrepreneurship across societies and the success or failure of entrepreneurial activities (Bullough et al., 2021). The biases women face in business often stem from gender stereotypes (Hoyt & Simon, 2011).

Europe and Asia show substantial gender differences in entrepreneurship (Ester & Roman, 2017; Gawel & Głodowska, 2021). On average, female entrepreneurship rates are half of male entrepreneurship rates (Anambane & Adom, 2018; Ester & Roman, 2017). In this sense, it is understandable that promoting female entrepreneurship has become a growing priority on the economic policy agenda of an increasing number of European and Asian countries (Hechavarria et al., 2019; Ilie et al., 2021; Rubio-Bañón & Esteban-Lloret, 2016a).

When choosing the topic of female entrepreneurship as a research field, according to Vadnjal et al. (2020), the doubt arises as to its logical foundation, since entrepreneurship is a concept that should not depend on gender. However, there is evidence that entrepreneurship is not equal for men and women and the challenges of women entrepreneurs vary in different environments and cultures (Vadnjal et al., 2020), which is why this study aims to provide a deeper understanding of the impact of female entrepreneurship on the internationalisation and innovation of firms and expose how the countries of Europe and Central Asia are grouped in terms of female entrepreneurship. More specifically, it aims to contribute to raise awareness about the role of gender in entrepreneurship, economic growth, innovation, and internationalisation.

To achieve this objective, a statistical study was carried out, using multivariate analysis of a sample collected from the database Enterprise Surveys of The World Bank. Factor

Analysis was performed as well, Multiple Linear Regression and Cluster Analysis using SPSS (Statistical Product and Service Solutions).

This paper contributes to the literature on female entrepreneurship and internationalisation by exploring the role that female entrepreneurship plays in innovation and internationalisation of firms. Research on female entrepreneurship is still characterized by explaining the differences between male and female entrepreneurs, not focusing on feminist epistemology. The conclusions drawn from this study are expected to contribute to propose measures to better integrate female entrepreneurs into the international trading system. According to the International Trade Center (ITC), only 15% of exporting firms are led by women entrepreneurs, although 40% of SMEs (Small and Medium Enterprises) worldwide are women-owned businesses, corroborating the existence of cultural, economic and social barriers that affect women entrepreneurs' decision to go international (Drori et al., 2018; Ratten & Tajeddini, 2018). This study also contributes to the fields of entrepreneurship and female entrepreneurship by providing evidence on how culture can impact female entrepreneurship levels in different environments.

This paper is organized as follows: in Section 2 a Literature Review is offered, where the ideas of the main authors studying female entrepreneurship are presented regarding internationalisation and innovation. Section 3 explains the methodology adopted for the development of the statistical study. Section 4 discusses and interprets the main results obtained through multivariate techniques. Finally, Section 5 shows the conclusions, answers, and limitations of the study.

2. Literature Review

2.1. Female Entrepreneurship

Entrepreneurship embodies an emerging field of research that has received special attention in recent decades (Ferreira et al., 2019), being considered a key factor in economic development (Ferreira et al., 2019; Welter & Lasch, 2003).

In the 19th century, with the advancement of the United States as the world's largest industrial power, discussions on entrepreneurship crossed the Atlantic (Ferreira et al., 2019). Although some economists tried to develop the debate around entrepreneurship at that time, it was in the 20th century that Knight (1921) first proposed the distinction between risk and uncertainty. For the author, the entrepreneurial capacity stems directly from the ability to deal with the uncertainties that exist in any society. Schumpeter (1934) was also the first economist to clearly highlight the importance of entrepreneurship in economic development by trying to develop a new economic theory based on change as opposed to equilibrium. According to the author, the entrepreneur is the one who distorts the equilibrium by introducing innovations, which are understood as new combinations of factors, into the system.

On the other hand, Hanson (2009, p. 251) proposed a more inclusive definition of entrepreneurship, arguing that entrepreneurship should be seen as a "geographic gender process". According to the abovementioned author, this inclusive definition of

entrepreneurship should be expanded from the narrow focus on the figure of the (male) "hero" created by Schumpeter (1945) who produces entirely new products or services that cause market disequilibrium, to include anyone who "owns a business, assumes the risks associated with ownership, deals with the uncertainties of resource coordination, and is responsible for the day-to-day management of the business" (Hanson, 2009).

Considering the positive social impact of entrepreneurial activities by women, such as improvements in income distribution and diversification of the economy (e.g., Verheul et al., 2006; Vázquez-Carrasco et al., 2012; Gupta et al., 2014; Akter et al., 2019), women entrepreneurs are an important factor in reducing inequality and promoting local development (Nieva, 2015; Alves et al., 2017; Akter et al., 2019).

This positive impact on society can be evidenced through GEM (Global Entrepreneurship Monitor) data regarding female entrepreneurship. In 2016, around 163 million women started or ran new businesses in 74 economies around the world. Additionally, more recent data, summarised at GEM 2018/2019 women's entrepreneurship report, estimated that nearly 231 million women were creating or running new ventures across the world (Elam et al., 2019). This not only shows the impact of women entrepreneurs around the world but also highlights their contributions to economic growth and well-being of their societies (Kelley et al., 2017).

Nevertheless, although the growth in the number of firms owned by women is encouraging, the size of these firms remains small in terms of revenues and number of employees, especially in comparison to firms owned by men (e.g., Anna et al., 2000; Fairlie & Robb, 2009; Hanson, 2009; Hanson & Blake, 2009; Robichaud et al., 2013; Rubio-Bañón & Esteban-Lloret, 2016b). Additionally, women-owned firms exhibit slower sales growth, have lower growth ambitions, and show limited internationalisation (Fairlie & Robb, 2009; Hanson, 2009). One explanation for this disparity is that female business ownership is mainly concentrated in the retail and service sectors, where businesses are relatively smaller in terms of employment and revenue, as opposed to high-tech, construction and manufacturing (Anna et al., 2000; Fairlie & Robb, 2009; Gatewood et al., 2009; Klapper & Parker, 2011) and create less added value. Indeed, this may be one reason for the relative neglect of female entrepreneurship in economic geography, which tends to focus on larger-scale, technology-oriented formal enterprises (Hanson, 2009). Nevertheless, factors such as (i) lower availability of start-up capital (Cumming et al., 2021); (ii) less human capital acquired through previous work experience in a similar firm and (iii) less previous work experience in a family firms may also help explain the disparity between the success of female and male-owned firms (Fairlie & Robb, 2009).

According to Ahl (2006), research on female entrepreneurship reveals, despite intentions to the contrary, and despite inconclusive research findings, a tendency to recreate the illusion that not only women are secondary to men but also women's businesses are less significant or, at best, an add-on.

However, Tung (2004), states that women may be better suited than men for certain cross-cultural leadership roles. Social context in terms of religious beliefs and ethnic stereotypes is useful in understanding the role of women in cross-cultural contexts (Bullough et al., 2021; Omar & Davidson, 2001). The biases women face in business

often stem from gender stereotypes (Hoyt & Simon, 2011). Thus, Parboteeah et al. (2008) suggested that gender and entrepreneurship need to be understood from a cross-cultural management approach. Culture provides multifaceted explanations for differences in female entrepreneurship across societies and the success or failure of entrepreneurial activities (Bullough et al., 2021). Many barriers and constraints that women entrepreneurs face are gender-specific and derive from cultural values, norms, and customs (Anambane & Adom, 2018; Baughn et al., 2006; Khandelwal & Sehgal, 2018). Social customs and expectations are strongly embedded in any culture (Berry & Segall, 2002; Bruin et al., 2007; Erez & Gati, 2004) and attitudes toward entrepreneurship reflect at least partially subjective perceptions that are prone to bias (Kemp et al., 2015). Traditionally defined gender roles within the home place domestic and family responsibilities primarily on women, while men contribute economically to the family by working outside (Milkie & Peltola, 1999; Vinnicombe & Singh, 2002). These gender role expectations have traditionally limited women's access to income-generating opportunities (Eagly & Karau, 2002). Thus, the environment in which individuals are active plays, a prominent role in the decision to engage in entrepreneurship (Jack & Anderson, 2002; Minniti & Naudé, 2010; van der Zwan et al., 2012).

Studies of formal firms in Eastern Europe and Central Asia have found that firms owned by women tend to be small and use less external finance (Sabarwal & Terrell, 2008). Sabarwal and Terrell (2008) also found that returns to scale for firms owned by women are significantly higher than firms owned by men, implying that women entrepreneurs would gain more from growing their firms, relative to male entrepreneurs. This study also found that the main reason for the suboptimal size of firms owned by women is capital constraints (Sabarwal & Terrell, 2008).

Although women entrepreneurs represent a significant portion of the economy, they face challenges in obtaining the resources needed to expand their businesses (Gatewood et al., 2009).

2.2. Female Entrepreneurship, Innovation and Internationalisation

Although the concept of internationalisation was previously initiated in international entrepreneurship, the pace has not kept up with the involvement of women entrepreneurs in the internationalisation process (Ratten & Tajeddini, 2018).

The experience of women entrepreneurs is important as it influences social conditions and internationalisation patterns (Moreira et al., 2019). Kalafatoglu and Mendoza (2017, p. 333) state that "so far, the literature on the international comparison of women entrepreneurship remains limited". In this sense, there is a need for more research on how women entrepreneurs are internationalising their business operations (Moreira et al., 2019).

Women entrepreneurs are often excluded from the market due to male norms that dominate socio-economic contexts (Drori et al., 2018). This may be justified by the fact that women's economic and social capacity has been hampered by their limited access to markets (Drori et al., 2018; Ramadani, 2015).

Little progress has been made to better understand the competitiveness of businesses led by women entrepreneurs (Alves et al., 2017). Farashah (2015), indicates that although gender is assumed to be a socially constructed factor, its implications are not fully explored. According to the author, it is important to go beyond the social and ethical reasons why women become entrepreneurs. It is necessary to understand their strengths to generate value in the long run (Farashah, 2015). Exploring the relationship between individual-level factors (gender) and macro-level outcomes (business competitiveness) is a growing issue in strategy and organization theory (Felin et al., 2015).

To contribute to this area of research, Alves et al. (2017), adopt two measures that are directly related to strategic behaviour in the competitive environment, namely, (i) innovation and (ii) internationalisation. The first describes the process of developing and implementing an idea, product, process and/or behaviours in an organisation, expressing the intention to create value and distinction from competitors (Damanpour, 1996; Teece, 1986). The second, refers to a firm's attitude towards foreign activities or the effective exercise of activities abroad, being characterized by a low dependence on domestic resources and high tacit and causal ambiguity (Alves et al., 2017; Johanson & Vahlne, 1977; Johanson & Wiedersheim-Paul, 1975). Several studies recommend that managers who wish to venture into internationalisation should create a competitive advantage that helps them demonstrate their firm's superior skills (Barney et al., 2001), including SMEs (Lu & Beamish, 2001). Indeed, fear of the unknown prevents managers from leaving their home country and benefiting from internationalisation, since growth markets tend to be very complex, stimulating competition (Thai & Chong, 2013). On the other hand, competition in a market stimulates competing firms to demonstrate their ability to serve customers in innovative ways (Alves et al., 2017). Both measures, internationalisation and innovation, are recognised as relevant to propel firms to higher levels of competitiveness (Alves et al., 2017).

In this sense, a firm's competitiveness can be driven by innovation and internationalisation: which are major contributors to high performance in organisations, and many researchers have demonstrated their mutual interdependence (Denicolai et al., 2015). Firms that internationalise have more opportunities to leverage their organisational capital than domestic firms, and may culminate in innovation (Alves et al., 2017; Kafouros et al., 2008). Nevertheless, firms that innovate tend to be motivated towards international diversification, earning higher returns on their innovation investments (Filipescu et al., 2013). Mutual relationships have also been studied (Filipescu et al., 2013), and are equally relevant in SMEs (Denicolai et al., 2015), although such firms have a distinct path in relation to innovation performance (Alves et al., 2017). The literature, then, supports that, internationalisation in business benefits innovation and vice versa.

Gender also embodies an important issue (Alves et al., 2017). The number of studies on female entrepreneurship has increased in the last 30 years (Alves et al., 2017). The field is still in an adolescent stage; however, emerging literature suggests that women can play an important role in the broad phenomenon of entrepreneurship and economic development (Sarfaraz et al., 2014). The literature also displays that internationalisation, innovation and female entrepreneurship have positive effects on

economic growth and there is a positive relationship between them (Sarfaraz et al., 2014; Alves et al., 2017).

In innovation-driven economies, more than a fifth of female entrepreneur's report that 25% or more of sales go to customers outside their economies (Kelley et al., 2017). Furthermore, female entrepreneurship is a key contributor to economic growth, not only based on wealth and job creation, but also by diversifying business activity (Verheul et al., 2006; Alves et al., 2017).

Thus, although studies linking gender with innovation or internationalisation have increased in number, they are still not extensive (Orser et al., 2010; Edward et al., 2012; Alves et al., 2017). These have not been sufficient to lead to a better understanding of the complexity of the relationship between these three issues (innovation, internationalisation, entrepreneurship) (Alves et al., 2017). Moreover, gender is often related to women's underperformance (Marlow & McAdam, 2013); for example, there is a strong association of innovation and technology with masculinity, and women are perceived as less innovative than men (Alves et al., 2017). Furthermore, it is important to consider that management decisions are not only related to whether business owners are male or female, but there is a complex structure relating gender to its context of social setting, class structure and politics (Orser et al., 2010).

Taking the gender perspective into account, one global trend is notable: more and more women are internationalising their businesses (Edward et al., 2012). This trend can be justified essentially by 3 factors, namely: (i) the financial rewards (maintaining/increasing revenues); (ii) more women finance their businesses and (ii) competition is no longer restricted to local markets due to globalisation (Welch et al., 2008; Jafari-Sadeghi et al., 2021).

Table I summarizes the hypotheses formulated for this all along with all theoretical support from the literature.

Table I. Hypotheses formulated together with literature support

Formulated Hypotheses	**Theoretical Support**
H_1: There is an interdependence between Innovation and Internationalisation	(Alves et al., 2017; Denicolai et al., 2015; Filipescu et al., 2013)
H_2: There is a positive relationship between Internationalisation, Innovation and Female Entrepreneurship	(Alves et al., 2017; Sarfaraz et al., 2014)
H_3: Female Entrepreneurship influences Internationalisation, i.e., has a positive impact on the Internationalisation process	(Alves et al., 2017; Edward et al., 2012; Jafari-Sadeghi et al., 2021; Moreira et al., 2019; Orser et al., 2010; Ratten & Tajeddini, 2018)

3. Methodology

3.1. Population, Sample, Data and Context of the Study

This study aims to provide a deeper understanding of the role of female entrepreneurship in the process of internationalisation and innovation of firms. To achieve this purpose, a quantitative methodology was employed.

Quantitative analysis holds several advantages, namely: (i) facilitates the processing and analysis of large volumes of data; (ii) facilitates the comparison of numerical data; (iii) facilitates the development of quantitative evaluation indicators; (iv) holds demonstrative power; (v) allows the generalization of data and finally (vi) enables inference for other contexts (Basias & Pollalis, 2018; Savela, 2018). Furthermore, since the outcome is numerical (quantitative), it is often, considered objective (fact-based, measurable, and observable) (Savela, 2018). As noted by Blommaert (2013), a quantitative approach can give a broad overview and protect research from misguided generalizations.

Following the theoretical research and having explored the concepts and constructions of the themes and their relation, the choice of variables representing Internationalisation, Female Entrepreneurship and Innovation (According to Table II) was made from The World Bank - Enterprise Surveys.

The World Bank works in all major development areas, providing a wide range of financial products and technical assistance. Enterprise Surveys provide a wide range of economic data on 164,000 enterprises in 144 countries. Enterprise Surveys are a business-level survey of a representative sample of an economy's private sector. The surveys cover a wide range of business environment topics, including access to finance, corruption, infrastructure, crime, competition, and performance measures. Importantly, the sampling methodology for conducting these business surveys is stratified random sampling, i.e., all population units are grouped into homogeneous groups and simple random samples are selected within each group.

This research consists of carrying out a statistical study, using three multivariate techniques, namely, Factor Analysis, Multiple Linear Regression and Cluster Analysis using SPSS. One of the main advantages arising from the use of multivariate analysis, is without a doubt, the technical rigor associated with the process (Jackson et al., 2011; Queirós et al., 2017). Using the Factor Analysis, the interdependence between the variables innovation and internationalisation is studied. Then, through the Multiple Linear Regression, we observe not only which variables influence the internationalisation of firms (which are grouped into indicators at the country level), but also the variables that influence their innovation. Finally, through Cluster Analysis it is possible to group the countries of Europe and Central Asia in terms of female entrepreneurship.

These techniques were applied to a sample built through the extraction of quantitative data of the years 2019/2020, from The World Bank platform (Enterprise Surveys), built on a sample of 35 countries from Europe and Central Asia. It should be noted that the firm data are grouped into indicators at the country level.

Table II. Explanatory variables with their theoretical sources of support

Explanatory variables	Measurement/Proxy	Acronym	Theoretical Support	Source
Female Entrepreneurship	Percent of firms with female participation in ownership	G1	(Ahl, 2006; Ahl & Marlow, 2012; Bird & Brush, 2002; Hanson, 2009; Rodrigues et al., 2021)	Enterprise Surveys
	Percent of firms with majority female ownership	G2		
Internationalisation	Percent of firms exporting directly or indirectly (at least 10% of sales)	T1	(Agarwal & Ramaswami, 1991; Bell, 1995; Belu & Cărăgin, 2008; Johanson & Vahlne, 2009; Johanson & Wiedersheim-Paul, 1975)	Enterprise Surveys
	Percent of firms exporting directly (at least 10% of sales)	T2		
Innovation	Percent of firms that introduced a new product/service	I1	(Alves et al., 2017; Damanpour, 1996; Gloet & Terziovski, 2004; Harkema, 2003; Sarfaraz et al., 2014; Savino et al., 2017; Schumpeter, 1934; Teece, 1986)	Enterprise Surveys
	Percent of firms whose new product/service is also new to the main market	I2		
	Percent of firms that introduced a process innovation	I3		
	Percent of firms that spend on R&D	I4		

3.2. Descriptive Analysis

The current statistical analysis comprises, in a first stage, a descriptive statistical analysis of some variables, aiming to summarise and clearly representing the information contained in the sample, followed by an inductive statistical study.

Regarding the age of the firms from the 35 countries (belonging to Europe and Central Asia) under study, it can be concluded that the countries have an average age of their firms of 18 years and 3 months. There is a confidence of 95% of the population average being between 16 years and 7 months and 19 years and 10 months. It is observed that the countries have 50% of the firms that have been in business for 18 years or less (Median equal to 18.10). It is possible to conclude by calculating the asymmetry (skewness) that the distribution is approximately symmetric.

It is observed that, on average, the countries have a female share in firm ownership of 31%, with only 13.9% having a female majority share. There is a confidence of 95% of the population average being between 26.47% and 34.57% of female participation in the firm. The median is 30.5%, denoting that the countries have 50% of the firms that hold 30.5% or less female participation.

It is also observed that, on average, the countries have 20.57% of firms that export directly or indirectly (at least 10% of sales) and 15.73% of firms that export directly (at least 10% of sales).

In terms of innovation, countries have, on average, 28.71% of firms producing a new product/service, and there are, on average, 64.57% of firms whose new products/services are also new to the main market. However, the countries have, on average, only 15.65% firms that have introduced innovative processes. Note that, on average, the countries have only 8.35% of firms that invest in research and development (R&D).

4. Results

4.1. Association between variables

To study the hypotheses under study, the test of association between variables was carried out. Considering that the variables are quantitative, the Pearson's r was used.

It should be noted that to study internationalisation, innovation and female entrepreneurship, three variables named "Internationalisation", "Innovation" and “Female Entrepreneurship” were created, resulting from the arithmetic average. Thus, (See Table II):

Internationalisation = (T1+T2) / 2

Innovation = (I1+I2+I3+I4) / 4

Female Entrepreneurship = (G1+G2) / 2

Both quantitative variables have approximately a normal distribution (according to the Kolmogorov-Smirnov test).

Considering the data in Table III, it can be seen that for a confidence level of 95%, the variables innovation and internationalisation are correlated. Additionally, there is also statistical evidence to consider that the variable innovation has not a significant correlation with the variable female entrepreneurship, since it has a significance level greater than 0.05, which does not lead to rejection of the null hypothesis, the independence between variables.

It is also observed that the relationship between internationalisation and female entrepreneurship is not statistically significant, since it has a significance level higher than 0.05. In this sense, it is found that apparently there is no relationship between female entrepreneurship and internationalisation.

In short, it is concluded that only internationalisation and innovation are correlated, so hypothesis 1 is confirmed, but hypotheses 2 and 3 are not confirmed.

Table III. Correlations between variables

Correlations				
		Innovation	Internationalisation	Female Entrepreneurship
Innovation	Pearson Correlation	1	0.359*	0.289
	Sig. (2-tailed)		0.034	0.093
	n	35	35	35
Internationalisation	Pearson Correlation	0.359*	1	-0.063

	Sig. (2-tailed)	0.034		0.720
	n	35	35	35
Female Entrepreneurship	Pearson Correlation	0.289	-0.63	1
	Sig. (2-tailed)	0.093	0.720	
	n	35	35	35

4.2. Factor Analysis

Factor analysis was applied to the variables I1; I2; I3; I4; T1 and T2 (See Table II). Thus, it is possible to explain the structure of correlations (covariances) between the variables, testing again H_1, since in the previous analysis, the multivariate correlation, more specifically factor analysis is not considered (e.g., Bahl et al., 2021; Ding et al., 2021; Vrontis & Christofi, 2019; Zivlak et al., 2017).

It should also be noted that the main assumptions underlying the factor analysis have been properly verified and satisfied.

The KMO measure of sample adequacy is approximately 0.7, indicating that the sample is adequate to perform factor analysis. Additionally, the Bartlett's test of sphericity allows us to ascertain whether the correlations between the variables, object of study, are high enough for factor analysis to be useful in estimating common factors. Because the significance level is less than 0,05 (sig <0.001), the null hypothesis is rejected, ie., it is appropriate to use factor analysis, since the variables are correlated.

From the results presented in Table IV, considering the Individual Measures of Sample Adequacy (MSA) values, all variables have MSA values greater than 0.5 and thus, they are all considered important for the analysis and have sufficient in common with the order variables to obtain viability measures.

The values of the rotated component matrix, indicates, after performing the factor rotation, which variables belong to each factor, and it can be seen that there is an almost perfect distinction between innovation and internationalisation. Factor 1 is composed of the variables "Percent of firms that introduced a process innovation"; "Percent of firms that introduced a new product/service" and "Percent of firms that spend on R&D". Factor 2 is composed of the variables "Percent of firms exporting directly or indirectly"; "Percent of firms exporting directly" and "Percent of firms whose new product/service is also new to the main market". Considering the variable "Percent of firms whose new product/service is also new to the main market", it has a negative factor loading, and therefore represents the relationship between the variables under study, i.e., it joins the two dimensions (innovation and internationalisation), being this one a negative correlation, it seems that I2 negatively influences internationalisation.

Through a reliability analysis, using the Cronbach's Alpha coefficient, it is possible to confirm the results presented by the exploratory factorial analysis. Taking in account the values presented in Table IV, the consistency of the first factor is reliable, since it lies within the range [0.8; 0.9[. However, the second factor presents an unacceptable consistency, given that the alpha value is less than 0.6 (Pestana & Gageiro, 2008).

In conclusion, through the factor analysis, unlike the correlation analysis, it was not possible to conclude the interdependence between innovation and internationalisation.

Table IV. Factor Analysis Results

Variable	Individual MSA	F1	F2
I3	0.735	0.867	
I1	0.747	0.837	
I4	0.917	0.756	
I2	0.604		**-0.579**
T1	0.606		0.878
T2	0.623		0.868
N		3	3
Explained Variance (%)		55.490	22.495
Cronbach's Alpha		0.807	0.380

4.3. Multiple Linear Regression

4.3.1. Do women's entrepreneurship and innovation stimulate the internationalisation of firms?

Initially, a linear regression was performed with the dependent variable "Internationalisation" and the independent variables "G1, G2, I1, I2, I3 and I4". By using this technique, it becomes possible to observe which variables influence the internationalisation of firms.

This model obtained using the stepwise method, in Table V, displays an adjusted R square of, approximately, 25% representing the expected percentage of the total variability in the level of internationalisation of firms explained by the significant independent variables. In this method, variables are introduced step by step, according to their contribution to the model. Only the variable "Percent of firms that spend on R&D" entered the model, which means that all other variables do not seem to contribute to the model.

Additionally, trough the ANOVA, it is verified that, there is statistical evidence to consider the model significant, as the only independent variable has a significant effect on the variation of the dependent variable "Internationalisation".

We were able to conclude that, only R&D, one of the component variables of innovation contributes to the decision of firms to internationalise, and that female entrepreneurship plays no key role in the internationalisation process (according to what was concluded when the Pearson's r association test was carried out).

Table V. Model Summary

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin - Watson
1	0.524[a]	0.275	0.253	8.81366	2.130

[a] Predictors: (Constant), Percent of firms that spend on R&D*

Nevertheless, we may have the multicollinearity effect, being interesting to carry out the same study, but this time, considering the representative variables of innovation obtained through the Factor Analysis. In this sense, the variables G1; G2; I1; I3 and I4 are considered.

Removing the variable I2, we obtained the same results. In this sense, only the variable "Percentage of firms that spend on R&D" entered the model.

4.3.1.1. Validation of assumptions of the linear regression model

Linear regression application assumes that errors follow a normal distribution with zero mean and constant variance and that they are independent.

This analysis included normal probability plot, a scatterplot and leverage graphic, and, to validate the assumption of normality, the one-sample Kolmogorov–Smirnov was used.

Kolmogorov–Smirnov tests allow validating the assumption of normality, for a significance level of 5% because for the Kolmogorov–Smirnov test the p-value equals 0.200. In the summary, in Table V, Durbin–Watson's test displays the value 2.130 and therefore it can expect that the residuals are uncorrelated.

The values of tolerance and VIF, Table VI, for each independent variable show that there is statistical evidence to support the absence of multicollinearity, because tolerance values are close to 1 and the VIF values are less than 3.

4.3.2. Do female entrepreneurship and internationalisation stimulate the innovation of firms?

The second linear regression was performed with the dependent variable "Innovation". The stepwise estimation method is used, that is, introducing the variables (G1, G2, T1 and T2) step by step according to their contribution to the model.

The final model was presented in Table VI. This model displays an adjusted R square of, approximately, 22%, representing the expected percentage of the total variability of the level of innovation explained by the significant independent variables (namely G2 and T1).

Table VI. Model Summary Innovation

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin - Watson
2	0.516 [b]	0.267	0.221	7.18544	2.223

[b] Predictors: (Constant), Percent of firms exporting directly (at least 10% of sales)*, Percent of firms with majority female ownership*

By looking at Table VII, only the variable T1 is significant for an α = 0.05/2 (Bonferroni correction). According to Table VII, the model can be written as below:

$Y = 17.844 + 0.369x_1$

Through this model it is possible to notice that an increase in the variable T1 implies an increase of 0.369 units in the variable Innovation if all other variables remain constant.

Table VII. Coefficients Innovation

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
		B	Std. Error	Beta			Tolerance	VIF
2	(Constant)	17.844	3.676		4.854	<0.001		
	Percent of firms exporting directly (at least 10% of sales)	0.369	0.128	0.443	2.890	0.007	0.976	1.025
	Percent of firms with majority female ownership	0.408	0.182	0.343	2.239	0.032	0.976	1.025

4.3.2.1. Validation of assumptions of the linear regression model

As carried out above, our analysis included normal probability plot, a scatterplot and leverage graphic, and, to validate the assumption of normality, the one-sample Kolmogorov–Smirnov was used.

Kolmogorov–Smirnov tests allow validating the assumption of normality, for a significance level of 5% because for the Kolmogorov–Smirnov test the p-value equals 0.200. In the summary, in Table VI, Durbin–Watson's test displays the value 2.223 and therefore it can expect that the residuals are almost uncorrelated.

The values of tolerance and VIF, Table VII, for each independent variable show that there is statistical evidence to support the absence of multicollinearity between the considered variables, because tolerance values are close to 1 and the VIF values are less than 3.

4.4. Cluster Analysis

4.4.1. A Clustered Division of Europe and Central Asia

We want to investigate if there are differences between countries, considering the variables G1 and G2 variables that explain female entrepreneurship. The aim was to group countries using the K-means clustering method and to discover structures in data separating the countries depending on the variables G1 and G2. The number of clusters used in K-means clustering method (two clusters) is based on the dendrogram that previously resulted of hierarchical cluster analysis.

By observing Table VIII, it can be seen that in Cluster 1 the means of the two variables are higher (because the associated value of the centroid is positive) than the global average. Since the variables are standardized, these results allow the average of the variables in each of the two clusters to be compared with the overall average (if all cases were analysed, without division into clusters). In cluster 1 are countries that have a female participation in firms, i.e., a rate of female entrepreneurship above the global average. On the other hand, in cluster 2 are the countries with percentages of female participation in firms below the global average.

Table VIII. Final Clusters Centres

	Cluster 1	**Cluster 2**
Percent of firms with female participation in ownership	0.68116	-0.51087
Percent of firms with majority female participation in ownership	0.87140	-0.65355

The composition of both clusters is shown in Table IX. This table displays the results of cluster membership, with 15 countries in the cluster 1 and 20 in the cluster 2:

- Cluster 1, where there is a level of female entrepreneurship higher than the global average, is composed mainly of Nordic, Central and Eastern Europe countries and some belonging to Asia, which are characterised by being more egalitarian.
- On the other hand, Cluster 2, consisting mainly of countries from Southern Europe and some from Central Asia, is characterised by the heterogeneity of the ethnic structure, where a clear gender division is perceived.

The most representative country in Cluster 1 is Poland since it is the least distant from the centroid. On the opposite side is Mongolia, which despite being classified in cluster 1, is the country with the greatest distance from the other countries classified in this cluster. Concerning cluster 2, the most representative country of the cluster is Jordan since it is the least distant from the centroid. On the opposite side is West Bank and Gaza, which despite being classified in cluster 2, is the one with the greatest distance from the other countries classified in this cluster.

To understand the extent to which the division of countries within groups is statistically significant, the Table X, presents the dispersion analysis of clustering results. The differences between the F-ratios (F column in the Table X) allow drawing general conclusions about the role of the different mean variables in the construction of the clusters. The results show that G2 have the greatest influence on the clusters

and G1 has the least important influence. Additionally, it can be concluded that the two variables allow a good discrimination of the two clusters, since they both present a p-value of approximately zero (sig < 0.001), indicating that there is statistical evidence to consider that the means of the variables differ for the 2 clusters, at a 5% significance level.

Table IX. Cluster Membership

Cluster 1		**Cluster 2**	
Economy	**Distance**	**Economy**	**Distance**
Bulgaria	0.599	Albania	1.137
Croatia	0.735	Azerbaijan	0.794
Czech Republic	0.927	Bosnia and Herzegovina	0.521
Estonia	0.596	Cyprus	1.765
Hungary	1.313	Georgia	0.349
Kazakhstan	0.892	Italy	0.304
Kyrgyz Republic	1.163	Jordan	0.253
Latvia	0.692	Kosovo	1.589
Lithuania	0.441	Lebanon	1.417
Moldova	0.351	Malta	1.898
Mongolia	1.925	Montenegro	0.785
North Macedonia	0.786	Portugal	1.147
Poland	0.235	Romania	0.747
Russiac	0.470	Serbia	0.709
Ukraine	0.712	Slovakia	0.509
		Slovenia	0.850
		Tajikistan	0.497
		Turkey	1.380
		Uzbekistan	0.379
		West Bank and Gaza	2.003

Table X. ANOVA

	Cluster		**Error**		**F**	**sig**
	Mean Square	df	Mean Square	df		
Percent of firms with female participation in ownership	12.180	1	0.661	33	18.420	<0.001
Percent of firms with majority female participation in ownership	19.933	1	0.426	33	46.760	<0.001

4.4.2. Cluster Analysis Validation

Nevertheless, since cluster analysis is a multivariate technique that does not have solid theoretical foundations, grouping cases according to more or less heuristic criteria, it lacks, therefore, validation.

First, we construct an Agglomeration Calendar Coefficient. We conclude that, there seems to be no significant difference between 3,4 or 5 clusters. However, from 2 to 3 clusters there is a considerable drop. In this sense, it is possible that the countries would be better grouped in 3 clusters instead of only 2.

To verify the appropriateness of the number of clusters, we performed again the k-means cluster analysis to check for convergence, but this time for K (Number of clusters) = 3. We observe the convergence of the method to 0 only in the seventh iteration. In addition, the dimensions of the clusters are not balanced. Cluster 1 includes 17 countries, cluster 2 7 countries and cluster 3 the remaining 11 countries. In this sense t-tests as well as ANOVA tests will be performed to investigate the inequality of means.

In relation to the t-test for K=2, the homogeneity of the variables is verified, using the Levene's Test, since the p-value is greater than 0.05, thereby not rejecting the null hypothesis (see Table XI). In this sense, the t-test can be considered, with Equal variances assumed in the row. According to Table XI, since the p values presented are less than 0.05, the null hypothesis is rejected, so all the variables have significantly different means in the two clusters.

Table XI. Independent Samples Test

		Levene's Test for Equality of variances		t-test for Equality of MEANS						
		F	Sig	t	df	Sig (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Percent of firms with female participation in ownership	Equal variances assumed	0.246	0.624	7.993	33	0.000	1.65640048	0.20723114	1.23478555	2.07801541
	Equal variances not assumed			7.880	24.215	0.000	1.65640048	0.21021199	1.22274778	2.09005318
Percent of firms with majority female participation in ownership	Equal variances assumed	0.351	0.558	3.708	33	0.001	1.10628167	0.29832766	0.49932947	1.71323386
	Equal variances not assumed			4.004	31.105	0.000	1.10628167	0.27628641	0.54286915	1.66969418

Next, the ANOVA test is performed to investigate the inequality of the means for K=3. Not all variables present significantly different means for the 3 clusters (i.e., test values lower than 0.05) (cf. Table XII).

In this sense, it seems more appropriate to consider 2 clusters.

Table XII. Post Hoc Tests

Dependent Variable	(I) Cluster Number of Case	(J) Cluster Number of Case	Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval	
						Lower Bound	Upper Bound
Percent of firms with female participation in ownership	1	2	1.9578561*	0.23412534	0.000	1.3825232	2.5331891
		3	0.55266868	0.23832901	0.067	-0.0329943	1.1383316
	2	1	-1.957856*	0.23412534	0.000	-2.5331891	-1.3825232
		3	-1.405187*	0.22282499	0.000	-1.9527512	-0.8576236
	3	1	-0.55266868	0.23832901	0.067	-1.1383316	0.329943
		2	1.4051874*	0.22282499	0.000	0.8576236	1.9527512
Percent of firms with majority female participation in ownership	1	2	1.7972286*	0.29034029	0.000	1.0837546	2.5107026
		3	1.2667360*	0.29555327	0.000	0.5404518	1.9930203
	2	1	-1.797229*	0.29034029	0.000	-2.5107026	-1.0837546
		3	-0.53049256	0.27632664	0.150	-1.2095298	0.1485447
	3	1	-1.266736*	0.29555327	0.000	-1.9930203	-0.5404518
		2	0.53049256	0.27632664	0.150	-0.1485447	1.2095298

*. The mean difference is significant at the 0.05 level

Legend:

Cluster 1

Cluster 2

Figure 1. Geographical representation of the clusters

It can be seen in Figure 1, that Cluster 2 comprises mainly southern, southwestern and southeastern European countries, also covering some from Central Asia. On the other hand, in Cluster 1 are the countries of mainly Nordic Europe, Central and Eastern Europe, and some belonging to Asia.

5. Discussion

In line with the objective of the paper, and through Correlation Analysis, it was possible to find that, innovation and internationalisation are highly correlated, verifying their interdependence. This is in line with what is advocated by the authors Alves et al. (2017); Denicolai et al. (2015) and Filipescu et al. (2013), who state that, there is an interdependence between internationalisation and innovation. Firms that internationalise have more opportunities to leverage organisational knowledge than domestic firms, which may culminate in innovation. Nevertheless, firms that innovate tend to motivate themselves for international diversification, obtaining higher returns on their investments in innovation.

However, it is not possible to confirm these results through Factor Analysis. There is an almost perfect distinction between innovation and internationalisation. Nevertheless, it is possible to conclude that grouping the variables considering the sum is a good strategy, because with Factor Analysis, variables T1 and T2; and I1 to I4 were verified, except for variable I2 which seems to have a negative correlation with internationalisation, perhaps because the products that are already on the market are not appealing to the foreign market.

In the Multiple Linear Regression, it was found that only innovation contributes to the option for firms to internationalise, and the variables considered of female entrepreneurship do not play a central role in the internationalisation process. Through the Multiple Linear Regression, it is also concluded that, only internationalisation drives the adoption of innovation by businesses, corroborating what is advocated by the authors Alves et al. (2017); Denicolai et al. (2015) and Filipescu et al. (2013) and Sarfaraz (2014). As discussed in the literature, this can be justified by several factors, namely, the fact that female business ownership is mainly concentrated in the retail and service sectors, where businesses are relatively smaller in terms of employment and revenue, as opposed to high-tech, construction and manufacturing (Anna et al., 2000; Fairlie & Robb, 2009; Gatewood et al., 2009; Klapper & Parker, 2011). Furthermore, according to Sabarwal and Terrell (2008), women entrepreneurs face enormous capital constraints. Although women entrepreneurs represent a significant part of the economy, they face challenges in obtaining the resources needed to expand their businesses (Gatewood et al., 2009). This translates into weak economic and social capacity of women as a result of limited access to markets (Ramadani, 2015; Drori et al., 2018).

Given the results, it appears that the representative variables of female entrepreneurship considered do not seem to contribute to either innovation or internationalisation of firms. However, these results may be affected by the use of

national indicators, which may waste more specific results of female entrepreneurial participation. According to Ratten and Tajeddini (2018), there are cultural, economic, and social barriers that affect women entrepreneurs' decision to go international and in line with the International Trade Center (ITC), only 15% of exporting firms are led by women entrepreneurs. In this regard and as advocated by the WTO, it is essential to take measures to better integrate women into the international trading system (Ratten & Tajeddini, 2018).

Through Cluster Analysis, considering the indicators chosen in ES to represent female entrepreneurship, it is concluded that the countries of Europe and Central Asia can be divided into two clusters. The difference between the two clusters can be justified by the role of women in the countries in question.

Cluster 1, where the level of female entrepreneurship is higher than the global average, is composed mainly of Nordic, Central and Eastern Europe countries and some countries in Asia. On the other hand, cluster 2 consists mainly of countries in Southern Europe and Southwestern Europe and some in Central Asia.

According to the World Economic Forum's Gender Gap Report, the Nordic countries are the most egalitarian. Additionally, many of the countries in Central and Eastern Europe have incorporated the ideal of gender equality into their new constitutions and now have full legal equality for men and women (Olson et al., 2007). Evidence suggests that there tends to be more equality for the sexes in countries around the world when laws support equality (Epstein, 1988). In this sense, it is understandable why these countries, belonging to cluster 1, have a higher level of female entrepreneurship than the global average.

In contrast, it is known that the countries of South Europe are characterized by the heterogeneity of their ethnic structure (Karamanou, 2004). Genders are still defined more by differences than by similarities. There is a very clear separation of roles according to gender. An unbalanced concept of success from a gender perspective is promoted. In this respect, religions continue to have a great influence on gender segregation (Karamanou, 2004). Although they are slowly gaining ground, women-friendly changes often face resistance stemming from traditional cultural codes, customary law and ancient cultural practices. In addition, regarding the characterization of the role of women in Southern Europe, namely in terms of the division of paid and unpaid work within the household, a clear gender division is perceived (Silva, 2002). Women are almost exclusively responsible for household chores and for the care of children and the elderly. This situation is even more problematic if we consider that despite the massive entry of women into the labor market (and the Portuguese situation is particularly significant), this has not corresponded to a greater collaboration of the spouse in domestic chores (Silva, 2002). On the contrary, the upward trend in female participation rates, which is tending to intensify, only results in an accumulation of effort on the part of women, limiting women's options when it comes to entering the labor market (Silva, 2002). Furthermore, according to Rubio-Bañón & Esteban-Lloret (2016), cultures with a high value on the masculinity scale tend to have more pronounced gender differences. Consequently, countries with a masculine orientation are expected to have higher rates of entrepreneurship, while in those where female values prevail there is a greater tendency towards paid employment. Hechavarría and Brieger (2020), suggest

that female entrepreneurs are more likely to engage in entrepreneurship when cultural practices of power distance and in-group collectivism are low, and cultural practices of long-term orientation and uncertainty aversion are high, when compared to male entrepreneurs. Since the southern countries are mostly characterized as societies with a high masculinity index (as is the case of Portugal) contrary to the Nordic countries and a higher power distance (Hofstede, 2011), it is perceptible why women engage less in entrepreneurship activities. All this may justify the fact that these countries (belonging to cluster 2) have lower rates of female entrepreneurship than the global average.

This is in line with Bullough et al. (2021), who state that culture provides multifaceted explanations for differences in female entrepreneurship across societies. Many barriers and constraints that women entrepreneurs face are gender-specific and derive from cultural values, norms, and customs (Anambane & Adom, 2018; Khandelwal & Sehgal, 2018).

In this sense, it is observed that indeed, the environment in which individuals are active plays a prominent role in the decision to bet on entrepreneurship, corroborating the literature (Jack & Anderson, 2002; Minniti, 2010; van der Zwan et al., 2012).

6. Conclusion

Given the increasing importance of female entrepreneurship for growth and employment, particularly in international markets, this study aims to contribute to this understudied area by exploring the role of female entrepreneurship in the internationalisation process of firms.

The scientific literature suggests that women can play an important role in the broad phenomenon of entrepreneurship, economic development, innovation, and internationalisation of firms. Nevertheless, women entrepreneurs are often excluded from the market due to male norms that dominate socio-economic contexts (Drori et al., 2018), which has resulted in the scant study in the literature on the role of women entrepreneurs in the process of firm internationalisation (Anggadwita et al., 2017; Palalic et al., 2017).

The main conclusion of the study is that apparently, the variables representing female entrepreneurship do not contribute to either innovation or internationalisation of firms. But, once again, it is important to note that these results may be affected by the use of national indicators, which may waste more specific results of female entrepreneurial participation.

For all this, there is a call for the formulation of policies that can eliminate the negative impact of culture on women-owned businesses. Sajjad et al. (2020) states that if women were empowered as entrepreneurs, then the entire society would benefit from it, since women entrepreneurs are beneficial not only for economic development but also for the social development of the society.

In this study, some inherent limitations should be highlighted, which future studies can address. First, data collection was restricted to employing secondary resources in which variables were drawn from The World Bank databases. Second, the option of

Europe and Central Asia as an analytical basis may not have allowed a true interpretation of the relationship between internationalisation, innovation and female entrepreneurship. As stated earlier, there is a huge heterogeneity of women's role in business in different countries and cultures, so limiting the study to countries in Europe and Central Asia may not have allowed a true interpretation of the results. In this sense, future study of the relationship between female entrepreneurship, internationalisation and innovation in other countries/environments is recommended. Thirdly, the fact that internationalisation is measured only through exports constitutes another limitation to the study in question. Finally, the timeline aggregates the most recent data available, only in the years 2019/2020. Future research could extend this period to examine whether the results would be reliable for any period.

For future research, it is suggested that more positive aspects of the contribution of female entrepreneurs to internationalisation be investigated. Further research is needed on the link between female entrepreneurship and internationalisation patterns and further reflection on how women entrepreneurs can succeed in the international market. Current thinking on female entrepreneurship focuses mainly on gender differences rather than female epistemology but it is essential to think more about the attributes unique to women that can be used beneficially to increase internationalisation rates. Additionally, it is suggested as a proposal for future research to investigate the factors explaining the distribution of clusters, seeking to understand not only why in the Nordic countries, Central and Eastern Europe countries and some of Central Asia there is a higher rate of female entrepreneurship, but also why in the countries of Southern, the rate of female entrepreneurship is lower.

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CHAPTER III

Business Innovation and Internationalisation in Female Owned Businesses: A Fuzzy-set QCA Approach

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Abstract

Purpose: Female entrepreneurship is increasingly important to create new jobs and contribute to countries social and economic growth. This paper aims to examine how innovation and internationalisation interact within a female entrepreneurship perspective.

Design/methodology/approach: Our research was based on fuzzy-set qualitative comparative analysis (fsQCA) method as means of exploring the causal complexity between female entrepreneurship (condition), innovation and internationalisation (conditions and outcomes).

Findings: Our results suggest that female entrepreneurship alone is neither a sufficient nor a necessary condition for the outcome (high internationalisation or innovation). Nevertheless, the results indicate that female entrepreneurship is important in achieving a high level of internationalisation.

Practical implications: This study provides policy makers with evidence of the gains of promoting female entrepreneurship in their respective countries.

Originality/value: This study advances knowledge in two ways. It explores the interplay between innovation and internationalisation from the perspective of female entrepreneurship. It applies fuzzy set methods to the three concepts simultaneously.

Keywords: Female Entrepreneurship; Innovation; Internationalisation; Fuzzy-set qualitative comparative analysis; fsQCA

1. Introduction

Female entrepreneurship represents one of the fastest growing categories of entrepreneurship globally and has recently attracted the attention of many researchers (e.g., Byrne et al., 2019; Cardella et al., 2020; Elam et al., 2019; Gawel & Głodowska, 2021). A woman entrepreneur is defined as one who uses her skills, means and knowledge to establish a new business venture, facing the issues and challenges until she makes financial gains from the venture (Noor et al., 2021). Women are undoubtedly relevant authors in the process of historical, socio-economic, scientific, and cultural transformations in the dynamics of society, from ancient to contemporary times, although the recognition of their role and protagonism has not always been explicit. On the other hand, memorable portrayals of their historical role in the society have always referred to their domestic, family, and exploitative assignments, and deprived civil rights (Rodrigues et al., 2021).

Given not only the principles of equal opportunities, promoted as basic rights, but also the elimination of the gender gap in accessing education and the labour market (Girón & Kazemikhasragh, 2021), the gender gap among entrepreneurs (Gawel & Głodowska,

2021; Miragaia et al., 2021; Strawser et al., 2021) also deserve exploration. The percentage of women who decide to pursue entrepreneurship is lower than men (Elam et al., 2019), and this gap is larger as the country's level of development increases (Coduras & Autio, 2013). Evidence suggests that women have different career outcomes than men working in similar positions and businesses (Ahl, 2006; Akter et al., 2019; Forret & Dougherty, 2004). It is important to acknowledge the challenges and discrimination that women often face in business when working in the international arena. Furthermore, discrimination is not a result of sexism, but a consequence of culture and tradition and has negatively affected women in the professional business context (Anambane & Adom, 2018; Brieger et al., 2019). Attitudes in business and management behaviour also affect women's aspirations and behaviour and a possible consequence of this is that women may be prevented from achieving their true potential (Anambane & Adom, 2018; Brieger et al., 2019).

In contrast, studies show that women account for 50% of the world population and approximately 40% of the global workforce (Rudhumbu et al., 2020; Strawser et al., 2021). Therefore, it goes without much discussion that today's world is dependent on female entrepreneurship, something that is also corroborated by a large number of studies that have been done (e.g., Anambane & Adom, 2018; Berger & Kuckertz, 2016; Brieger et al., 2019; Kalafatoglu & Mendoza, 2017). According to Sajjad et al. (2020), women's participation in entrepreneurial activities not only contributes to household income, but also plays a significant role in the economic development and social well-being of society. Female entrepreneurs contribute to economic growth and social progress worldwide (Bullough et al., 2021), representing an important factor in reducing inequalities and promoting local development (Akter et al., 2019; Alves et al., 2017; Nieva, 2015). Thus, female entrepreneurship is considered a strategic priority and a catalyst regarding women's empowerment in business and development in many countries (Naguib, 2022).

However, articles concerning female entrepreneurship, predominantly focus on the differences between female and male entrepreneurship (e.g., Crespo, 2017; Guzman & Kacperczyk, 2019; Kanze et al., 2017; Laguía et al., 2019; Li et al., 2021; Vracheva & Stoyneva, 2020; Yadav et al., 2022). Additionally, according to Nissan et al. (2012), except for some research veins dedicated to explaining gender differences in entrepreneurship developed mainly during the last decade, the study of innovation and internationalisation has been characterised by gender blindness. Furthermore, previous research has predominantly used conventional quantitative techniques (Arun et al., 2020; Lemma et al., 2022; Osgood et al., 2017), which consider independent variables, as analytically separable causes of a given dependent variable and assume that the impacts of independent variables are both linear and additive (Ragin, 2008). Consequently, a more relevant and appropriate approach, such as qualitative comparative analysis (QCA), should be used to gain a better understanding of the complexity of the contextual determinants regarding female entrepreneurship.

Therefore, this paper aims to use a fsQCA approach to examine how female entrepreneurship relates to innovation and internationalisation of firms. This study uses quantitative data for the years 2019/2020 from The World Bank Enterprise Surveys platform, for 38 countries in Europe and Central Asia.

The paper addresses a specific and not yet recognised dimension of entrepreneurship, namely female entrepreneurship, which needs to be studied more extensively according to several authors (e.g., Gawel & Głodowska, 2021; Minniti & Naudé, 2010; Misra et al., 2014; Moreira et al, 2019). The findings also provide a practical contribution to women entrepreneurs, policy makers and global agencies. The research contributes both theoretically, by adding insights on the relationship between internationalisation, innovation, and female entrepreneurship through a new approach, and practically, by providing policy makers with a holistic point of view aiming to promoting female entrepreneurship in their respective countries.

In addition, the novelty of our paper also relies on the combination of the topic and the methodological approach. A search on the web of science under "fuzzy-set" returns 19,650 papers, but only 4.47% are within business. The journal of Business Research is the leading title regarding the use of fuzzy-set methods in business, accounting for more than 1/3 of all papers. In addition, if one adds "female entrepreneurship" to the search, only 7 papers are returned. These papers employ fuzzy set methods to female entrepreneurship in different areas: entrepreneurial barriers (Wu et al., 2019); the institutional context (Xie et al., 2021; Li et al., (2021); psychological cognition (Huang, et al., 2022; Jiang et al., 2021); education (Jiang et al., 2021); career expectations (Albors-Garrigos et al., 2021); and regional innovation capabilities (Huang et al., 2022).

This research is divided as follows: Section 2 presents a literature review with the aim of deepening the knowledge inherent to female entrepreneurship, highlighting its relationship with innovation and internationalisation of firms. Section 3 concerns the methodology, including the sample and data collection, adopted for the development of the study. This is followed by Section 4, whose objective is the presentation and interpretation of the main results. Finally, Section 5 presents the main conclusions, limitations, and proposals for future research, which fulfil the objective of the study.

2. Literature Review

2.1. Female Entrepreneurship

Entrepreneurship has been a gender-defined phenomenon for several decades. It has been presented as a typically male domain requiring typical male characteristics for its demanding performance (Vadnjal et al., 2020).

According to the Global Entrepreneurship Monitor (GEM), entrepreneurship is understood as any attempt to create new businesses or new ventures, such as self-employment, a new business organisation, or the expansion of an existing business, by an individual, a team of individuals, or an established business (Kelley et al., 2017). A clear trend in entrepreneurship is the increasing rate of women entrepreneurs, which is growing internationally (Sendra-Pons et al., 2021). The GEM 2018/2019 women's entrepreneurship report estimated that almost 231 million women were creating or managing new ventures worldwide in 2019 (Elam et al., 2019). Women play a major role in entrepreneurship, despite female entrepreneurship being lower than male

entrepreneurship (Crespo, 2017; Laguía et al., 2019; Rubio-Bañón & Esteban-Lloret, 2016b; Xie et al., 2021).

Female entrepreneurship has attracted increasing attention from scholars and policymakers given its economic and social importance (Xie et al., 2021). Women represent one of the fastest growing entrepreneurial populations, which contributes substantially to innovation, job creation and added value (Vadnjal et al., 2020). Women's entrepreneurial activities contribute to improving their social status (Datta & Gailey, 2012), create employment, contribute to economic growth (Bosse & Taylor, 2012; Bullough et al., 2021) and improve the overall social quality of life (Akter et al., 2019; Dheer et al., 2019). From the perspective of economy and development, Hapsari e Soeditianingrum (2018), highlight that woman play a key role in improving the social environment, creating a more educated and evolved society.

Regarding the definition of female entrepreneurship, different scholars present different definitions of the concept, with some insisting on a narrow definition for female entrepreneurship (Deng et al., 2020). Humbert and Brindley (2015), underline the link between the notion of risk and female entrepreneurship and argue that female entrepreneurs must take enormous personal and financial risks to build a business and show some innovation in this process, just as male entrepreneurs do. Other authors (for example, Adom & Asare-Yeboa, 2016; Hechavarria et al., 2019 and Jennings & Brush 2013) argue for a broad definition of female entrepreneurship that embraces both “self-employment”, where women own small businesses but do not create a new venture, and “entrepreneurship” in the classical sense, where women take initiative, mobilise resources and take risks to create a new venture.

According to Ribes-Giner et al. (2018), there are some factors that lead to high female entrepreneurship, namely, (i) high female labour market participation coupled with a smaller gender pay gap, i.e. high and good quality female employment; (ii) high female labour market participation coupled with a low presence of women in positions of power and (iii) high female labour market participation, a low presence of women in positions of power and a high position in the country risk ranking. The latter condition shows that countries’ good economic, financial, and developmental conditions contribute to provide confidence to investors and favour entrepreneurship, particularly when financing is one of the main problems women face when starting their own businesses (Kanze et al., 2017; Ribes-Giner et al., 2018).

Entrepreneurship has been proposed as a possible career path that alleviates the problems women face in the traditional workplace; for example, work-family conflict, barriers to their advancement based on stereotypical beliefs, negatively skewed performance evaluations when compared to men, lower chances of being promoted than their male counterparts, penalization for their success by being unappreciated and interpersonally belittled, among others (Heilman & Chen, 2003; Laguía et al., 2019). In fact, women are more likely to start businesses triggered by necessity (no other work option) than seeking an opportunity as the basis for their entrepreneurial motivation (Vadnjal et al., 2020; van der Zwan et al., 2016). Women are less motivated by the desire for power and money than by reasons associated with the need for flexibility, desire to balance family responsibilities, earning money for their family, to achieve personal independence, and lack of other options (McGowan et al., 2012; Vadnjal et al., 2020). However, entrepreneurship offers a partial answer. In some

cases, it works as a trigger for women to take the positive step they have been waiting for some time, but on the other hand, the negative realities of the company pose important challenges to these women since, for most of them, achieving and maintaining a proper balance between the domestic and working arena remains a constant challenge, a huge source of stress (Cardella et al., 2020).

2.2. Innovation

Innovation is an approach used by organisations to introduce change to survive and thrive in uncertain and turbulent conditions (Chandra et al., 2020; Tsegaye et al., 2020). It has become a Holy Grail in economic growth and sustainability agendas worldwide (Edwards-Schachter, 2018).

The ability to create and manage innovations is recognised as an important skill not only for core business activities but also for the survival of organisations (Amabile & Pratt, 2016; Chandra et al., 2020; Damanpour & Evan, 1984).

Innovation is usually considered an important driver of economic development, but the innovation process itself is transformative for all institutions in society (Baskaran & Mehta, 2016). Regardless of its economic scope, it is associated with changes that do not come only from the business or productive sector in a market (Solis-Navarrete et al., 2021). Change is perceived as essential to innovation, being part of the human evolution dynamics and central to how humans produce knowledge and change and "institutionalise" their social practices over time. Change may have its origins in the need to solve a problem or a "societal need" (Edwards-Schachter, 2018). Moreover, innovation is particularly important for resilience - an ability to survive and thrive in a rapidly changing world (Chandra et al., 2020; Drucker, 1954). Innovations enable organisations to keep up with competitive markets (Chandra et al., 2020).

Innovation is defined in various ways in the literature (Taylor, 2017). The term was originally based on the concept of renewing an existing good or concept (similar to 'renewal') (Schumpeter, 1934; Teece, 1986). Increasingly, however, the term has come to be associated with invention and creativity, although it is clearly distinct from invention through its application in a practical context (Chandra et al., 2020). Utterback (1971) and du Plessis (2007) state that innovation can be a new product, a new service or a new technology. To innovate is to introduce "something new" that produces change, but innovation also refers to "the process" (the method) by which a change occurs and sustains with time. Innovation includes both revolutionary changes and small incremental changes (Dodgson, 2018). According to Cardinal et al. (2001), the innovation process encompasses the technical, physical and knowledge-based activities that are central to the creation of product development routines. According to Petruzzelli et al. (2018) and Savino et al. (2017) innovation is often the result of a new combination of knowledge inputs, defined as the fundamental parts of knowledge that constitute innovative ideas. "Under different policies, innovation can take different directions, or assume different forms, or involve different processes, or bring in different actors and bodies of knowledge" (Martin, 2016, p. 435). Finally, according to Granstrand and Holgersson (2020), most contemporary definitions of innovation, seen as the result of a process, rely on two main characteristics: the degree of novelty of a change and the degree of usefulness or success in applying something new. The

concept of 'new' could mean new to the world, new to a nation, new to a company, etc. (Granstrand & Holgersson, 2020).

2.3. Internationalisation

Internationalisation is the process of increasing involvement in international operations, whereby firms increase their international activities as they accumulate learning and experience from their international forays (Bagheri et al., 2019). It embodies a strategic decision that leads to the mobilization of resources to create and capture value through cross-border business activities (Santangelo & Meyer, 2017; Welch & Paavilainen-Mäntymäki, 2014). It is also a process of committing resources to capture opportunities in international markets where industry conditions may diverge from those in which the firm is used to operating in the domestic market (Teece, 2006). This strategic process is, therefore, affected by the local firms´ existing resources as well as market conditions in host countries (Matysiak et al., 2018).

According to Tookey (1975), the decision to internationalise represents a major commitment to enter a new industry and should therefore be done step by step: (1) obtaining information, (2) analysing it and (3) formulating alternative action plans. A model that focuses on the dynamics of the internationalisation process is the Uppsala Model, also called the "U Model". This model was developed by Johanson and Wiedersheim-Paul (1975) and Johanson and Vahlne (1977) based on the internationalisation pattern of Swedish firms in the 1970s. The models of internationalisation phases, such as the Uppsala Model, suggest that firms slowly increase their commitments in international markets.

In the process of internationalisation, to maximise the use of international resources and potential, it is imperative that managers focus simultaneously on their external and internal operations, therefore they should be more proactive in cooperating with foreign partners and using advanced technology from foreign countries in order to increase their performance, while preparing their organisations internally for emerging challenges (Bagheri et al., 2019).

Usually, having a prior commitment to internationalisation will influence future internationalisation intentions. To develop international business relationships, a commitment to acquire market knowledge is required (Belu & Cărăgin, 2008; Hörnell et al., 1973; Joahanson & Vahlne, 1977; Johanson & Wiedersheim-Paul, 1975). As individuals become more confident in trading partners, they are likely to engage with them in international markets (Ratten & Tajeddini, 2018). International entrepreneurship is directly related to the ability to understand the international opportunity, an essential condition for it to be effective (Dimitratos et al., 2016).

This corroborates what is advocated by Beugelsdijk et al. (2018), who concluded that firms are less likely to expand into culturally diverse locations, and if they do, they prefer new investments and the integration of subsidiaries through the transfer of management practices.

Entry into new foreign markets can be achieved in various ways, namely through (1) exports, (2) licensing, (3) joint ventures, (4) strategic alliances, (5) full ownership over subsidiaries (sole ventures), among others (Agarwal & Ramaswami, 1991; Belu & Cărăgin, 2008). Firms can also enter foreign markets through other contractual modes,

such as: management contracts, outsourcing, consortia, and franchising (Beamis & Bank, 1986; Kedia et al., 1995). Each of these forms imposes unique challenges on the firm in terms of organisational and financial resources. Most often, entering international markets is not a matter of choice, but of the need to remain competitive in new or established markets (Belu & Cărăgin, 2008).

The firms' ability to extract, analyze and use knowledge is also fundamental in internationalisation and is one of the most important factors when one aims to enter a new market where there is not yet much experience (Love & Roper, 2015). Firms face difficulties in foreign markets, so they need to develop a strong knowledge base to compete successfully across borders. It is a fact, then, that knowledge intensity and diversity in knowledge sources have positive effects on firm internationalisation (de Clercq et al., 2012; Hilmersson, 2013) and, also on innovation (Anoruo & Dipietro, 2006; León-Ledesma, 2005).

2.4. Female Entrepreneurship, Innovation and Internationalisation

Over the last two decades, an increasing number of studies have examined the relationship between internationalisation and innovation (e.g., Azevedo et al., 2021; Danish et al., 2021; Freixanet & Rialp, 2022; Thakur-Wernz & Samant, 2019). Firms are indeed able to learn from their international experience and achieve higher levels of innovation (Azevedo et al., 2021; Thakur-Wernz & Samant, 2019). However, the innovation-internationalisation link is not a simple matter, and the mentioned relationship is not a matter of consensus among researchers (Azevedo et al., 2021). If, on one hand, internationalisation can be considered an innovation process and allows access to various sources of knowledge stimulating innovation, on the other hand, the development of innovations can create or improve market opportunities (Zucchella & Siano, 2014). According to Thakur and Samant (2019), as learning does not occur at the same pace over time, the relationship between international experience and innovation performance is positive but not linear; instead, it follows an S-shaped curve.

Considering not only internationalisation and innovation but also female entrepreneurship, some studies (e.g., Moreira et al., 2018; Welch et al., 2008) report that exporting is not only a strategy for the firm, but also a life-changing experience for women, allowing them to grow as individuals as well as growing in business and succeed as exporters. International orientation is one of the indicators monitoring the activity of women entrepreneurs, and this is higher in male entrepreneurs compared to women entrepreneurs (Kelley et al., 2017). Women entrepreneurs have a favourable view of exporting (Sui et al., 2022). Specifically, they see exporting as an avenue for personal and business development and want to operate in export businesses with financial success (Welch et al., 2008).

Moreira et al. (2018) concluded that, women's entrepreneurial personality positively influences the expansion of international markets and innovation.

Women entrepreneurs provide important contributions to innovation, internationalisation, employment and wealth creation across economies (Azeem et al., 2022; Garcia-Quevedo, 2021; Ratten & Tajeddini, 2018) .

Nevertheless, it should be noted that women still face a significant number of difficulties and obstacles in the creation and management of firms (Garcia-Quevedo, 2021). The main challenges identified in the literature in relation to women entrepreneurs are mainly related to the lack of adequate training and exposure to role models, the inability to work in thought stimulating networks, as in relatively conservative societies women prefer to network in private circles or with families and friends, and limited access to loans and funds (Al-Qahtani et al., 2022). As Bates (2002) argued, women entrepreneurs have less access to business clients than male firms, which increases the potential gap in network access. Women owners could learn less than men about foreign markets and develop fewer capabilities in such markets. While export markets may be an avenue to circumvent domestic market discrimination, as stated by Osgood et al. (2017), discrimination still provides a challenge that may reduce the ability of women-owned firms to conduct a very intensive export strategy. More generally, women owners may not pursue an intensive export strategy when they face explicit or subtle barriers outside their control (Sui et al., 2022). As a result, women start fewer firms and their ventures underperform as they remain smaller in terms of revenue, job creation and size relative to male-led firms (Garcia-Quevedo, 2021).

Several studies (e.g., Azeem et al., 2022; Garcia-Quevedo, 2021; Moreira et al., 2018; Ratten & Tajeddini, 2018), conclude that female entrepreneurship positively influences firm innovation and internationalisation. The apperent contradictory positions of the previous paragraphs justifies why exploring the relationship between female entrepreneurship and both internationalisation and innovation calls for new methodologies so that existing knowledge ca be increased.

Therefore, this study makes the following propositions:

Proposition 1: Female entrepreneurship is associated to firm internationalisation.

Proposition 2: Female entrepreneurship is associated to firm innovation.

3. Methodology

3.1. Method

This study employs the fsQCA with the aim of exploring whether female entrepreneurship positively influences firm innovation and internationalisation.

The fsQCA, developed by social scientist Charles Ragin, has received increasing attention (Pappas & Woodside, 2021), being an empirical method based on Boolean algebra that allows a configurational examination of the causal relationship between a group of antecedent conditions and a related outcome (Ragin, 2000). This methodology offers a set-theoretic approach to the analysis of causality, with respect to conditions, and an outcome (Ragin, 2008). A unique aspect of this methodology is the ability to uncover and account for contrary cases (Gligor & Bozkurt, 2020). For example, within the same dataset, there could be cases where one variable might relate to another negatively or not at all, however, by accounting for all cases in the dataset, the overall relationship between the two variables could be positive. In this sense, this methodology allows researchers to go beyond the "all-or-nothing"

association that regression analysis can reveal (Woodside et al., 2018). Moreover, fsQCA can successfully explain the association between variables when the relationship is inconsistent or statistically insignificant (Gligor & Bozkurt, 2020).

According to Rihoux and Ragin (2008), fsQCA has several benefits when compared to regression-based methods namely, i) equifinality (i.e., a specific outcome can result from various combinations of conditions), ii) multi-finality (i.e., similar combinations of conditions can lead to different outcomes), iii) asymmetric causality (i.e., a specific outcome may result from various combinations of conditions, a combination of conditions identified as an explanation for a specific outcome is not the logical opposite of the combination for the absence of the same outcome), and iv) conjunctive causality (i.e., a combination of conditions rather than just one condition may be necessary or sufficient to achieve a specific outcome).

To apply the fuzzy QCA methodology, the fs/QCA v. 3.0 software was used. In particular, the fsQCA methodology is useful in small samples (Fiss, 2011), as is this case.

3.2. Data and Measurement

This study uses quantitative data for the years 2019/2020 from The World Bank Enterprise Surveys platform, built on a sample of 38 countries from Europe and Central Asia (enterprise data are grouped into country-level indicators). As described by the World Bank, the Enterprise Surveys methodology aims to provide information on the universe of firms that are representative of the private sector of an economy. The surveys cover a wide range of topics in the business environment, including access to finance, corruption, infrastructure, crime, competition, and performance measures. The sampling methodology for conducting these business surveys is stratified random sampling, meaning that all population units are grouped into homogeneous groups and simple random samples are selected within each group.

The World Bank Enterprise Surveys datasets are widely used in research on entrepreneurship, specifically female entrepreneurship (e.g., Arun et al., 2020; Berguiga & Adair, 2021; Brixiová et al., 2020; Hardy & Kagy, 2021; Lemma et al., 2022). Table I details the variables and data sources used, which also presents the Cronbach α value for the innovation variable. The reliability test, based on the Cronbach alpha indicator, shows an acceptable internal consistency index, as the construct exceeds the cut-off threshold of 0.70. Descriptive statistics on the initial data support a better understanding of the methodology. In this sense, Table II presents the main descriptive statistics of the variables under analysis.

Table i. Description of variables and data source

Variables	Acronym	Description of the variable	Cronbach's α	Data Source
Female Entrepreneurship	FE	Percent of firms with majority female ownership	-	The World Bank Enterprise Surveys
Innovation	INN	The mean of 4 indicators: (a) Percent of firms that introduced a new product/service; (b) Percent of firms whose new product/service is also new to the main market; (c) Percent of firms that introduced a process innovation; (d) Percent of firms that spend on R&D	0,755	The World Bank Enterprise Surveys
Internationalisation	INT	Percent of firms exporting directly (at least 10% of sales)	-	The World Bank Enterprise Surveys

Table II. Descriptive Analysis of the sample

Variable	n	Cases Missing	Mean	Std. Dev.	Minimum	Maximum
FE	38	0	13.46	5.48	3.9	26.9
INN	38	0	33.27	11.31	12.6	62.2
INT	38	0	17.69	10.74	2.2	44.9

3.2.1. Female Entrepreneurship

Entrepreneurship is a widely understood concept, grounded in various scientific disciplines (Albert, 2017; Guerrero et al., 2020). The narrow definition links entrepreneurship to the creation and/or management of one's own business, while the broad understanding combines it with the discovery and exploitation of market opportunities, implementation of innovations, or risk-taking (Ferreira et al., 2017; Markowska et al., 2019). In our study, entrepreneurship is understood in its narrow concept, with entrepreneurs being considered individuals who run their own businesses. More specifically, female entrepreneurship (FE) refers to the rate of women engaged in entrepreneurial activities in a country (Xie et al., 2021). In line with the literature (Adom & Asare-Yeboa, 2016; Hechavarria et al., 2019; Jennings & Brush, 2013), we measure this variable by the percentage of firms with a majority female participation.

3.2.2. Innovation

Innovation (INN) is defined in various ways in the literature (Taylor, 2017). When a variable or construct is measured across multiple items, it becomes necessary to calculate a value per construct that will be used as input in fsQCA. In other words, for each case (row) in the dataset one value is needed for each construct (column). The

simplest way is to calculate the average of all items to obtain a single value per case (as in the test of correlations) (Pappas & Woodside, 2021). Taking into account the definitions of the authors du Plessis (2007), Cardinal et al. (2001), Petruzzelli et al. (2018) and Savino et al. (2017), we measured innovation as the average of: (a) percentage of firms that introduced a new product/service; (b) percentage of firms whose new product/service is also new in the main market; (c) percentage of firms introducing a process innovation and (d) percentage of firms investing in R&D.

3.2.3. Internationalisation

Internationalisation (INT) can be measured through exports. In this study, taking into account the literature (Santangelo & Meyer, 2017; Welch & Paavilainen-Mäntymäki, 2014), we measure internationalisation by the percentage of firms with direct exports above 10% of total sales.

3.3. Calibration

FsQCA requires the specification of thresholds of full membership and non-full membership, and a crossing point of maximum ambiguity. The transformation of the original data to a scale over the interval [0, 1] is called "calibration"; this procedure preserves information by allowing gradual membership. Each threshold translates into a specific fuzzy value - it is standard to use fuzzy values of 0.95, 0.50 and 0.05 for the thresholds of full membership, crossing point and non-membership, respectively (see Ragin, 2008). The direct method was used as it is the most common and recommended method, which can lead to more rigorous studies that are easier to replicate and validate as it is clearer how the thresholds were chosen (Pappas & Woodside, 2021). Given that the sample is The World Bank Enterprise Surveys dataset, covering 38 economies in Europe and Central Asia, we perform our calibration on a sample basis. In line with previous studies (Ho et al., 2016; Li et al., 2021; Torres & Augusto, 2019, 2020), we set the full membership threshold, crossover point, and non-membership threshold at the 90th, 50th, 10th percentiles, respectively. Table III presents the calibration thresholds for the variables under study.

Table III. Fuzzy-set membership calibrations

Variables	Fuzzy set calibrations		
	Fully in	**Crossover**	**Fully out**
FE	21.25	12.45	6.00
INN	49.16	31.90	19.54
INT	32.25	14.55	4.89

4. Results

4.1. Necessity Analysis

After all antecedent conditions calibrated, following Ragin's (2000) recommendation, the next step was to conduct the necessary condition tests before the sufficiency tests. The necessary condition means that the outcome is the subset of the causal condition, which can be assessed by the consistency score (Ragin, 2008). In line with the literature (Li et al., 2021; Ragin, 2008; Xie et al., 2021), we set the consistency threshold of the necessity analysis at 0.9 or 0.8, which implies that a condition is "necessary" or "almost always necessary" (Ragin, 2000). Tables IV and V list the results of the necessity analysis for both high INT and non-high INT (INT = internationalisation), and high INN and non-high INN (INN = Innovation), respectively.

Table IV. The necessity of conditions for high and not-high INT

	INT		**~INT**	
	Consistency	**Coverage**	**Consistency**	**Coverage**
FE	0.629057	0.618855	0.639053	0.602129
~FE	0.595569	0.632731	0.595481	0.605911
INN	0.748068	0.781906	0.475524	0.476037
~INN	0.498712	0.498199	0.782141	0.748327
Note: "~" indicates the absence of the condition; FE: female entrepreneurship; INN: innovation				

Table V. The necessity of conditions for high and not-high INN

	INN		**~INN**	
	Consistency	**Coverage**	**Consistency**	**Coverage**
FE	0.565428	0.532185	0.714874	0.704004
~FE	0.685514	0.696771	0.524962	0.558292
INT	0.781906	0.748068	0.498199	0.498712
~INT	0.476037	0.475524	0.748327	0.782141
Note: "~" indicates the absence of the condition; FE: female entrepreneurship; INT: internationalisation				

As the consistency of each condition is no greater than 0.8, none of the conditions alone is necessary for a high INT or for high INN. For example, this means that a high level of female entrepreneurship or a high level of innovation are not necessary conditions for a high level of internationalisation. The same is true for a non-high degree of internationalisation.

4.2. Sufficiency Analysis

Next, we performed tests of sufficient conditions using the truth table approach. According to previous studies (Fiss, 2011; Xie et al., 2021), we set the raw consistency

threshold at 0.8 to perform the sufficiency analysis. Therefore, we assign a value of 1 to each result when the consistency value of that setting is equal to or greater than 0.8 and assign a value of 0 otherwise. As the sample size is small (n=38) and following previous studies (Li et al., 2021; Ragin, 2008; Xie et al., 2021), we set the frequency threshold at 1 case per configuration.

Finally, the fsQCA method can produce three types of solutions, namely, complex, parsimonious and intermediate. According to Pappas and Woodside (2021), the complex solution presents all possible combinations of conditions when traditional logic operations are applied. In contrast, the parsimonious solution set is a simplified version of the complex solution, based on simplified assumptions, and presents the most important conditions that cannot be left out of any solution. The main difference between parsimonious and complex solution is that the complex solution excludes counterfactual cases, involving limited simplification, whereas the parsimonious solution includes any counterfactual combination that can contribute to a logically simpler solution. Finally, the intermediate solution is obtained by performing counterfactual analysis on the complex and parsimonious solutions, including only theoretically plausible counterfactuals. Intermediate solutions are considered optimal and preferred since they strike a balance between the complex and parsimonious solutions. However, in Table VI, we present the parsimonious solution, since the parsimonious solution is equal to the intermediate one, and no elaboration beyond the parsimonious solution is useful.

Table VI. Sufficient configurations for high INT and high INN

	INT	**INN**
Conditions	**1**	**2**
INN	●	-
FE	●	⊗
INT	-	●
Consistency	0.831429	0.877163
Raw coverage	0.449768	0.546042
Unique coverage	0.449768	0.546042
Overall solution consistency	0.831429	0.877163
Overall solution coverage	0.449768	0.546042
Countries	Latvia, Kyrgyz Republic, North Macedonia, Albania, Armenia, Bosnia and Herzegovina, Czech Republic, Estonia	Netherlands, Luxembourg, Denmark, Finland, Kosovo, Sweden, Slovenia, Belgium

Notes: Black circles indicate the presence of a condition and the circle with "x" indicates its absence.

Overall, the values of consistency (i.e., assessing how close a subset relationship is) and coverage (i.e., assessing the empirical relevance of a consistent subset, being comparable to the R-square of regression-based methods) of the solutions for INT are 0.83 and 0.45, respectively and; for INN these values are 0.88 and 0.55, respectively.

All values are higher than the minimum thresholds of 0.74 for solution consistency and 0.25 for solution coverage, indicating that both models are informative (Ragin, 2008; Woodside, 2013).

In this regard, Table VI shows the causal paths for high INT (on the left-hand side, Configuration 1) and for high INN (on the right-hand side, Configuration 2). Using Boolean operators, the results can be expressed as follows:

(i) INN*FE ⟶ INT
(ii) ~FE*INT ⟶ INN

Only one combination (Configuration 1) is sufficient for a high INT in 83% of the total cases and covers 45% of them, i.e., a high FE level in combination with a high INN level leads to a high INT. The sample countries include Latvia, Kyrgyzstan, North Macedonia, Albania, Armenia, Bosnia and Herzegovina, the Czech Republic and Estonia. Regarding innovation, only one configuration is also sufficient for high INN in approximately 88% of cases, covering roughly 55% of them. In this sense, a low FE level in combination with a high INT level leads to a high INN. This configuration 2 can be found in the Netherlands, Luxembourg, Denmark, Finland, Kosovo, Sweden, Slovenia and Belgium.

4.3. Necessity Analysis/ Additional Analysis

Given that female entrepreneurship is neither a sufficient nor a necessary condition for the outcome (high INT or INN), producing Y (outcome) only if combined with other conditions, it becomes interesting to analyse the need for FE combined with other solutions. Table VII presents the results of the need for a high INT, taking into account the various combinations of solutions.

It is found that, the combination of high FE and high INN conditions (FE ∩ INN) is consistent and overarching as a necessary antecedent to achieve high INT. In this sense, it is found that the combination of high FE and high INN is sufficient and necessary to achieve high INT.

Table VII. Necessity of the configurations for high INT

	INT	
	Consistency	**Coverage**
FE + INN	0.927357	0.647482
~FE + INN	0.821226	0.661136
FE + ~INN	0.672334	0.516423
~FE + ~INN	0.798557	0.563636

Note: "~" indicates the absence of the condition

Table VIII presents the results of the requirement for high INN, by considering the various combinations of solutions. It can be observed that, the combination of the conditions low FE and high INT (~FE ∩ INT) is consistent and overarching as a necessary antecedent to achieve high INN. In this sense, it is found that the combination of low FE and high INT is sufficient and necessary to achieve high INN.

Table VIII. Necessity of the configurations for high INN

	INN	
	Consistency	**Coverage**
FE + INT	0.877221	0.604902
~FE + INT	0.921378	0.655054
FE + ~INT	0.686591	0.482224
~FE + ~INT	0.818524	0.589376

Note: "~" indicates the absence of the condition

4.4. Robustness check

Finally, we performed a robustness test. According to Skaaning (2011), there are three types of robustness tests for fsQCA results, including changes in calibration thresholds, the frequency of cases, and the consistency of settings. Here, we adopt the first type and use the 95th, 50th and 5th percentiles as three cut-off points for our robustness check. We use the new cut-off points to calibrate all conditions, both causal conditions and outcomes, keeping the same frequency threshold of 1 and the consistency threshold of 0.8 for the following sufficiency test. The results are similar the previous results (see Table IX in Appendix).

5. Conclusion

Some expect female entrepreneurship to grow substantially as a result of the Covid-19 pandemic (Martínez-Rodríguez et al., 2021). However, women entrepreneurs continue to face several obstacles in their journey (Drori et al., 2018). As such, economic policies supporting women are needed, to promote the development of total entrepreneurial activity, generating economic growth (Hechavarria et al., 2019; Rubio-Bañón & Esteban-Lloret, 2016; Sajjad et al., 2020).

Nowadays, although men are traditionally more likely than women to start new businesses, increasing female participation in entrepreneurship is an important policy goal in many countries (Bosma et al., 2020).

This paper aims to contribute to the field of female entrepreneurship, which needs more extensive studies (e.g., Gawel & Głodowska, 2021; Minniti & Naudé, 2010; Misra et al., 2014), providing a deeper understanding of the relationship between female entrepreneurship, innovation, and internationalisation. In this paper, we focused on female entrepreneurship and use the fsQCA approach to explore how female entrepreneurship relates to firm internationalisation and innovation, responding to several calls to study this relationship (e.g., Garcia-Quevedo, 2021; Moreira et al., 2019).

Overall, our results show that female entrepreneurship alone is neither a sufficient nor a necessary condition for the outcome (high internationalisation or high innovation). However, although the INT or INN conditions are neither sufficient nor necessary for the outcome, i.e., to lead one to the other, they are present in the combinations. The combination of high FE and high INN is sufficient and necessary to achieve a high INT.

It is also important to mention that, when conducting the robustness analysis, the results are similar, except for Configuration 1, which demonstrates that the INN condition alone is sufficient for a high INT level. On the other hand, the combination of low FE and high INT is sufficient and necessary to achieve a high INN. This is in line with the literature, confirming a positive relationship between internationalisation and innovation (e.g., Azevedo et al., 2021; Danish et al., 2021; Freixanet & Rialp, 2022; Thakur-Wernz & Samant, 2019). Our results also suggest that firms can learn from their international experience and to achieve higher levels of innovation (Azevedo et al., 2021; Thakur-Wernz & Samant, 2019). On the other hand, innovation can create or improve market opportunities (Zucchella & Siano, 2014). Additionally, our results are in line with Azevedo et al. (2021) confirming the complexity of the innovation-internationalisation relationship which is a matter of debate in the literature. Thakur and Samant (2019) suggest that learning does not occur at the same pace over time, with a positive relationship between international experience and innovation performance but non-linear - instead following an S-shaped curve. Our methodology is unable to capture this possible shape, and therefore, such results cannot be confirmed.

In relation to Configuration 1, as mentioned above, a high level of female entrepreneurship combined with a high level of innovation is a sufficient and necessary combination to achieve a high level of internationalisation. Although, alone female entrepreneurship is neither sufficient nor necessary for the outcome (high INT), its importance in achieving a high INT is evident, which is in line with the literature that suggests that women entrepreneurs display exporting willingness (Sui et al., 2022). Specifically, they see exporting as an avenue for personal and business development and want to operate export businesses with financial success (Welch et al., 2008).

In contrast, taking Configuration 2 into account, our results show that a low level of female entrepreneurship combined with a high level of internationalisation is a sufficient and necessary combination to achieve a high level of innovation. This can be justified by the various difficulties and obstacles that women entrepreneurs face in setting up and managing firms (Garcia-Quevedo, 2021). Many barriers and constraints that women entrepreneurs face are gender specific and derive from cultural values, norms and customs (Anambane & Adom, 2018; Baughn et al., 2006; Khandelwal & Sehgal, 2018). In this regard, it becomes important to acknowledge the challenges and discrimination that women, often, face in business. Discrimination is not a result of machismo but a consequence of culture and tradition and has negatively affected women in the professional business context (Anambane & Adom, 2018; Brieger et al., 2019), and our results support this evidence. Attitudes in business and managerial behaviour also affect women's aspirations and behaviour and a possible consequence of this is that women may be prevented from achieving their true potential (Anambane & Adom, 2018; Brieger et al., 2019).

Our study contributes to the existing literature in two different ways. First, it covers 38 countries in Europe and Central Asia, including several countries characterised by different cultures and structures regarding the role of women in societies, thus enriching our understanding of female entrepreneurship in a broader context. Second, this study uses a configurational approach, namely, fsQCA, to highlight the holistic thinking of the influence of female entrepreneurship on firm innovation and

internationalisation, which particularly helps to enhance our understanding of how the variables under study interact in complex ways to shape internationalisation and innovation. Moreover, the study also enriches the application of the fsQCA method in research on entrepreneurship, internationalisation, and innovation.

The study has some limitations, but it also suggests opportunities for future research. First, the measurements of the 3 variables under study (FE, INT and INN) are based on data from The World Bank Enterprise Surveys. Future studies should try to replicate and confirm the robustness and generalizability of the results with alternative measurements based on other data sources. Second, this study focuses on the static relationship between female entrepreneurship, innovation, and internationalisation across countries. Future studies can complement this study with longitudinal analyses by introducing QCA time series to explore the relationship in depth. Finally, the timeline aggregates the most recent data available, only in the years 2019/2020. Future research could extend this period to assess whether the results are time sensitive.

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Appendix

Table IX. Results for Robustness Check

	INT	**INN**
Conditions	**1**	**2**
INN	●	-
FE		⊗
INT	-	●
Consistency	0.796648	0.886885
Raw coverage	0.769563	0.604469
Unique coverage	0.769563	0.604469
Overall solution consistency	0.796648	0.886885
Overall solution coverage	0.769563	0.604469
Countries	Finland, Denmark, Netherlands Slovenia, Sweden, Luxembourg Belgium, Ireland, Latvia, Bosnia and Herzegovina, Kyrgyz Republic, North Macedonia, Georgia, Albania, Cyprus, Armenia, Azerbaijan, Czech Republic, Estonia	Netherlands, Luxembourg, Denmark, Finland, Kosovo, Sweden, Slovenia, Belgium

Notes: Black circles indicate the presence of a condition and the circle with "x" indicates its absence. Blank spaces indicate "not important"

CHAPTER IV

Conclusion

Conclusion

Entrepreneurial activities play a critical role in the development and well-being of societies. Thus, various stakeholders, including governments, non-profit organisations, researchers and individuals, are interested in facilitating the development of supportive entrepreneurial ecosystems. However, the growth of women entrepreneurship has lagged that of men in many developed and most developing countries. Understanding the potential roadblocks that women entrepreneurs face is important to increase their participation in entrepreneurial activity. For all these reasons, female entrepreneurship is a crucial phenomenon in entrepreneurship and management research. However, the field suffers from fragmentation, leaving fundamental questions unanswered. Previous research focuses predominantly on differences between female and male entrepreneurship. Furthermore, the study of innovation and internationalisation has been characterised by gender blindness.

The results of Chapter Two suggest that female entrepreneurship does not seem to contribute either to innovation or to the internationalisation of firms. Nevertheless, it should be noted that these results may be affected by the use of national indicators, which may miss more specific results of female entrepreneurship participation.

As discussed in the literature, these results can be explained by several factors, including: (1) the fact that female business ownership is mainly concentrated in the retail and services sectors, where firms are relatively smaller in terms of employment and revenues, as opposed to high-tech, construction and manufacturing, creating less value added; (2) less availability of start-up capital; (3) less human capital acquired through previous work experience in a similar firm; and (4) less previous work experience in a family firm.

The research methodology adopted, more specifically the use of traditional quantitative methods - Factor Analysis, Multiple Linear Regression Analysis and Cluster Analysis - proved fruitful, but insufficient, since these conventional quantitative techniques consider independent variables as analytically separable causes of a given dependent variable and assume that the impacts of the independent variables are both linear and additive.

In this sense, a more relevant approach, namely the fsQCA, was used in Chapter Three with the aim of gaining a better understanding of the complexity of the contextual determinants relating to female entrepreneurship.

Overall, the results of Chapter Three suggest that female entrepreneurship alone is neither a sufficient nor a necessary condition for the outcome (high internationalisation or high innovation). However, the results indicate that female entrepreneurship is important for achieving a high level of internationalisation.

Having met all the proposed objectives, this research work has highlighted the difficulties and obstacles that female entrepreneurs face in setting up and running businesses. Many barriers and constraints that women entrepreneurs face are gender specific and derive from cultural values, norms and customs. There is a need for policy formulation that can eliminate the negative impact of culture on women-owned businesses. In fact, if women were empowered as entrepreneurs, then the entire

society would benefit from it as women entrepreneurs are beneficial not only for economic development but also for the social development of the society.

In this dissertation some inherent limitations should be highlighted, which future studies can address. Firstly, data collection was limited to using secondary resources in which variables were taken from World Bank database. Secondly, the choice of Europe and Central Asia as the analytical base may not have allowed a true interpretation of the relationship between internationalisation, innovation, and female entrepreneurship. As mentioned throughout the dissertation, there is a huge heterogeneity of the role of women in business in different countries and cultures, so limiting the study to countries in Europe and Central Asia may not have allowed a true interpretation of the results. In this regard, future study of the relationship between female entrepreneurship, internationalisation and innovation in other countries/environments is recommended. Third, the fact that internationalisation is measured only through exports constitutes another limitation to this research. Fourth, the measurements of the three variables (internationalisation, innovation, and female entrepreneurship) under study are based on data from the World Bank Enterprise Surveys. Future studies should attempt to replicate and confirm the robustness and the generalization of the results with alternative measurements based on other data sources. Furthermore, this study focuses on the static relationship between female entrepreneurship, innovation, and internationalisation across countries. Future studies can complement this study with longitudinal analyses. Finally, the timeline aggregates the most recent data available, only in the years 2019/2020. Future research could extend this period to assess whether the results are time sensitive.

In addition to the future research proposals mentioned above, it is suggested to investigate factors that explain why female entrepreneurship apparently does not contribute significantly to business innovation and internationalisation.

According to Rubio-Bañón and Esteban-Lloret (2016), cultures with a high value on the masculinity scale tend to have more pronounced gender differences. It would also be interesting, in future studies, to apply the fsQCA method to verify its veracity, as well as, to find out, if countries with a masculine orientation tend to have higher rates of entrepreneurship, in contrast to countries with a female orientation.

Furthermore, according to Hechavarría and Brieger (2020), women entrepreneurs are more likely to engage in entrepreneurship when cultural practices of distance to power and within group collectivism are low, and cultural practices of long-term orientation and aversion to uncertainty are high, when compared to male entrepreneurs. In this sense, it would also be interesting to relate Hofstede's cultural dimensions with the level of female entrepreneurship. That is, to verify, applying the fuzzy-set method, if, for example, a society with a low power distance is a sufficient or necessary condition to achieve a high level of female entrepreneurship.

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