St. Petersburg University
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Master in Management Program

THE IMPACT OF INSTITUTIONAL FACTORS ON FEMALE ENTREPRENEURSHIP

Master Thesis by the 2nd year student
Concentration – Management
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ЗАЯВЛЕНИЕ О САМОСТОЯТЕЛЬНОМ ХАРАКТЕРЕ ВЫПОЛНЕНИЯ ВЫПУСКНОЙ КВАЛИФИКАЦИОННОЙ РАБОТЫ

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28.05.2020 (Дата)

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THE MASTER THESIS

I, Medushenko Alena Yurevna, (second) year master student, program «Management», state that my master thesis on the topic «The impact of institutional factors on female entrepreneurship: evidence from GEM data», which is presented to the Master Office to be submitted to the Official Defense Committee for the public defense, does not contain any elements of plagiarism.

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АННОТАЦИЯ

Автор	Алёна Юрьевна Медушенко
Название ВКР	Влияние институциональной среды на предпринимательскую активность женщин: на базе проекта GEM
Факультет	Высшая Школа Менеджмента
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Научный руководитель	Ольга Рафаиловна Верховская
Описание цели, задач и основных результатов	Цель исследования: определить институциональные факторы, которые влияют на развитие предпринимательской активности женщин, для двух групп: развитые и развивающиеся. Задачи работы: провести анализ теоретических исследований предпринимательства; выявить особенности женского предпринимательства; выбрать наиболее подходящий для цели исследования теоретический подход к изучению институциональной среды; сформулировать гипотезы на базе проведенного анализа теоретических исследований; провести количественный анализ панельных данных для двух групп стран; интерпретировать результаты и дать рекомендации на их основе. Результаты: в ходе исследования было выявлено, что несколько институциональных факторов влияют на предпринимательскую активность женщин: сложность доступа к финансовым ресурсам (негативное влияние, обе группы стран), поддерживающие социально-культурные нормы (положительное влияние, обе группы стран), высшее образование (положительное влияние, развитые страны), школьное образование (негативное влияние, развитые страны), доступность физической инфраструктуры (негативное влияние, развитые страны), государственное регулирование (негативное влияние, развивающиеся страны).
Ключевые слова	Женское предпринимательство, институциональные факторы, развитые страны, развивающиеся страны, GEM

ABSTRACT

Master Student's Name	Alena Medushenko
Master Thesis Title	The impact of institutional factors on female entrepreneurship: evidence from GEM data
Faculty	Graduate School of Management
Main field of study	Management
Year	2020
Academic Advisor's Name	Olga R. Verkhovskaya
Description of the goal, tasks and main results	Research goal: to identify the institutional factors that encourage female entrepreneurship in two set of countries: innovation-driven and efficiency-driven. Research objectives: conduct a literature overview with regard to entrepreneurship, identify peculiarities of female entrepreneurship, select institutional framework which is most appropriate for this study; choose institutional factors based on the peculiarities of female entrepreneurship and framework identified and state hypotheses; build regression models for both innovation-driven and efficiency-driven countries; analyze the obtained results; provide recommendations for different stakeholders based on the findings. Results: as the result of the analysis several institutional factors have been recognized as significant, namely difficulty in obtaining finance (negative impact, both groups of countries), socio-cultural norms (positive impact, both groups of countries), entrepreneurial education at school (negative impact, innovation-driven countries only), entrepreneurial education at university (positive impact, innovation-driven countries only), physical infrastructure (negative impact, innovation-driven countries only), and government regulations (negative impact, efficiency-driven countries only).
Keywords	Female entrepreneurship, institutional factors, innovation-driven, efficiency-driven, GEM

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Introduction

A number of companies are being created every year. Policy makers worldwide have recognized the importance of entrepreneurship, and governments focus their efforts on providing entrepreneurs with more favorable conditions to facilitate the process of creating and scaling an enterprise. Apparently, government authorities have a good reason for that: startups and SMEs are considered to be driving forces for the national and international economies. Entrepreneurs participate in economic value creation, reduce unemployment, and directly contribute to gross domestic product growth (Minniti, 2010). Thus, enterprises add to the wellness of societies. No wonder why many governments are interested in supporting entrepreneurs and facilitating the process of launching a company.

Along with the rise of entrepreneurial activity and venture creation, more and more women tend to be engaged into entrepreneurial activity. Consequently, a considerable interest has arisen in the phenomena of female entrepreneurship. In particular, what kind of factors and determinants affect women and their intentions. A number of studies have investigated the peculiarities of women-owned enterprises, intentions of female entrepreneurs, human capital women tend to possess, and the influence of social and cultural norms on their choice of entrepreneurship as a career path (Brush et al., 2008; Minniti 2010; Poggesi et al., 2015; Dheer et al., 2019). The majority of researchers tend to agree that female entrepreneurship obtains unique characteristics and shall be studied separately.

Although a lot of studies have already been conducted in order to investigate the relationship between motivation, experience, human capital and the inclusion of women into entrepreneurial activities, the role of institutional factors and government have not been sufficiently covered in the academic literature yet, especially when it comes to analyzing the impact of these factors on female entrepreneurs.

Relevance of the study. Taking into consideration the increasing role of women in economic value creation and the driving force of small and medium enterprises in the international economy, it seems to be crucial to investigate further the main factors that boost female entrepreneurship, and exact reasons that encourage and help women to launch their own business.

This paper will be of a great interest for policy makers, since the main aim of this study is to find out what kind of institutional factors and institutional environment are the most favorable for female businesses and boost female entrepreneurship. As a result of this paper, the most relevant factors will be identified and some recommendations to different stakeholders will be proposed.

Research gap. Although many studies have already investigated the phenomena of female entrepreneurship from a variety of perspectives, very few of them explored the impact of

institutional factors on intentions of female entrepreneurs. In addition to that, existing articles tend to focus on specific topics e.g. impact of education, effect of financial environment etc. and usually provide a single-country analysis, with many of them implementing a qualitative analysis. After thorough analysis of academic papers, no study has been found that provided a comprehensive overview of the influence of institutional environment on female entrepreneurship and comparative analysis of that environment between innovation-driven and efficiency-driven countries implementing a quantitative analysis. Thus, this paper is aimed at filling the existing gap in literature.

Object of this paper is female entrepreneurship. **Subject**, in its turn, is institutional environment that boost the levels of entrepreneurial activity among women.

Research goal of this paper is to identify the institutional factors that encourage specifically women to start their own business and conduct a comparative analysis of these factors between innovation-driven and efficiency-driven countries. In order to achieve the abovementioned goal several **research objectives** have been stated:

1. Conduct a literature overview with regard to entrepreneurship;
2. Identify peculiarities of female entrepreneurship;
3. Select institutional framework which is most appropriate for this study;
4. Choose institutional factors based on the peculiarities of female entrepreneurship and framework identified and state hypotheses;
5. Collect and restructure the data;
6. Build regression models for both innovation-driven and efficiency-driven countries;
7. Analyze the obtained results;
8. Provide recommendations for different stakeholders based on the findings.

In order to achieve the above mentioned goal and complete research objectives, the following **research questions** shall be answered:

1. What institutional factors affect the intentions of women to launch their own business?
2. What institutional environment is the most favorable for female enterprises?
3. What are the differences between the innovation-driven and efficiency-driven countries in terms of institutional factors that encourage women to start entrepreneurial activities?

For the empirical part the database of Global Entrepreneurship Monitor will be used collected for five consecutive years (2015-2019). In order to conduct the analysis two regression models will be build separately for two set of countries: innovation-driven and efficiency-driven.

Chapter 1. Analysis of entrepreneurial context influencing female entrepreneurship

1.1 Definition of entrepreneurship

First of all, it seems to be essential to identify what the terms entrepreneurship and entrepreneurial activity stand for. It is worth mentioning that scholars have different approaches to analyzing it. The main reason for a variety of definitions to exist is the interdisciplinary nature of entrepreneurship. Indeed, the phenomenon combines economics, business strategy, organizational behavior, psychology, sociology (Peneder, 2009). Moreover, ideas on entrepreneurship have been constantly developing throughout the years in the academic world. Thus, in order to see the major trends and the development of the term in focus, it seems to be important to look how scholars used to approach entrepreneurship in different periods of the history.

The first time the term entrepreneur and entrepreneurship were used by Richard Cantillon in 1755. According to him, an entrepreneur is "undertaker", "person who engages in the market exchanges at their own risk in order to make profit". Basically, entrepreneurs are willing to expose themselves towards risk, and operate in risky business venture (Higgs, 1931). However, it is also worth mentioning that, according to Cantillon, entrepreneurs are not able to mitigate this exposure of the risk. Moreover, he argues that the success or failure of an entrepreneur depend rather on his foresight than on the conditions of the market (Hébert et al., 1989).

In 1845 Jean-Baptiste Say developed the vision of Cantillon and added to this definition the importance of capital, since before launching any kind of venture "undertaker" needs to finance it (Schoorl, 2012). Basically, according to these two prominent economists, entrepreneur is a person who is mainly engaged in organizing and managing the production and trade process. That is why, the entrepreneurship is seen as organization and administration of production and trade.

The completely new vision of entrepreneurship was developed by one of the most prominent economists that formed the basis for future discussions and studies regarding entrepreneurship - Joseph Schumpeter. In his work (Schumpeter, 1943) he for the first time introduced the relationship between entrepreneurship and innovation, and stated that these are two phenomenon that cannot be separated. Joseph Schumpeter developed two theories – "first" and "second" Entrepreneurship theories, that were largely included in his business cycle research and innovation theory. The economist states that entrepreneurs are those who aim "to reform or revolutionize the pattern of production by exploiting an invention or, more generally, an untried technological possibility for producing a new commodity or producing an old one in a new way,

by opening up a new source of supply of materials or a new outlet for products, by reorganizing an industry". Basically, Schumpeter insists that an entrepreneur must be an innovator as well. Moreover, the economist argues that the main role of an entrepreneur is "creative destroyer", which means that by implementing innovations entrepreneurs destroy "circular flow" (movement towards equilibrium). Taking into consideration, the latest trends towards digitalization and constant implementation of new technologies in the businesses, this definition of entrepreneurship seems to be appropriate even nowadays (Sledzik, 2013).

The foregoing definitions were then further developed by Hébert and Link (Hébert et al., 1989), and adjusted more to new realities of the world. They define an entrepreneur as "someone who specializes in taking responsibility and making judgemental decisions that affect the location, form, and the use of goods, resources, or institutions". The scholars emphasize more on decision-making part of entrepreneurial activity and risk exposure, than on innovative features, as Schumpeter proposed before.

The above mentioned definitions make us conclude that the main areas covered by the definitions of entrepreneurship in the academic world are the following (Ahmad, 2008) :

1) Enterprising human activity,
2) Value creation,
3) Leveraging creativity, innovation.

The first attempt to provide one comprehensive definition that will include diverse aspects of entrepreneurship was made by Wennekers (Wennekers et al., 1999). He states that entrepreneurship is "the manifest ability and willingness of individuals, on their own, in teams, within and outside existing organizations to perceive and create new economic opportunities (new products, new production methods, new organizational schemes and new product-market combinations), and to introduce their ideas in the market, in the face of uncertainty and other obstacles, by making decisions on location, form and the use of resources and institutions".

However, not only academic world conducts research and studies on entrepreneurship, different international organizations also provide their own definitions of the term in focus. For example, OECD (Ahmad, 2008) has made a considerable research and reviewed the existing definitions of the term. The main aim of the report was to identify the most important measurable characteristics of entrepreneurship which then could be suitable for data collection and further analysis and comparison of the countries. Some of the indicators from the list:

1) Enterprise birth
2) High-growth enterprises
3) Business ownership rates
4) The size of 3 and 5 years firms

5) Survival rates of 3 and 5 years firms
6) The value-added share of young firms

That is why, they provide the following definition: "Entrepreneurial activity is the enterprising human action in pursuit of the generation of value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets". As it is seen, the definition has mainly the same ideas as scholars define in their academic papers. However, OECD supports its definition with measurable indexes.

Another prominent international organization that traces entrepreneurship is Global Entrepreneurship Monitor. The organization defines entrepreneurship as "any attempt at new business or new venture creation, such as self- employment, a new business organization, or the expansion of an existing business, by an individual, a team of individuals, or an established business".[1] As it can be seen, the definition of GEM is a narrow one and mainly comes down to new business activity. However, it is worth mentioning that the organization in its research goes beyond just analyzing the registered business, they look into issues such as intrapreneurship and corporate entrepreneurship as well.

All in all, it can be concluded that there is a variety of definitions of entrepreneurship, and over time the ideas on this subject have been evolving. This high number of definitions has resulted from the interdisciplinary nature of the entrepreneurship since it combines economics, business strategy, organizational behavior, psychology, sociology. Thus, a number of approaches to studying entrepreneurship have appeared, since each approach seeks to explain certain area of the topic, and aims at defining certain factors that influence either intentions or business performance of the business. The overview of existing approaches to analyzing entrepreneurship will be provided in the next part.

1.2 Overview of existing approaches to entrepreneurship

In the previous part, all major definitions of the term "entrepreneurship" have been discussed. Now it seems to be appropriate to move further and discuss approaches to studying entrepreneurship that currently exist in the literature. A lot of studies have investigated the phenomenon of entrepreneurship from a variety of perspectives, and they can be divided into the following categories:

1. Personal perspective, which includes human capital, social capital, aspirations, and personal characteristics of entrepreneurs;
2. Motivation, what drives the intentions to launch one's own business;

[1] Global Entrepreneurship Monitor website (https://www.gemconsortium.org/wiki/1149)

3. Performance of business and what factors influence it;
4. Institutional environment, how the context influence the intentions and success of new and growing enterprises.

Personal perspective

Generally, personal aspect can be divided into personal traits, human capital and social capital.

Personal traits. A number of studies have investigated the personal traits that distinguish entrepreneurs from people who pursue different career path. These studies tend to agree that in general people who start they own business are more tolerate towards risk, they are not afraid to expose themselves to risky activities and create risky ventures (Higgs, 1931). In addition to that, researchers tend to believe that entrepreneurs manage their time better, and they are more self-efficient. Indeed, academic researchers find a positive correlation between self-efficacy and the intention to start one's own business (Chen et al., 1998; McGee et al., 2009). Furthermore, studies usually argue that entrepreneurs possess characteristics such as proactiveness, optimism, competitiveness, flexibility, autonomy, and innovativeness (Envick & Langford, 2000; Sledzik, 2013).

Human capital. Many researchers tend to analyze entrepreneurship from human capital perspective. In many cases it narrows down simply to the level of education entrepreneurs tend to possess (Xavier-Oliveira et al., 2015).

However, some economists embrace a wider approach towards this issue. Brüderl (Brüderl et al., 2000) distinguish between general and specific forms of human capital. From their point of view, general human capital comprises of educational level, thus, formal education. Grant (Grant, 1996) argues that formal education helps prospective entrepreneurs to get ability to learn about markets, to be able to better organize business processes, and to gain broader network since they stayed longer in the academic field. Consequently, all those obtained knowledge contributes to the entrepreneurial intentions nurture and success of an enterprise.

Specific human capital, in its turn, include work experience and specific knowledge about the industry. People who worked in specific industry tend to gain managerial skills which are really important when it comes to setting up own business. Apparently, in case the new business is founded in the same industry the person used to work in before, it has higher chance to succeed.

In general, the economists argue that people with higher human capital (both formal education and industry specific knowledge) tend to spot new market and business opportunities easier. Moreover, in many studies economists draw a relationship between type of business, its success, on the one hand, and with motivation and human capital, on the other hand (Baptista et al., 2014).

The economists argue that the higher the human capital of entrepreneurs is the bigger the opportunity to succeed on the market, since such entrepreneurs tend to have more knowledge about market, technology, management processes and are more certain about their capabilities and enterprise.

Social capital. Along with the human capital comes social capital, hence, network people tend to possess. A number of studies confirm the positive correlation between network and entrepreneurial activities (Chell & Baines, 2000; Dimitratos et al., 2014). In addition, social capital entrepreneurs tend to obtain is tightly connected to their human capital. Thus, the higher human capital is, the wider the network entrepreneurs have, e.g. people with specific industry experience tend to collect contacts of customers, partners, suppliers, from which they can benefit when launching their own business.

Motivation

Another dimension from which entrepreneurship is studied is motivation. Economists are genuinely interested in what factors motivate people to launch their own businesses. When it comes to motivational aspect, economists tend to distinguish between opportunity-driven and necessity-driven entrepreneurs (van der Zwan, et al., 2016). Basically, researchers divide motivational factors into positive that "pull" people and negative that "push" them into entrepreneurial activity. Opportunity entrepreneurs are those who pursue the chance to achieve more and fulfill their potential, seek for independence, would like to get a prestigious social status. On the other hand, necessity entrepreneurs are mainly driven by unemployment, family pressure, general dissatisfaction with their lives. In order to better understand the difference between the two types of motivation, in many studies economists attempt to draw the profile of necessity and opportunity entrepreneurs based on their socioeconomic characteristics (van der Zwan, et al., 2016).

Socioeconomic characteristics include gender, age, level of education, family background and household income. In terms of gender, there appears to be weak relationship between gender and certain type of motivation to start business (Stefan et al., 2015). As for age group, younger entrepreneurs tend to be more often "pushed" towards entrepreneurial activity while older people tend to search for new opportunity to develop (Fossen and Büttner, 2013). Furthermore, in terms of education opportunity entrepreneurs usually have higher education level in comparison to necessity ones. Family background is also very important when it comes to motivation to launch the business. People driven by necessity often have neutral attitude towards entrepreneurship in their family while "pull" entrepreneurs tend to be encouraged by the members of their family

(Amit and Muller, 1995). Last but not least, opportunity entrepreneurs report higher household income when compared to necessity ones (Stefan et al., 2015).

Some other economists, in its turn, conduct the analysis of type of entrepreneurial entry based on other factors, not socioeconomic ones. Xavier-Oliveira (Xavier-Oliveira et al., 2015), for example, examines the relationship between motivation and financial and human capital, in particular. According to this study, entrepreneurs with higher financial capital tend to pursue opportunities in their actions, while people with less financial capital usually enter entrepreneurship out of necessity. Likewise, the similar trends can be traced when analyzing the influence of human capital on types of entry into entrepreneurial activity. Apparently, people with lower human capital do not have many opportunities for well-paid job, that is why due to financial pressure they seek for ways to get money, and, thus, start their own enterprise.

All in all, the profile of necessity and opportunity entrepreneurs differ considerably in terms of their socioeconomic and personal background.

Institutional environment

Another very important approach to analyze entrepreneurial activity is the institutional one. Basically, institutional theory and studies deal with the influence of institutional environment on entrepreneurial activity.

Institutional environment is a very complex phenomenon which comprises a variety of factors (Bruton, 2010). These factors include: direct governmental programs and policies, favorable market incentives, access to financial resources, socio-cultural norms, allocation of resources, access to certain type of services such as physical infrastructure, legal and commercial services. By its actions governments can either improve or hinder market efficacy.

Apparently, governmental policies and institutional environment can have either supportive or disruptive effect. Too many rules to comply with, big amount of paperwork , procedural requirements, documentation to submit in a variety of different institutions do not boost entrepreneurship in countries (De Soto, 2000). There can be given one example which explicitly shows the kind of institutional environment businesses operate in: number of days required to launch a business. For instance, in Russia it takes 97 days to register a business, while in the United States this figure goes down to 4 days, and in Hong Kong , in its turn, it takes even less time (Timmons et al., 2004).

Business performance

Another stream of studies are dedicated to investigate what kind of factors influence the performance of one's business. Usually the performance of business is measured by the following

criteria: number of employees, sales, profitability, productivity, physical capital, business survival rate. Researchers that investigate business performance tend to combine in different ways the characteristics that were mentioned before, namely the influence of personal traits, human or social capital (Bosma et al., 2014) on the success of business, impact of motivation (Baptista et al., 2014) on the performance and effect of institutional environment (Acs et al., 2014).

1.3 Peculiarities of female entrepreneurship

After having analyzed general approaches towards studying entrepreneurship, not it seems to be important to apply them to the object of the current study – female entrepreneurship.

Female entrepreneurship is not a new phenomenon and it has been studied from a variety of perspectives over the years (Dheer et al., 2019). Close attention has been paid to the above mentioned topic especially in recent years due to the increase in number of enterprises run by women (Minniti et al., 2010; GEM, 2019). Moreover, female enterprises are considered to be the fastest growing domain in entrepreneurship all over the world (Brush et al., 2017).

Both the interest in female entrepreneurship and the recent growth of number of companies launched by women can be explained by the realization that women's enterprises are able to contribute to the economic and social development of the country (Brush et al., 2012). From economic perspective, female enterprises create new jobs and through value creation increase gross domestic product (Bosse et al., 2012). From social perspective, some authors argue that since women tend to pay special attention to such issues as health, education and nutrition, income gained by women tend to improve the quality of life first of their family, and second it also has a positive effect on the society as a whole. (Minniti & Naudé, 2010). In addition to that, running a business helps women get autonomy and independence, become more confident about future, and improve the social status they have in society.(Treviño et al., 2018).

Although the number of women-owned enterprises is increasing fast, still entrepreneurship remains men-dominated domain, and smaller number of women in comparison to men tend to launch their own business (Kim, 2007; Hughes et al., 2012; Rubio-Banon et al., 2016). In GEM report it is stated that on average there are 7 female entrepreneurs for every 10 male ones, and among 48 countries which have been surveyed in 2018, only in six of them the TEA rate (total early-stage entrepreneurial activity) is equal among men and women, these countries are Indonesia, Thailand, Panama, Angola, Qatar and Madagascar. (GEM, 2019).

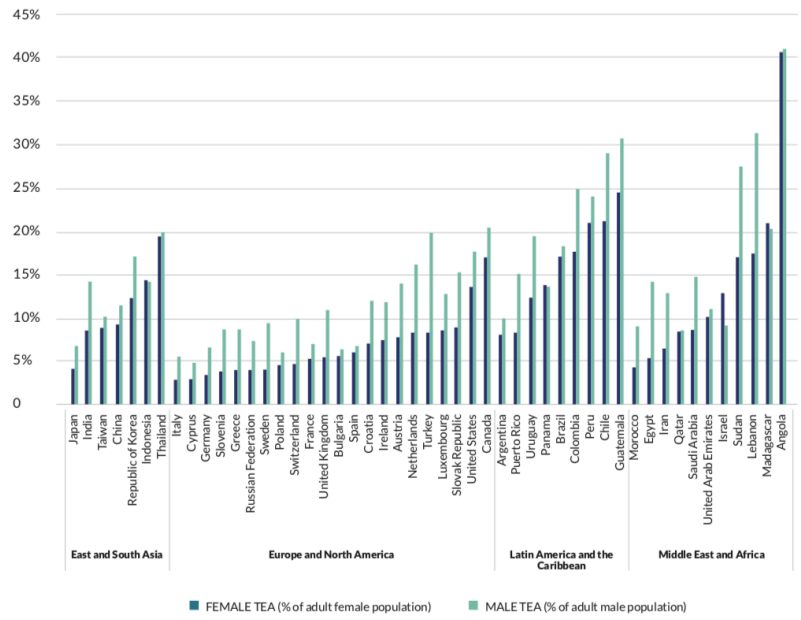

Figure 1. Rate of male and female entrepreneurship (GEM, 2019)

The situation with less women than men engaged in entrepreneurship can be explained mainly by two reasons: 1) less women than men tend to set up their own business, 2) the failure rate of female startups appears to be higher than the one of men. As for the first statement, some works explain that for cultural and socioeconomic reasons women prefer to work as an employee, while men opt for self-employment more often. (Kanazawa, 2005). As for the second statement, some studies argue that if we take into consideration size of the firm and the sector it operates in, the difference in failure rates tend to be significant (Rei-Martí et al., 2015).

It is worth mentioning that female entrepreneurship as well as entrepreneurship in general has been studied from a variety of perspectives. However, here it seems to be crucial to apply the same dimensions that have been discussed in the previous part in order to highlight the differences and distinguishing features of female entrepreneurship. Thus, the following aspects are going to be further discussed:

1. Personal perspective, which includes human capital, social capital, aspirations, and personal characteristics of female entrepreneurs;
2. Motivation, what drives the intention of women to launch their own business;
3. Institutions, how the context and environment influence the intentions and success of female enterprises;
4. Performance of business, how successful female enterprises in comparison to the ones run by men.

Personal perspective

As it was previously mentioned women tend to be less engaged in entrepreneurial activities in comparison to men. However, apart from that researchers also see the difference between

personalities of men and women who start their own business. Thus, a number of articles have been dedicated in order to explore the management style of female entrepreneurs, their aspirations, human capital and social capital, and to compare those with the one that men usually tend to have.

Personal traits. Many researchers tend to believe that motives why women launch their business, sector they select to operate in and the way they manage their firms is slightly different from male entrepreneurs.

Many researchers state that this difference comes from psychological aspect. Mueller (Mueller et al., 2008) in his work confirms that the difference between male and female traits, which they bring to business, proves to be statistically significant. From his perspective women usually tend to possess so-called femininity which includes the concern about the welfare of society and other people and about harmony in the group. Men, on the other hand, can rather be described as assertive, competitive, independent, and aggressive. Moreover, women tend to be more risk-averse (Pérez-Pérez et al., 2016).

In addition to that, another reason for the forgoing difference between genders is that women usually place higher importance on emotional component in business which then influence their decision-making process, e.g. the choice of sector and management focus (Brush, 1992; Godwin et al., 2006; Muller et al., 2008). In regard with the sector, women are prone to launch their companies in service-oriented niche, and they tend to avoid production-oriented area (Brush, 1992). As for the management focus female entrepreneurs usually place higher importance on social or environmental issues, for example, customer satisfaction, whereas men in the majority of cases prioritize maximizing economic benefits (Eddleston et al., 2012).

Human capital. As it was previously mentioned, human capital can be understood either as a combination of knowledge, personal and cultural traits or as a mix of knowledge and skills people get throughout their lives. In this part, the second approach to human capital will be implemented.

Some researchers claim that there is a difference between skills that men and women consider as their strong ones. Usually women state that their social skills are the main asset they bring to business, while men rather mention hard skills such as financial skills (Smith et al., 1982).

Another finding of the researches already done is that in general women who start their own enterprises have less working experience either in family business or in a sector which is related to their businesses (Fairlie and Robb, 2009). Moreover, the sectors (retail sales, office administration, secretaries) their previously work differ from the one in which men (executive management, scientific and technical sector) work (Brush, 1992; Allen et al., 2007).

Finally, some researchers argue that women usually tend to place higher importance on the knowledge they obtain through formal and informal education (Markovic et al., 2012).

Social capital. As for the social capital, this aspect is usually approached from the network perspective. There is evidence from different studies that women tend to stress the importance of networks to launch business far more often in comparison to men (Bruni et al., 2004; Gutiérrez, 2008; Pérez-Pérez et al., 2016). The reason why women distinguish this factor is rather simple: women usually have smaller access to corporate or entrepreneurial networks when compared to men, and thus, women consider lack of social and professional networks as a limiting factor to become an entrepreneur, since networks play essential role, particularly, at the early stage of business operations.

Moreover, some studies highlight the importance of family as a source of entrepreneurial support, since very often women become an entrepreneur either to continue family business or to create her own company with the help of existing family network of entrepreneurs (Aldrich et al., 2003; Kirkwood, 2007).

Motivation

Motivation is believed to be an aspiration that encourages and keeps interest of people in a certain task or job they undertake (Kumar et al., 2003).

With regard to motivation, a number of researchers have focused their attention on what factors encourage women to start their own business (McClelland et al., 2005; Kirkwood, 2007; Cavada et al., 2017). Others investigated how motivational factors women had when launching business influence the performance and survival of their companies (Rey-Martí et al., 2015). However, after thorough analysis of the existing literature it can be concluded that with regard to motivation researchers largely focus on factors that encourage women to set up a company.

Usually the abovementioned motivational factors are divided into two groups. In some studies researchers call them opportunity-based entrepreneurship and necessity-based entrepreneurship, in some other studies the forgoing phenomenon is sometimes referred to as pull and push factors. However, the idea behind them is the same. Pull factors or opportunity based entrepreneurship are usually perceived as wish for self-independence, autonomy, achieving self-confidence, pursuing self-fulfillment and greater satisfaction from what people do in their lives, desire to accomplish social goals such as helping others, and wish for work-family balance. When it comes to female entrepreneurship the latter one, namely desire for work-family balance is mentioned and investigated much more often in comparison to male entrepreneurship (Cavada et al., 2017).

Push factors or necessity based entrepreneurship usually include lack of job on the market, discrimination on work place of women, not favorable working conditions, unofficial division between men and women where men are given the priority for promotion. Here many researchers

mention the phenomenon which is called glass-ceiling, or glass-ceiling index. Usually it investigates an invisible barrier that prevents some demographic minorities from climbing higher in a certain hierarchy. With regard to female entrepreneurship, those minorities are considered to be women who due to social and cultural prejudices are discriminated against men, and even though those women have the same educational level, they tend to hold less senior positions and usually receive smaller pay in comparison to their male colleagues (Buttner et al., 1997; Ribes-Giner et al., 2018). Some studies confirm that in masculine societies where glass ceiling issue is most visible, women tend to opt for venture creation more often since in this way they believe to be able to achieve gender parity.(Lerner et al., 1997; Jamali, 2009; Woodhams et al., 2015)

The summary of motivational factors divided into pull and push is presented in Table 1.

Table 1. Motivational factors for female entrepreneurs (Cavada et al., 2017)

Push factors (necessity based)	**Pull factors (opportunity based)**
Unemployment	Self-fulfillment
Unfavorable working conditions	Independence
Lack of jobs	Self-achievement
Glass ceiling	Desire for wealth
Economic necessity	Job satisfaction
Lack of childcare facilities	Entrepreneurial drive
	Social objectives
	Aspiration
	Autonomy

A number of studies confirm that pull factors or opportunity based entrepreneurship prevails on push factors or necessity based entrepreneurship both for men and women (Buttner et al., 1997; McGowan, 2012; Cavada 2017). However, still pull factors differentiate between men and women. Men are stated to be driven by motives such as social status both for themselves and their family, desire for wealth and economic well-being, upward mobility, opportunity for self-realization. While female entrepreneurs usually place importance on the improvement of their personal life and are motivated in major cases by desire for self-fulfillment, seeking work-family balance, flexible working hours and the wish to improve working conditions, with work-family balance being predominant. (Thompson and Hood, 1991; Brush and Gatewood, 2008; McGowan et al., 2012; Cavada 2017).

Institutional environment

Some researchers investigate the phenomenon of female entrepreneurship from institutional perspective. With regard to institutions, the majority of articles focus on either accessing to finance by women or influence of socio-cultural norms in society. It is worth mentioning that very few articles provide the bigger picture analyzing the whole contextual environment in which enterprises have to operate. In addition to that, articles that implement

institutional approach are usually focused on a single-country study (Goby, 2011; Devi, 2019; Mukorera, 2020).

Socio-cultural norms. The impact of socio-cultural factors on the intentions of female entrepreneurs is widely studied in the literature. However, this aspect has been studied from mainly two perspectives: 1) overall values that exist in society, and 2) perception of women and women's role in society (Rubio-Banon, 2016).

As for the first point, there is no consensus yet on how overall values influence the intentions of women to create their own business. One of the explanation of existing confusion in literature might be caused by the methods those studies implement. The majority of articles which study socio-cultural factors use theory designed by Hofstede (Hofstede, 1983), which taking into the account the year it was published might be outdated and not really represent the reality of the present moment.

In his work, Hofstede identifies several features that can describe each society, namely Power distance, Individualism, Masculinity, Uncertainty avoidance, Long-term orientation and Indulgence. Out of all the characteristics, researchers who study female entrepreneurship mainly focus on the concept of feminine/ masculine society.

Masculine society is a society which values competition, achievement and success. Success in masculine societies is defined as being best or the winner in the field people are working. Feminine societies on the other hand promote values such as caring for others, and the success is measured by quality of one's life.

Thus, some of the studies show evidence that the environment of masculine societies tend to be perceived as obstacle by women to start their own business. While others provide evidence of the opposite: in masculine societies women tend to believe that succeeding in entrepreneurial field is the right career choice.

The second perspective that is widely implemented in literature to analyze the influence of socio-cultural norms on female entrepreneurship is to investigate how women and women's role are perceived in society. Again there is no consensus between researchers on this issue. Some researchers tend to believe that in patriarchal societies where women are positioned as household keepers, cares of children and elders, female entrepreneurship is less prominent. However, some studies still argue that in patriarchal societies women see entrepreneurship as the only way to overcome glass-ceiling and job segregation, thus, they opt for entrepreneurship.

All in all, it can be concluded that the perception of entrepreneurship as a male-domain results in women opting for this career path more seldomly in comparison to men (Connell, 2005; Gupta, 2009; Rubio-Banon, 2016).

Finance availability. Financial institutions play crucial role in setting up a new venture. Thus, a number of studies have investigated whether there are differences in obtaining necessary financial resources between men and women.

Currently many researchers claim that it can be more difficult to obtain financing for women than for their males counterparts (Marlow et al., 2005; Muravyev et al. 2009, Brana, 2013). This phenomenon authors explain by two factors. The first one is self-discrimination of women when they feel themselves inferior to men, and thus, believe they will not be able to obtain financing needed for their companies. The second reason is the background women manage to accumulate before applying for financial resources, namely their human and social capital, financial and credit history thus, making themselves less attractive to lenders.

Business performance

Business performance of women-owned enterprises has been widely studied. Usually the performance of firms is assessed by the size, growth, profitability of the company and the survival rate. The majority of articles in the literature that currently exist compare the business performance of women-owned enterprises with the business performance of men-owned enterprises. However, some articles do not make any gender-based comparisons but rather investigate how factors such as human and social capital, motivations, finance availability of female entrepreneurs affect the success of their businesses.

According to a number of studies, women-owned enterprises tend to be smaller in size in terms of number of employees, sales, costs and physical capital in comparison to men-owned companies. Female firms usually bring less profit. Moreover, women-owned firms tend to be less productive with regard to small business, no such evidence was found for medium and large firms (Robb , 2002; Fairlie and Robb, 2009; Bruhn, 2009; Poggesi et al., 2016).

In addition to that, women tend to open their companies in a different kind of sectors in comparison to men. Researchers believe that women are more likely to open their companies in service-oriented industries such as retail trade, personal services and professional services, and are far less likely to operate in construction (Brush, 1992; Fairlie and Robb, 2009, Goldstein, 2019).

The main reasons for female enterprises to underperform in comparison to men-owned enterprises were discussed by Bruhn (Bruhn, 2009). The author states that some evidence was found that the main obstacle for women-owned businesses to perform similarly to men is considered to be household obligations and child care. According to Bruhn, businesses where women tend to have children under 12 years old in 30 to 40 percent of cases are more likely to be smaller both in size and in profit they generate. In addition to that, women more often run their

businesses inside their homes compared to men, thus, it restricts the location, size of the firm and sector-choice for women-owned businesses.

The summary of the findings on peculiarities of female entrepreneurship can be seen below in Table 1.

Table 2. Summary of findings on female entrepreneurship

Aspect	Findings	Literature source
Personal perspective		
Personal traits	They are more risk-averse, sensitive and tend to lack confidence in their entrepreneurial skills. Women tend to place importance rather on social value of their business than on economic one.	Mueller et al., 2008 Eddleston et al., 2012 Pérez-Pérez et al., 2016
Human capital	Women tend to possess less working experience. In addition, they tend to stress that education is important for starting a business.	Smith et al., 1982 Fairlie and Robb, 2009 Markovic et al., 2012
Social capital	Women consider lack of social and professional networks as a limiting factor to become an entrepreneur more often than men.	Bruni et al., 2004 Gutiérrez, 2008 Pérez-Pérez et al., 2016
Motivation		
	A number of studies confirm that opportunity-driven entrepreneurship prevails over necessity-driven for both men and women. However, women tend to start business in search of work-family balance which is not typical for men.	Buttner et al., 1997 Kirkwood, 2007 McGowan, 2012 Cavada 2017
Institutional environment		
Socio-cultural norms	Entrepreneurship is considered as mainly male-domain. The perception of women as household keepers hinders their entrepreneurial intentions.	Connell, 2005 Gupta, 2009 Rubio-Banon, 2016

Finance availability	Many researchers claim that it can be more difficult for women to obtain necessary financial resources than for their male counterparts.	Marlow et al., 2005 Muravyev et al. 2009 Brana, 2013
Business performance		
Sector	Female entrepreneurs are more likely to open their companies in service-oriented industries such as retail trade, personal services and professional services, and are far less likely to operate in manufacturing.	Robb , 2002 Fairlie and Robb, 2009 Bruhn, 2009 Poggesi et al., 2016 Goldstein, 2019
Size	Women-owned enterprises tend to be smaller in size in terms of number of employees, sales, costs and physical capital in comparison to men-owned companies.	
Profitability	Female enterprises usually are less profitable, which can be an industrial issue.	

All in all, we can conclude that female entrepreneurship differs in a variety of ways from the male one. In general, women tend to be aspired by different aspects. In major cases, women tend to opt for entrepreneurial activities since it gives more flexibility and work-life balance. Moreover, female-driven businesses are more likely to spend resources on household health, nutrition and education, and employ more women in comparison to men. These all make it evident why female startups play an important role in the economic activities and how the society can benefit from supporting female entrepreneurship.

1.4 Implementation of institutional theory in entrepreneurship

After having analyzed the approaches to entrepreneurship and peculiarities of female entrepreneurship, it seems to be important to proceed to institutional theory and identify the framework that will be used in this paper further in the empirical part. This is vital since the goal of this study is to identify which institutional factors have the most either positive or negative effect on female entrepreneurs and their intentions to start a business.

Overall, researchers tend to stress the importance of institutional environment in promoting and supporting the creation of new business ventures (Hechavarría & Ingram et al., 2019).

Governments can encourage entrepreneurial activities through a number of channels: facilitation of government regulations and procedures to launch a company; creation of special programs that support entrepreneurial activities; implementation of entrepreneurial education both at schools and universities; improvement of certain facilities such as physical, commercial, legal infrastructure (Bruton, 2010).

First of all, it is first essential to define what institution stands for. Institution refers to "formal set of rules such as regulatory structures, governmental agencies, laws, courts, and others, that organizations and individuals are expected to follow" (Bruton, 2010). Furthermore, it is essential to identify the framework that can be used further in empirical part. Few papers that conduct this kind of analysis for entrepreneurship, tend to implement the institutional theory that was established by Scott (Scott, 1995), and then further developed by him (Scott, 2013).

In his theory Scott divides the institutional environment into three pillars:

- Regulative;
- Normative;
- Cognitive.

Regulative component of the institutional theory stands for formal rules that prescribe the behavior of organizations and individuals. These are the rules to which people must comply, and this pillar is a key element in controlling the activities of residents. This component is composed of governmental legislation and industrial agreement. Those regulations are used as guidelines by new enterprises and all the documentation shall comply with the rules that government sets. This pillar can be also referred to as external one since it is set by the government and cannot be neglected.

Normative component, in its turn, is not set by the government but rather arises from society. This component stands for the rules and a variety of norms that emerged in society, and is very connected with what is perceived as moral or not. Normative pillar is composed of professional norms, socio-cultural norms, established values. Thus, it rather explains what is expected from individuals in terms of social, professional and organizational interaction. The main difference between regulative and normative pillars, is that the latter one is not coercive. Consequently, punishment for non-compliance to this set of rules tend to be informal.

Finally, *cognitive component* narrows down to the perception of each individual. Unlike the normative component, which explains what individuals do to get approval from society and which reflects collective decision-making principles, cognitive factors relate to individual experiences and beliefs, which, in turn, are influenced by the culture and traditions that exist in society. Culture can determine attitudes toward risk, independent thinking, and willingness to take

initiative. Cognitive component is comprised of individuals' perception of external environment, of his or her own skills and abilities, fear of failure.

When deciding to create a business, an individual compares the benefits of its creation with the costs that are required to launch this business. Therefore, the degree to which the external environment is perceived as favorable by individuals for an entrepreneurial start can affect entrepreneurial activity in the country. In addition to the perception of the overall environment, the perception of one's own skills and abilities as sufficient to start a business is also crucial for stimulating entrepreneurial activity (Bowen & De Clercq, 2008). Apparently, education system plays vital role in addressing these perceptions and nurturing confidence in one's entrepreneurial abilities.

As a matter of fact all three pillars can either encourage or discourage entrepreneurial activity in the society. That is why, many empirical studies are aimed at finding out what is the relationship between the success of enterprise and the existing institutional environment in different contexts. One of the main advantages of the institutional approach is that it provides insights into the specific features of different countries based on rules, norms and beliefs that exist there. In turn, it helps to elaborate on governmental policies that might help to boost entrepreneurship in a given context.

Although in literature there is an acknowledgement of the importance of institutional context on the development of entrepreneurial activities' levels, yet limited attention has been placed on its impact on female entrepreneurship. Thus, this paper will contribute to this research field by implementing Scott's institutional theory, since this framework corresponds to the goals of this research and appropriately aligns with the peculiarities of female entrepreneurship that have been previously discussed.

1.5 Research gap, factors selection and hypotheses statement

Institutions, or entrepreneurial ecosystems as some researchers refer to it, play crucial role in either boosting or hindering entrepreneurial activity depending on how those institutions operate and what policies follow (Hechavarría & Ingram et al., 2019).

Entrepreneurial ecosystem is a broad term which comprises of formal and informal institutions such as financial institutions, education, physical, legal, commercial infrastructure, governmental policies and programs, socio-cultural norms that exist in society. Thus, the way how the foregoing ecosystem is constructed in a certain country can affect the level of entrepreneurial activities.

As it was mentioned in the previous chapter, in this paper institutional framework proposed by Scott (Scott, 2013) will be implemented in order to analyze the entrepreneurial ecosystem. Scott in his study divides all the institutional factors into three categories which he calls pillars, namely

regulative, normative and cognitive pillars. Apparently, each pillar can consist of a variety of different factors. Regulative pillar can comprise of governmental policies, access to financial resources, legal, commercial and physical infrastructure, programs that support new and growing firms. Normative pillar can include cultural norms and how entrepreneurs and role of women, in particular, are perceived in society and what kind of career path they are expected to follow, if any, it can comprise of socio-cultural norms, high social status of entrepreneurial career, perception of corruption. Finally, cognitive pillar mainly comprises of female entrepreneurs' perception of their own abilities, external environment, fear of failure. Thus, factors that are aligned with those pillars shall be selected.

In addition to that, peculiarities of female entrepreneurship have been discussed identifying that women pursue different kind of goals in comparison to male counterparts and set up businesses in a different kind of sectors, they tend to possess less human and social capital, and their enterprises tend to underperform in terms of sales and growth. In addition to that, women are usually more dependent on the socio-cultural environment that surrounds them, and often suffer from 'glass-ceiling' when they cannot climb the career ladder due to invisible norms that exist in society with men being given priority when it comes to promotion.

After careful analysis of existing papers in literature, it can be concluded that all the papers that study the influence of institutional factors on female entrepreneurship tend to focus on some specific topic, e.g. influence of education and trainings, impact of financial environment, affect of socio-cultural norms. Furthermore, the majority of papers focus on a single country analysis, neglecting the cross-country perspective. In addition to that, most of the papers on this topic tend to use qualitative analysis. Finally, no study has been found that provided a comprehensive overview of the influence of institutional environment on female entrepreneurship and comparative analysis of that environment between innovation-driven and efficiency-driven countries implementing a quantitative analysis.

Thus, this paper will focus on a holistic analysis of institutional factors and how they influence female entrepreneurship. All the factors are going to be divided into three pillars that have been mentioned above. Furthermore, it is essential to choose factors that are most important for female entrepreneurship in order to provide relevant results.

Regulative pillar plays crucial role and shall include different factors in order to better describe the entrepreneurial environment in which female enterprises operate. Based on that the following factors have been chosen: finance availability, government policies and taxes, governmental programs and access and availability of physical infrastructure.

Analysis of financial environment seems to be essential, since number of studies have indicated the importance of this factor, on the one hand, and the difficulty that women encounter

when it comes to setting up a business, on the other hand. Moreover, according to some studies, women tend to possess less working experience, credit history, and social capital which makes them lose credibility of financial institutions, thus, implementing one more challenge to start a business.

Government policies and taxes affect immensely intentions of people to launch a new company. Government policies can impede entrepreneurial activities by extending the time needed to register a company, obtain necessary permits and licenses, collect the required set of documents etc. Taking into account that women tend to be more risk-averse and less self-confident about their entrepreneurial abilities in comparison to men, high burden of government procedures and rules to comply with shall have a greater effect on female entrepreneurs.

Governmental programs, in its turn, seem to be crucial to analyze, especially those programs that address directly female entrepreneurs. For the above-mentioned reasons, namely low self-confidence and usually less human capital gained, women seem to be the demographic group that can benefit a lot from dedicated governmental programs, especially from special trainings and skills development organized through incubators and business accelerators.

Physical infrastructure, namely access to roads, utilities, communications, water disposal etc., is taken for granted in many countries, especially in innovation-driven ones. However, since this study is focused on cross-country study and comparative analysis between innovation-driven and efficiency-driven countries, this can be a distinguishing factor between two groups of countries. In addition to that, poorly developed infrastructure can drive uncertainties towards new venture creation. Taking into account that women tend to be risk-averse this can negatively affect their entrepreneurial intentions.

Now we can proceed to cognitive pillar. For this study the following cognitive factors have been selected: entrepreneurial education at school and entrepreneurial education at universities. It seems to be important to investigate the influence of both educational levels on the intentions of female entrepreneurs and define which one has a bigger impact. In addition to that, women usually focus bigger attention on the knowledge and skills they possess before deciding on launching a new company. Thus, entrepreneurial education may have huge positive impact on the entrepreneurial levels of female entrepreneurship.

Finally, normative pillar usually comprises of cultural values and norms that exist in society. Thus, for this pillar the following factor has been selected: socio-cultural norms. As it was previously mentioned women tend to be more affected by the culture and gender perception that exist in society. Consequently, this factor will considerably contribute to this study.

Based on the factors that have been chosen for further analysis, seven hypotheses have been formulated. The hypotheses stated below will be tested in two groups of economies, namely

innovation-driven and efficiency-driven, in order to identify which factors influence the most each type of economy.

Finance availability

A number of studies have already investigated the influence of financial environment on both intentions and success of entrepreneurs. In addition to that, some of the above mentioned studies have focused on female entrepreneurs, in particular (Marlow et al., 2005; Muravyev et al. 2009, Brana, 2013).

The researchers tend to agree that finance availability is a very important factor when it comes to launch a business, and that it can either boost entrepreneurial activity in case it is relatively easy to get financial resources for one's enterprises, or hinder entrepreneurship if it is considered to be difficult to obtain finance which is needed to start a company.

Overall, studies investigating the impact of financial environment tend to focus either on demand side (entrepreneurs themselves), or on supply side (lenders, banks, venture funds etc.). Analyzing the demand side in gender-based studies, there is no consensus yet in literature whether it is supposed to be more difficult for women to obtain finance in comparison to men, or not. On the one hand, some of the studies state that women tend to struggle to get financial resources (Marlow et al., 2005), which is explained by the fact that in general women tend to have less working experience, less or no at all credit history, less physical capital and social network when it comes to starting a business. Consequently, it makes it riskier for financial institutions to lend money to this demographic group. In addition to that, women tend to be more risk-averse, thus, they eliminate the opportunity of getting external funding to avoid potential difficulties with paying those money back. On the other hand, some studies argue that when such factors as demographics, sector choice, type of finance applied for are taken into account there is no statistically significant gender difference in obtaining financial resources.

When supply side is analyzed, it can be concluded that financial resources suppliers tend to believe that all in all there is a shortage of finance from formal financial institutions for women (Hill et al., 2006).

Summing up, it can be concluded that finance availability is considered as a crucial factor to launch a business, and in general, it is assumed to be more challenging to obtain necessary financial resources by women.

H1: Finance availability has positive impact on female entrepreneurial activity.

Government policy and taxes

When starting a business entrepreneurs inevitably face some government regulations and procedures they need to follow and comply to. Thus, this factor can have a strong effect on the

overall entrepreneurial activity in the country and worldwide. By government regulations and procedures researchers imply time needed to register the company and to obtain necessary permits and license to start operations, set of documents required, tax policies that apply to new and growing firms. Regulations that extend the time needed to found a company result in entrepreneurs missing possible opportunities. Moreover, entrepreneurs might need considerable financial resources in order to comply with all the government regulations, which, in turn, can drive their costs, and prevent entrepreneurs from launching a company (Mullins et al., 2005).

Apart from regulations, many studies focus on the influence of tax system on both the incentives of prospective entrepreneurs and the success of their ventures. On the one hand, some authors believe that progressive tax system can encourage entrepreneurs and boost the level of entrepreneurship in the country (Keuschnigg et al., 2004). On the other hand, other authors found no direct connection between the tax system and the level of entrepreneurship (Levie et al., 2008). However, many researchers believe that proper tax policies applied to new and growing firms are more important that tax system itself, since it provides more holistic view on the institutional ecosystem in which companies operate. Thus, some researchers argue that proper tax policies can incentivize entrepreneurs to launch and grow companies (Keuschnigg et al., 2004). In addition to that, some studies show evidence that higher tax rates might boost entrepreneurial activity, since it is easier for companies to underreport income in comparison to traditional employment (Blau, 1987). Overall, although there is no agreement in literature which tax system is best suited to boost entrepreneurial activities, it can be concluded that changes in tax rates can explain changes in the level of entrepreneurial activities.

All in all, government regulations, labour market rules, high taxes are perceived as a common barrier to launch a new venture (Acs et al., 2008).

H2: High government regulations and burden of taxes have negative impact on female entrepreneurial activity.

Governmental programs

Governmental programs that support new and growing companies are believed to be essential in order to boost entrepreneurial activity among different demographic groups, e.g. female entrepreneurship, youth entrepreneurship, etc. (Conchada et al., 2017). By governmental programs it is usually meant some special regimes that favor new firms, e.g. light tax policies, additional financing/ subsidies that can be obtained from government, private-public partnership, additional quotas for companies that are going to be engaged in either importing or exporting activities. Apart from policies coming purely from the government, governmental programs also comprise of the activities performed by science parks and business incubators, since these institutions contribute

immensely to start-ups scaling up and extending their activities to different markets (Clarysse et al., 2007). Moreover, the support of government may also include business trainings and mentorship programs conducted through the above mentioned business accelerators and incubators.

All in all, governmental programs can reduce the transaction costs of companies, develop human and social capital of entrepreneurs, address competences gaps that currently exist on the market (Delmar et al., 2006). Consequently, existence and development of programs that will encourage female entrepreneurship can boost the level of entrepreneurial activities among this demographic group.

H3: Governmental programs that favor new and growing firms have positive impact on female entrepreneurial activity.

Access to physical infrastructure

Physical infrastructure comprises of access to roads and highways, utilities (gas, water, electricity, sewer), communications (phone, internet, etc.), water disposal. The ability to get access to these services, their quality and cost is crucial in establishing a new business (Van de Ven, 1993). Moreover, access to resources such as offices, equipment, transportation, telecommunications also facilitates entrepreneurial activities (Carter et al., 1996).

Access to physical infrastructure can be taken for granted in some countries (e.g. innovation-driven countries). However, in some other countries (e.g. factor-driven or efficiency-driven countries) access to these services and their quality may be of difficulty for potential entrepreneurs and thus, hinder their intentions to start a company (Ghani et al., 2014). According to some researchers (Audretsch et al., 2015), access and availability of certain kind of physical infrastructure (e.g. broadband) positively influence entrepreneurial activities, while others (e.g. highways, railroads) are negatively associated with entrepreneurship.

All in all, it can be concluded that in general availability and access to physical infrastructure is positively associated with intentions to launch a new business.

H4: Access to physical infrastructure has positive impact on female entrepreneurial activity.

Entrepreneurial education

Education is considered to play a crucial role in career choice, and in opting for entrepreneurship, in particular.

Some of the studies confirm that lack of minimal knowledge in the fields such as management, finance, leadership, legislation may prevent potential entrepreneurs from starting a business, since it is important to have al least basic idea on how companies operate (Geldhof et al., 2014). In

addition to that, education trains certain set of skills, develop cognitive abilities to be able to recognize possible opportunities on the market, assess and exploit them, and finally it encourages people to opt for entrepreneurship as a career choice (Honig, 2004; DeTienne et al., 2004; Peterman et al., 2003).

Generally, when it comes to education researchers tend to distinguish between primary and secondary education (school) and tertiary education (universities). Although there is a general agreement that education indeed has positive effect on entrepreneurship, researchers are still not sure which level of education influence the career choice the most. On the one hand, university education is believed to be more profound, give deep dive into business activities, and provide with practical knowledge. On the other hand, the mentality itself and personal characteristics are formed during early stage of people's life, thus, arguing that primary and secondary education contribute immensely to the intentions of future entrepreneurs. Thus, it is important to take into account both levels of education.

However, here we are interested not only in the education itself, but rather in entrepreneurial education, and whether this career path is promoted all along different educational stages. According to different researchers (Mayhew et al., 2012), many European countries promote entrepreneurship as a possible career choice mainly through educational programs that take place at universities. However, entrepreneurial courses at school are also popular and can even boost innovative entrepreneurship. Thus, in our analysis we will concentrate on entrepreneurial education, in particular.

Moreover, there is evidence that entrepreneurial education can have higher positive effect on women than on men, since women tend to put into question their entrepreneurial abilities more often, and lack self-confidence. Thus, undertaking entrepreneurial courses either at school or university can boost female self-confidence and encourage women to opt for entrepreneurship as a career choice and launch their own enterprises (Oosterbeek et al., 2010).

H5: Entrepreneurial education provided at primary and secondary school has positive impact on female entrepreneurial activity.

H6: Entrepreneurial education provided at universities has positive impact on female entrepreneurial activity.

Socio-cultural norms

When it comes to socio-cultural norms it is important to distinguish between universal values and national culture (Hofstede, 1980). This is vital since universal values take long time to be changed in the minds of people, whereas national culture, e.g. attitudes towards entrepreneurship, is relatively easier to address and implement in the society. Furthermore, positive image of

entrepreneurs, people who have obtained wealth through their own entrepreneurial activities, positive media coverage of the foregoing topic, publicity of people' stories can have an immense positive effect on the development of entrepreneurship in society (Reynolds, 2011). However, the contrary is also possible. When there is a negative attitude towards entrepreneurs, women are perceived as ones responsible for households and taking care of family, then it can refrain women from undertaking entrepreneurial path (Marlow et al., 2018).

In addition to that, researchers tend to believe that socio-cultural aspect and norms that exist in society have a major effect on women in comparison to men (Croson et al., 2009). Thus, authors state that in countries where women get higher cultural support to pursue their own career path, usually have higher rates of female entrepreneurship (Hechavarría et al., 2017).

All in all, there is vivid evidence that countries whose socio-cultural norms support and promote the image of entrepreneur and, female entrepreneurship in particular, can boost levels of entrepreneurship and encourage women to launch their own business.

H7: National culture and social norms which promote entrepreneurship have positive impact on female entrepreneurial activity.

Table 3. Research hypotheses

Null hypotheses	**Pillar**
Finance availability has positive impact on female entrepreneurial activity	Regulative
High government regulations and burden of taxes have negative impact on female entrepreneurial activity	Regulative
Governmental programs that favor new and growing firms have positive impact on female entrepreneurial activity	Regulative
Access to physical infrastructure has positive impact on female entrepreneurial activity	Regulative
Entrepreneurial education provided at primary and secondary school has positive impact on female entrepreneurial activity	Cognitive
Entrepreneurial education provided at universities has positive impact on female entrepreneurial activity	Cognitive
National culture and social norms which promote entrepreneurship have positive impact on female entrepreneurial activity	Normative

Chapter 2. Research methodology

2.1 Data collection and processing methods

In this research paper the comprehensive GEM database will be used, for the period of 5 years from 2015 to 2019. GEM is a trusted dataset and is largely used by organizations like United Nations, OECD, World Bank. Moreover, it has been collecting data for more than 20 years on entrepreneurial activity across countries. Thus, it has vast and relevant data for this paper.

GEM is a global consortium which was founded more than 20 years ago in 1999 due to collaboration between two universities, namely Babson College and London Business School. Over the years the consortium has developed immensely, and currently it involves more than 500 researches and collects data from more than 100 countries.[2]

GEM consists of a number of national teams that are involved in research on different aspects of entrepreneurship. These national teams contribute to developing a global view on entrepreneurial activities and exploring what factors either drive people to launch their own business or help to remain successful and survive on market both at national and global level.

GEM data includes two parts, namely Adult Population Survey (APS) and National Experts Survey (NES). The first one is Adult Population Survey. APS reaches at least 2000 individual entrepreneurs in each economy in order to find out the aspirations, motivation, personal characteristics, ambitions of entrepreneurs and the perception of people starting their own business in the society.[3]

NES, in its turn, reaches out at least 36 experts who are aware of entrepreneurial context, institutional environment, and national situation in each economy who participates in GEM research. Thus, this survey complements the understanding of entrepreneurial environment on national level which then assist researchers in conducting further analysis.

There is a number of groups of stakeholders who can benefit from the data collected by GEM consortium. First of all, data in question is of a particular interest to academics since it contains a lot of insights both on individual and national level. Secondly, policy-makers are able to benefit immensely from GEM studies and reports as they can see how actions, governmental policies and programs encourage individuals to launch their own enterprise. Thirdly, individual entrepreneurs themselves can find interesting insights into entrepreneurial environment and based on that decide

[2] Babson college official website, URL: https://www.babson.edu/academics/centers-and-institutes/the-arthur-m-blank-center-for-entrepreneurship/thought-leadership/global-entrepreneurship-monitor/#

[3] GEM consortium official website, URL: https://www.gemconsortium.org/about/gem/5

where to allocate the resources they possess. Among the stakeholders, international organizations and sponsors can be mentioned as well.

For this particular research paper both types of survey, namely APS and NES, will be used.

Moreover, for deeper insights into countries contexts, the author plans to analyze other secondary resources like national reports, and documents on governmental policies that concern entrepreneurial activity in general, and female entrepreneurship in particular.

In the first part of the research paper the author has identified the goal as follows: to identify the institutional factors that encourage specifically women to start their own business and reveal what kind of institutional environment is the most favorable for female enterprises both for innovation-driven and efficiency-driven economies.

In order to achieve this objective and answer the research questions mentioned in the previous chapter the author will use quantitative analysis building a regression model. According to Wooldridge (Wooldridge, 2016), quantitative analysis comes into play when a researcher would like to test a theory or to estimate a relationship between different factors. Thus, quantitative analysis is an optimal method for this research paper in order to identify the relationship between diverse institutional factors and female entrepreneurship and define what kind of relationship between the variables exist.

Two software programs will be used to complete the analysis. Firstly, the data will be gathered and transformed in SPSS Statistics software. Then further analysis will be done using STATA software, since it provides a wider range of tools to work with panel data.

The regression model will be built first for the two set of countries combined together, and then separately for innovation-driven and efficiency-driven countries since the institutional environment in two sets of economies differ considerably from one another. The classification of World Competitiveness Report by World Economic Forum, which as well used by GEM project, will be used to divide countries into the foregoing groups.

According to World Competitiveness Report, there are three stages of economic development: factor-driven, efficiency-driven and innovation-driven economies. The first stage is factor-driven, and competitiveness of this type of economies is based on unskilled labor and/ or natural resources. Efficiency-driven is the second stage, and competitiveness is boosted by more-efficient production processes and increased product quality, economies tend to focus on manufacturing. Finally, the third stage is innovation-driven economies, competitive advantage is obtained through implementing the most advanced and sophisticated methods to produce innovative products, businesses are usually more knowledge-intensive, and the service sector expands.

2.2 Model description

In order to answer the research questions, the quantitative analysis will be conducted in this paper. In particular, the panel data regression will be built. This type of analysis will help the author to measure the impact of certain institutional factors which will be divided, according to Scott's three pillars (Scott, 2013) into regulative, normative and cognitive groups, on female entrepreneurship. The dependent variable will be the female total early-stage entrepreneurial activity (TEA) collected through APS. TEA stands for the proportion of women who are identified as nascent or new entrepreneur to the overall population for a given year. [4]

As for defining the early-stage entrepreneurial activity International organizations such as World Bank and Global Entrepreneurship Monitor have the same approach towards analyzing the entrepreneurial activity. (Figure 1)[5]

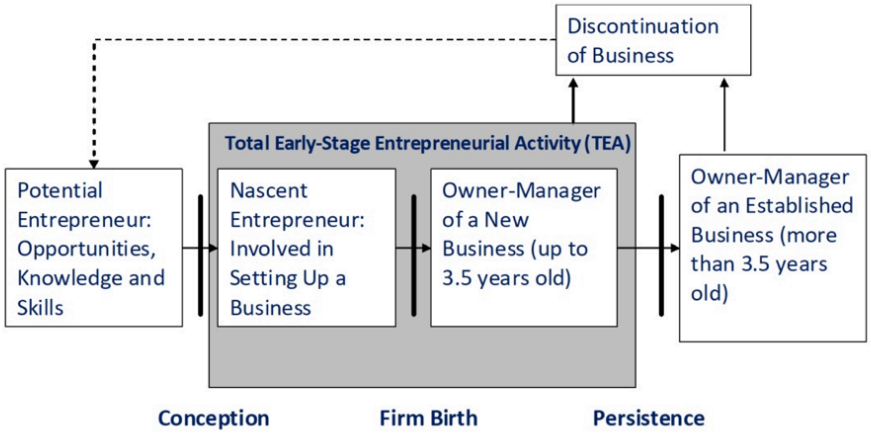

Figure 2. Entrepreneurial process and GEM's basic terms

The above mentioned organizations divide the entrepreneurial process into the following stages:

1. Potential entrepreneur
2. Nascent entrepreneur
3. Owner-manager of a new business
4. Owner- manager of an established business

According to GEM, potential entrepreneur is the one who has ideas about launching a new business, may have appropriate skills, knowledge and network for that. Nascent entrepreneur, in its turn, is the one who started doing first steps towards implementing the idea into real life, this is the stage when the firms is "born" and enters the market. Owner-manager of a new business is an entrepreneur who is currently running its business. However, his or her business is still young and

[4] GEM consortium official website, URL: https://www.gemconsortium.org/about/gem/5
[5] Ibid

operates for less than 42 months on the market. These three stages are very important for a new business and predetermine the future success or failure of a new business. Here we come to the next indicator of business survival. The last observed stage is owner- manager of an established business, which means that an entrepreneur runs his business for more than 42 months or 3,5 years. This time frame distinguishes between new and established business, and, according to GEM, business which managed to overcome 3,5 years and is still operating can be considered as survived.

Since in this paper the GEM database will be used, we will follow their conceptual framework and definitions. Thus, total early-stage entrepreneurial activity will be defined as either 1) the entrepreneur who is engaged into setting up business, or 2) entrepreneur who is currently running the business which has been operating for less than 42 months.

As for independent variables the indicators measured in National Expert Survey (GEM) will be used. For this paper, following the theoretical framework defined by Scott (Scott, 2013) seven independent variables were chosen namely, finance availability, government regulations and taxes, governmental programs, entrepreneurial education at school, entrepreneurial education at university, physical infrastructure and socio-cultural norms. Finance availability, government regulations and taxes, governmental programs, physical infrastructure will contribute to regulative pillar, entrepreneurial education at school, entrepreneurial education at university – to normative pillar, and socio-cultural norms – to cognitive pillar.

Before moving forward, it is crucial to understand what stands behind each independent variable. Finance availability defines how easy it is to get debt or equity funding and governmental subsidies on the market, whether business angels support new and growing firms and funding available through venture capital and IPOs. Thus, this variable will correspond with Hypothesis 1 that was stated in Part 1 of research paper.

Government regulations and taxes stands for the number of procedures new firms shall go through when setting up a new enterprise, and the burden of tax system on new companies, which will support Hypothesis 2.

Governmental programs explain whether there are programs that support new and growing firms and whether they are effective or not. This variable will correspond to Hypothesis 3.

Physical infrastructure explains the accessibility of internet, telephone and other services and quality of roads, water, utilities, communications. This variable will support Hypothesis 4.

Entrepreneurial education both at school and at university level shows how effective education system is to encourage students to set up their businesses and equip them with the required knowledge. These two variables will correspond to Hypotheses 5 and 6.

Finally, socio-cultural norms show how national culture supports and encourages individuals to become an entrepreneur, corresponding with Hypothesis 7. Bellow the table explaining the correspondence of variables with hypotheses can be found.

Table 4. Correspondence of variables with hypotheses

Null hypotheses	Variable
Finance availability has positive impact on female entrepreneurial activity	Finance availability
High government regulations and burden of taxes have negative impact on female entrepreneurial activity	Government regulations and taxes
Governmental programs that favor new and growing firms have positive impact on female entrepreneurial activity	Governmental programs
Access to physical infrastructure has positive impact on female entrepreneurial activity	Physical infrastructure
Entrepreneurial education provided at primary and secondary school has positive impact on female entrepreneurial activity	Entrepreneurial education at school
Entrepreneurial education provided at universities has positive impact on female entrepreneurial activity	Entrepreneurial education at university
National culture and social norms which promote entrepreneurship have positive impact on female entrepreneurial activity	Socio-cultural norms

2.3 Research strategy

For the analysis GEM data will be used collected for the years 2015, 2016, 2017, 2018 and 2019.

As it was previously mentioned, two software packages will be utilized in order to build the model. The first software is IBM SPSS Statistics to collect and transform data. The second software is STATA 14 to analyze the panel data, since it provides features that are more suited to the analysis of data that is used in this research paper.

In the table below the description of the variables can be found with the corresponding institutional pillar.

Table 5. Description of the variables

Variable	Variable in output	Explanation of variable	Pillar	Source
Dependent variable				

Early-stage entrepreneurial activity among women	TEAFEM	% of women in the age group of 18-64 who are engaged in starting new business or operate business for less than 42 months	-	APS
Independent variables				
Finance availability	ASUM	Different types of financial resources are available for new and growing firms	Regulative	NES
Government regulations and taxes	B2SUM	The burden of government policies bureaucracy and taxes is not high for new and growing firms	Regulative	NES
Governmental programs	CSUM	Government programs provide adequate support to new and growing firms	Regulative	NES
Access to physical infrastructure	HSUM	Access to physical infrastructure and to necessary services facilitate the activity of new and growing firms	Regulative	NES
Entrepreneurial education at school	D1SUM	Primary and secondary school promote entrepreneurial activity	Cognitive	NES
Entrepreneurial education at university	D2SUM	Universities equip students with skills and competences needed to start a new firm	Cognitive	NES
Social norms	ISUM	National culture supports and encourages people to start new enterprise	Normative	NES

For the analysis cross-sectional time-series data will be used, also known as panel data. There are three major methods that are widely used in studies to analyze panel data, namely Pooled OLS, fixed-effects and random-effects model. There is no consensus yet in literature which of these methods suits best the cross-country analysis of panel data, and is usually dependent upon data itself and research questions that are formulated in study (Alexandrova & Verkhovskaya, 2016).

In order to choose between the models and define which method suits best the data that is presented in this paper several tests will be conducted. First of all, the data will be checked for homoscedasticity and collinearity, since these are the most important assumptions for Pooled OLS regression. Then two models will be built using random-effects and fixed-effects models. In order to choose between the models Hausman test will be implemented. Thus, the following tests will be implemented in order to choose the most appropriate model:

1. Breush-Pagan Lagrarian test
2. Multicollinearity check
3. Hausman test

After the appropriate method is selected, the regression itself can be built.

2.4 Data analysis

After having identified the research strategy that is going to be followed in this paper, it is possible to proceed to the cross-country analysis itself.

Analysis of complex model for two sets of countries combined

As it was discussed above, first, it is important to define the model that is going to be used.

First of all, it is necessary to understand whether the Pooled OLS model can be used. Thus, we need to check for collinearity and homoscedasticity, since these are important assumptions for this type of model.

In order to check whether there is a heteroscedasticty, Breush-Pagan Lagrarian test is going to be done. The null hypothesis of this test states that there is no variance between the errors from a regression and values of the independent variables, thus, the homoscedasticity can be identified. If the p-value of this test is below 0.5 then the null hypothesis of homoscedasticity shall be rejected, and heteroscedasticity shall be assumed.

After having run Breush-Pagan Lagrarian test, it can be concluded that our data turns out to be more complex, and that heteroscedasticity is present. Thus, Pooled OLS regression cannot be implemented with these data. (The output of Breush-Pagan Lagrarian test can be found in Appendix 1).

Now it is essential to understand whether fixed-effects or random-effects model shall be used. In order to define that, Hausman test shall be run. This test checks for endogeneity of variables. The null hypothesis of this test states that the difference in coefficients is not systematic, thus, the data is not endogeneous. If p-value of this test is below 0.5, then the null hypothesis shall be rejected, we shall assume that fixed-effect model shall be used.

As it can be seen from the STATA output Hausman test shows that the null hypothesis shall be accepted. (The output of Hausman test can be found in Appendix 3). Thus, random-effect model is the most appropriate model for the dataset that is going to be analyzed.

Finally, before proceeding to the regression itself, it is important to conduct a check for multicollinearity, this is a phenomenon when some of the predictors are strongly correlated in a multivariate regression, and some independent variables can be predicted from other predictors (Field, 2013).

Usually collinearity can be tested by calculating Variance Influence Factor (VIF). However, this method is not appropriate for panel data. Consequently, another method is going to be used, namely Covariance Matrices of coefficients.

As it can be seen in the output multicollinearity is not violated since all of the coefficients are below ± 0.5. (The output of Covariance Matrices can be seen in Appendix 2).

After having conducted all the required tests, we have identified that the most appropriate model for this data is random-effects model. The model is going to be described by the following equation:

$$TEAFEM_{it} = \mu + \sum_{j} \alpha_j \, RF_{jit} + \sum_{l} \gamma_l \, CF_{lit} + kNF_{it} + u_{it} + \varepsilon_{it}$$

Where TEAFEM is total entrepreneurial activity among women, μ – average test score for the population, RF – regulative factors, CF – cognitive factors, NF – normative factor (in the model only one normative factor is considered), i – country, t – time, u_{it} is between-group error, ε_{it} is a within-group error, j, l and k reflect a particular factor.

Finally, the analysis of the complex model can be done.

```
Random-effects GLS regression                   Number of obs     =       231
Group variable: country                         Number of groups  =        78

R-sq:                                           Obs per group:
     within  = 0.4032                                         min =         1
     between = 0.2822                                         avg =       3.0
     overall = 0.3687                                         max =         5

                                                Wald chi2(7)      =    130.89
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =    0.0000
```

teafem	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
asum	-1.950331	.6185691	-3.15	0.002	-3.162704	-.7379581
b2sum	-1.155297	.5962957	-1.94	0.053	-2.324016	.0134205
csum	-1.108617	.6924053	-1.60	0.109	-2.465706	.2484726
d1sum	-1.997805	.7898985	-2.53	0.011	-3.545977	-.4496322
d2sum	2.27963	.8044394	2.83	0.005	.702958	3.856303
hsum	-1.020137	.5073939	-2.01	0.044	-2.014611	-.0256633
isum	2.240815	.5928517	3.78	0.000	1.078847	3.402783
_cons	15.29413	1.066721	14.34	0.000	13.2034	17.38486
sigma_u	5.2907722					
sigma_e	2.942481					
rho	.76376304	(fraction of variance due to u_i)				

Figure 3. STATA output, regression model for combined sets of countries

After careful analysis of the literature, it has been identified that p-value shall be set at 10% significance level. Thus, it can be seen that the model is overall significant, and six factors have turned out be statistically significant and influence a dependent variable (proportion of women in the age of 18-64 who are engaged in early-stage entrepreneurship). The way those variables influence the dependent one is represented in the table below.

Table 6. Accepted and rejected hypotheses for complex model

Hypotheses	**Status**	**Impact**
Finance availability has positive impact on female entrepreneurial activity	Accepted	Negative
High government regulations and burden of taxes have negative impact on female entrepreneurial activity	Accepted	Negative
Governmental programs that favor new and growing firms have positive impact on female entrepreneurial activity	Rejected	No impact
Access to physical infrastructure has positive impact on female entrepreneurial activity	Accepted	Negative

Entrepreneurial education provided at primary and secondary school has positive impact on female entrepreneurial activity	Accepted	Negative
Entrepreneurial education provided at universities has positive impact on female entrepreneurial activity	Accepted	Positive
National culture and social norms which promote entrepreneurship have positive impact on female entrepreneurial activity	Accepted	Positive

Analysis of the innovation-driven countries

Now the analysis of innovation-driven countries needs to be done. Here the same logic and steps will be followed, namely first, Breush-Pagan Lagrarian test will be run in order to check for heteroscedasticity in the sample, then Hausman test, and Covariance Matrices, based on all that tests the most appropriate model will be chosen.

After having run Breush-Pagan Lagrarian test, it can be concluded that there is a heteroscedasticity and simple Pooled OLS cannot be used. (The output of Breush-Pagan Lagrarian test can be found in Appendix 1).

Then Hausman test has identified that random-effects model suits best our dataset. (The output of Hausman test can be found in Appendix 3).

Finally, Covariance Matrices have shown that the problem of multicollinearity is not present, since all the coefficients are below ± 0.5. (The output of Covariance Matrices can be seen in Appendix 2).

Thus, the analysis of the innovation-driven countries can be done.

```
Random-effects GLS regression                   Number of obs     =       159
Group variable: country                         Number of groups  =        49

R-sq:                                           Obs per group:
     within  = 0.6235                                         min =         1
     between = 0.3697                                         avg =       3.2
     overall = 0.4078                                         max =         5

                                                Wald chi2(7)      =    194.93
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =    0.0000
```

teafem	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
asum	-1.221598	.6257977	-1.95	0.051	-2.448139	.0049425
b2sum	-.1175175	.531391	-0.22	0.825	-1.159025	.9239898
csum	-.5461598	.6770882	-0.81	0.420	-1.873228	.7809087
d1sum	-2.125739	.6910095	-3.08	0.002	-3.480093	-.7713857
d2sum	1.865254	.7741456	2.41	0.016	.347957	3.382552
isum	1.145748	.5388055	2.13	0.033	.0897082	2.201787
hsum	-1.688347	.5087714	-3.32	0.001	-2.685521	-.6911738
_cons	14.88188	.9385698	15.86	0.000	13.04232	16.72144
sigma_u	3.2910392					
sigma_e	2.2640326					
rho	.6787671	(fraction of variance due to u_i)				

Figure 4. STATA output, regression model for innovation-driven countries

In this model, it can be seen that again the model is overall significant, and five factors have turned out be statistically significant and influence a dependent variable (proportion of women in the age of 18-64 who are engaged in early-stage entrepreneurship). The way those variables influence the dependent one is represented in the table below.

Table 7. Accepted and rejected hypotheses for innovation-driven countries

Hypotheses	**Status**	**Impact**
Finance availability has positive impact on female entrepreneurial activity	Accepted	Negative
High government regulations and burden of taxes have negative impact on female entrepreneurial activity	Rejected	No impact
Governmental programs that favor new and growing firms have positive impact on female entrepreneurial activity	Rejected	No impact
Access to physical infrastructure has positive impact on female entrepreneurial activity	Accepted	Negative
Entrepreneurial education provided at primary and secondary school has positive impact on female entrepreneurial activity	Accepted	Negative

Entrepreneurial education provided at universities has positive impact on female entrepreneurial activity	Accepted	Positive
National culture and social norms which promote entrepreneurship have positive impact on female entrepreneurial activity	Accepted	Positive

Analysis of the efficiency-driven countries

Now the analysis of efficiency-driven countries needs to be done. Following the same algorithm, namely conducting Breush-Pagan Lagrarian test, Hausman test and multicollinearity check, random-effects model turned out to be the most appropriate one. (Outputs of all performed tests can be seen in the Appendices).

Thus, the analysis of the efficiency-driven countries can be done.

```
Random-effects GLS regression                   Number of obs     =        72
Group variable: country                         Number of groups  =        29

R-sq:                                           Obs per group:
     within  = 0.1593                                         min =         1
     between = 0.2155                                         avg =       2.5
     overall = 0.2933                                         max =         5

                                                Wald chi2(7)      =     15.18
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =    0.0338
```

teafem	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
asum	-2.175711	1.26535	-1.72	0.086	-4.655751	.30433
b2sum	-2.932328	1.371526	-2.14	0.033	-5.620469	-.2441874
d1sum	.8068057	2.08814	0.39	0.699	-3.285874	4.899485
d2sum	1.175125	1.844579	0.64	0.524	-2.440184	4.790434
hsum	-.5070685	1.014307	-0.50	0.617	-2.495074	1.480937
isum	2.573579	1.49623	1.72	0.085	-.3589791	5.506136
csum	.2094261	1.768803	0.12	0.906	-3.257364	3.676217
_cons	13.54457	2.532101	5.35	0.000	8.581737	18.50739
sigma_u	6.2924513					
sigma_e	3.8798082					
rho	.72454708	(fraction of variance due to u_i)				

Figure 5. STATA output, regression model for efficiency-driven countries

In this model, it can be seen that the model is overall significant, and three factors have turned out be statistically significant and influence a dependent variable (proportion of women in

the age of 18-64 who are engaged in early-stage entrepreneurship). The way those variables influence the dependent one is represented in the table below.

Table 8. Accepted and rejected hypotheses for efficiency-driven countries

Hypotheses	**Status**	**Impact**
Finance availability has positive impact on female entrepreneurial activity	Accepted	Negative
High government regulations and burden of taxes have negative impact on female entrepreneurial activity	Accepted	Negative
Governmental programs that favor new and growing firms have positive impact on female entrepreneurial activity	Rejected	No impact
Access to physical infrastructure has positive impact on female entrepreneurial activity	Rejected	No impact
Entrepreneurial education provided at primary and secondary school has positive impact on female entrepreneurial activity	Rejected	No impact
Entrepreneurial education provided at universities has positive impact on female entrepreneurial activity	Rejected	No impact
National culture and social norms which promote entrepreneurship have positive impact on female entrepreneurial activity	Accepted	Positive

It can be seen that the results of efficiency-driven countries differ from the ones obtained for innovation driven-countries. In both innovation-driven and efficiency-driven countries factors such as finance availability and socio-cultural norms turned out to be significant. However, physical infrastructure and entrepreneurial education seem to play bigger importance in innovation-driven countries, while government regulations have stronger affect in efficiency-driven countries. More detailed analysis of the results obtained from the models is going to be provided in the next chapter.

Chapter 3. Discussion of the results and implications

3.1 Discussion of the results obtained

After the analysis of two sets of countries combined and separately both innovation-driven and efficiency-driven countries that has been done in the previous chapter, it seems to be essential to proceed to the discussion of the results obtained, elaborating on the influence of pillar and relative factors. The summary of the factors and their influence on total entrepreneurial activity among women in both groups of countries can be seen below.

Table 9. Factors and their impact on two groups of countries

	Complex model	Innovation-driven countries	Efficiency-driven countries
Finance availability	Negative	Negative	Negative
Government regulations and taxes	Negative	No impact	Negative
Governmental programs	No impact	No impact	No impact
Access to physical infrastructure	Negative	Negative	No impact
Entrepreneurial education at school	Negative	Negative	No impact
Entrepreneurial education at university	Positive	Positive	No impact
Social norms	Positive	Positive	Positive

The discussion will be started with the regulative pillar which included factors such as finance availability, government programs and taxes, governmental programs and physical infrastructure.

Finance availability

Surprisingly, it turned out that access to financial resources negatively affects the levels of entrepreneurial activity among women both in innovation-driven and efficiency-driven economies. This finding is consistent with Hechavarría and Ingram' paper (Hechavarría & Ingram, 2019). This can be partially explained by the discrimination that women tend to experience from supply side: banks, lenders, venture funds (Carter et al., 2003).

Thus, on the one hand, it can be seen that financial resources and types of financing are expanding. But on the other hand, women tend to be kept away from the abundance of these

resources. The reason for that is the following: financial institutions tend to be more conservative and rather avoid high-risk investments, and women-owned enterprises sometimes can be perceived as high-risk since as it was previously mentioned women tend to have less working experience, less credit history etc. This impedes immensely their ability of women to obtain necessary finance.

In addition to that, apart from the evident reasons that were mentioned above, women tend to have biased perceptions which impedes their ability to obtain finance (Kwong et al., 2012). Female entrepreneurs are more likely to perceive themselves as finally constrained due to discrimination, and thus, do not opt for available finance at all.

All in all, it can be concluded that women have limited access to the abundance of financial resources. Overall, it can be seen that financial environment is an important factor for boosting female entrepreneurship, and facilitating the process of accessing financial resources for women can improve the levels of female entrepreneurial activity.

Government regulations and taxes

According to the models, this factor was significant only for complex model and efficiency-driven countries, and has a negative impact on the levels of total entrepreneurial activities among women. This finding can be explained by the fact that efficiency-driven countries tend to have a heavier burden of bureaucratic procedures new firms have to go through. Thus, strong government policies and regulations hinder the activities of female entrepreneurs. This issue is widely accessed by Doing Business Index of World Bank Group (Doing Business Report, 2020). In this report authors estimate the easiness of doing business in certain counties by assessing a number of parameters such as starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors paying taxes. So they state that there is a correlation between economic freedom and Gross Domestic Product growth. Thus, they encourage to loosen the regulations in order to boost entrepreneurial activities.

In addition to that, the evidence of the higher burden of bureaucracy and corruption in efficiency-driven countries is also represented in the Corruption Perception Index Report (Index C.P., 2019), where this group of countries lag behind the innovation-driven countries, which impedes the development of entrepreneurial activities as well. Furthermore, this factor tends to have the strongest impact from all the institutional factors on total entrepreneurial activities among women in efficiency-driven countries, with the coefficient amounting to -2.9. Thus, this is of vital importance to pay attention to this aspect in order to encourage women-owned enterprises creation.

In its turn, for the innovation-driven countries this factor turned out to be not statistically significant. It can be explained by the fact that in this group of countries governments tend to have lighter policies, they facilitate the process of new ventures creation, and support new and growing

firms, since in these countries it is recognized that small and medium firms contribute immensely to the economic development of the country and to the economic well-being of societies.

Thus, overall it can be concluded that high government regulations and taxes negatively impact the creation and development of new firms owned by women, in efficiency-driven countries, in particular. Thus, facilitating and shortening government procedures may increase the level of total entrepreneurial activities among women.

Governmental programs

Surprisingly, governmental programs turned out to be insignificant for both group of countries: innovation-driven and efficiency-driven. This can be explained by the fact that usually governmental programs do not specifically target women entrepreneurs, but rather entrepreneurs in general. However, according to some researches (Alieva et al., 2016), gender neutral legislation is not sufficient to promote entrepreneurship among women, and more gender sensitive policies are required.

In addition to that, governmental programs tend to focus on people who already have some entrepreneurial experience or on already established firms. Furthermore, many governmental programs provide support for some specific industries, e.g. agriculture, thus, limiting the ability of female entrepreneurs to benefit from them. Last but not least, the reason of insignificance of this institutional factor might be caused by the fact, that female entrepreneurs can simply be not aware of existence of such programs and support that government is ready to provide to them. Finally, the majority of governmental programs focus on providing financial help to new firms, whereas some of female entrepreneurs can rather require trainings, business skills development, networking to get necessary contacts and mentors, taking into account the lower human capital they tend possess when launching a company.

Physical infrastructure

Another surprising result was obtained with regard to physical infrastructure. Access to physical infrastructure has a negative impact in complex model and in innovation-driven countries, while remaining non-significant for efficiency-driven ones.

This result can be explained by several reasons. First of all, the limited number of articles dedicated to investigating the impact of physical infrastructure on entrepreneurship suggest that physical infrastructure is very fragmented and shall not be studied as a whole, since different type of infrastructure has different effect on enterprises. Moreover, the companies' activities differ as well, and the types of infrastructure they might require differ as well between the sectors (Ghani et al., 2014, Audretsch et al., 2015).

Another reason for such finding can be caused by the type of data used for obtaining this result. According to the questionnaire that GEM circulates among the experts, questions that concern physical infrastructure focus not on only on getting access to the infrastructure, but on its price as well. Taking into account that utilities, communication services tend to be quite expensive in the innovation-driven countries, this can explain the negative impact that was obtained as a result.

After having discussed the results of regulative pillar, we can proceed to the next one, namely cognitive pillar. For this pillar two institutional factors have been taken into account: entrepreneurial education at school and entrepreneurial education at university.

Entrepreneurial education

It turned out that for complex model both levels of education turned out to be significant. However, the separate analysis of two groups of economies showed that this result remains consistent for innovation-driven countries, but insignificant for efficiency-driven countries.

Surprisingly, entrepreneurial education at school has a negative impact on the levels of female entrepreneurship. This can be explained by the fact that TEA rates tend to increase with the level of education (GEM Women, 2019). Thus, taking into account the importance of education for women that was mentioned in the first part of this paper, it can be concluded that indeed women tent to first obtain higher education. This finding is also supported by data from Global Education, Our World in Data[6]. According to this dataset, gender parity index for gross enrollment for tertiary education tends to show disparity in favor of women in innovation-driven countries. Thus, in these countries there is a higher number of women enrolling for tertiary education in comparison to men. In addition to that, school life expectancy falls within the range of 16-22 years, indicating that higher education is considered as important in innovation-driven countries.

However, surprisingly, in efficiency-driven countries the influence of entrepreneurial education turned out to be statistically insignificant. This finding can be explained by the fact that education is closely connected with national cultures, thus, the effect of entrepreneurial education on entrepreneurial intentions can vary across countries (Bae et al., 2014). Another reason for such finding could be that entrepreneurial education at both levels is not well promoted and developed in these countries, thus, not having much impact on entrepreneurial intentions among women (Khalifa & Dhiaf, 2016). In addition to that, a number of reports conducted by international organizations claim that educational system in efficiency-driven countries needs more exposure to entrepreneurial education, and needs more robust supply of quality educators in order to ensure the positive effect of entrepreneurial education (OECD, 2018).

[6] Global Education, Our World in Data. URL: https://ourworldindata.org/global-education

Finally, the last pillar, namely normative one, can be discussed.

Socio-cultural norms

Supportive socio-cultural environment is significant and is positively associated with the levels of total entrepreneurial activity among women in both innovation-driven and efficiency-driven countries, which supports our last hypothesis. Indeed, this finding is consistent with a number of studies (Croson et al., 2009; Hechavarría et al., 2017; Marlow et al., 2018). In addition to that, according to coefficients obtained in the models this is one of the most important institutional factor for female entrepreneurs. Thus, it can be concluded that enhancing the image of female entrepreneurship in society can boost immensely the creation and development of women-owned businesses.

3.2 Implications

The findings obtained in this paper make both theoretical and practical contributions. First, it is important to discuss how this work contributes to the development of theoretical field. Then, based on the results obtained, several recommendations can be made for different kind of stakeholders. First of all, implications for policy makers can be elaborated since institutional environment is directly connected to this group of stakeholders. Secondly, it is of vital importance to highlight managerial implications of this research.

Theoretical input

As it was mentioned in the first chapter there is a research gap in the literature regarding the influence of institutional environment on the levels of female entrepreneurship. The majority of studies focus either on certain aspect of the institutional context, or on single country analysis. Thus, this paper partially covers this gap providing a cross-country quantitative analysis of a set of institutional factors implementing Scott's institutional framework.

Although this paper considerably contributes to the current literature, it is also worth taking into account several limitations of this study. Firstly, this paper relies upon GEM dataset only, which might not represent and hold exhaustive information with regard to institutional environment. Secondly, the data is limited to national level, neglecting sub-national differences, which might be of interest to investigate further. Lastly, it can also be acknowledged that women do not necessarily behave as a homogeneous group, and their individual behavior and intentions are subject to life stage and family situation.

In addition, there are several areas that can be researched further.

1. Governmental programs: how, and if, certain types of programs targeted at female entrepreneurs affect the levels of female entrepreneurial activity, which seem to be the most effective.
2. Entrepreneurial education in efficiency-driven countries: how, and if, entrepreneurial education is promoted and encouraged among women, and at what educational levels.
3. Non-governmental programs: how business accelerators and techno-parks influence the levels of female entrepreneurship.
4. Physical infrastructure: how, and if, different types of physical infrastructure influence differently female enterprises depending on the sector they operate in.

Implications for policy makers

Now we can proceed and discuss implications for governments, since this research is primarily focused on this group of stakeholders.

The first institutional factor that was significant for women in both set of countries was finance availability. Thus, it seems important for policy makers to facilitate the process that currently exist in financial system in order to enable female entrepreneurs to obtain necessary finance. The solution of current undercapitalization of female enterprises shall be twofold: dealing with negative stereotypes towards women, and providing with tailored financial tools.

First of all, this problem is largely caused by stereotypes that have been nurtured in societies for long time. Women have to encounter wide system of disadvantage where they are constantly forced to be perceived as inferior to men (Marlow et al., 2005; Brana, 2013). Such system prevents female entrepreneurs from acquiring human, social, cultural capital that is necessary in order to obtain personal savings, create attractive credit history or get attention of venture capitalists. This all results in immense undercapitalization of women-owned businesses, which in its turn affect long-term performance of these entities, and in the end reinforces the negative image of female entrepreneurs. Governments should address this issue by providing a variety of facilities and necessary services for women. For example, a lot of women struggle to get knowledge and skills required since they need to take care of children. Thus, the development of childcare facilities and services for nascent female entrepreneurs can contribute to acquisition of human capital, reinforce the positions of women on the market, and make them more attractive to potential lenders. In addition to that, the whole image of women in societies shall be rethought, and governmental campaign highlighting female role models and success of women-owned businesses shall be run.

The second part of solution to the undercapitalization of female entrepreneurs is tailored financial tools. According to Brana (Brana, 2013), microfinance services can help immensely

women with obtaining financial resources. Microfinance is targeted at the groups of people, small businesses that lack access to traditional banking system. It includes microcredit, savings and checking accounts, microinsurance and payment systems. In this regard, governments can support those microfinance institutions who support female entrepreneurs. In addition to that, governments can provide tailored financial aid and through different programs secure access of female entrepreneurs to larger loans, both on local and national level.

The second institutional factor that is very important for the development of total entrepreneurial activity among women in both innovation-driven and efficiency-driven countries is socio-cultural norms. Apparently, norms that exist in society cannot be changed in short-term. However, this issue shall be tackled by governments anyway, since it will ensure economic growth and development as it was previously discussed. Policy makers shall focus their effort in creating equal environment for both genders promoting individualism, proactiveness, entrepreneurial spirit. Equal treatment, opportunities for personal development and creativity encouragement starting from primary and secondary school will contribute immensely to coping with gender stereotypes. In addition to that, governments can promote the image of successful female entrepreneurs through different mass media channels, which will both deal with gender prejudices and promote entrepreneurship as a prestigious career path among women.

From the analysis made, it was also concluded that tertiary education plays a major role in forming entrepreneurial intentions and right mindset, in particular in innovation-driven countries. Consequently, education shall be promoted as an opportunity to gain necessary skills, network, confidence, and as a platform that supports new venture creation by policy makers. Thus, governments can think of making tertiary education more affordable, especially with regard to entrepreneurial education. Additionally, governments can create special scholarship programs for women.

Another interesting finding was in regard with the government regulations, and it was found out that high burden of procedures and bureaucratic processes negatively affect female entrepreneurship, in particular, in efficiency-driven countries. Some international organizations like World Bank Group in their Doing Business Index track the cross-country progress. Such organizations consult governments and help them develop and implement more favorable conditions for new companies such as decrease the number of procedures for company registration and shift them into online format, reduce the time required to obtain all necessary construction permits, electricity, registering a property, improving legislation and information transparency with regard to credits. Implementation of the aforementioned reforms will eventually lead to higher levels of female entrepreneurial activity and lower levels of corruption in such countries (Doing Business Report, 2020).

These actions undertaken by governmental bodies can enhance levels of female entrepreneurship. However, it is also worth mentioning that all measures implemented on the national level shall be balanced, and avoid sharp distort towards women as it might negatively affect male entrepreneurs.

Managerial implications

After having discussed the implications of the current study on policy makers, we can now proceed to managerial implications of the paper.

Since entrepreneurial education has been identified as a significant factor to enhance female entrepreneurship, this opportunity can be exploited by educational centers. Private centers can create certain programs dedicated to develop entrepreneurial mindset, provide specific knowledge, and promote entrepreneurial career. In addition to that, this type of centers can promote role models for participants, and if spoken about female entrepreneurship, the stories about women in business can be shown and told to females. These centers will play crucial role in boosting female entrepreneurial activities since they will increase women's confidence, help them acquire specific knowledge and nurture gender-equality, thus, contributing to socio-cultural aspect as well. In addition, since universities play a crucial role in boosting the levels of female entrepreneurship, they can seek to promote interdisciplinary knowledge and opportunity to develop soft skills.

In addition to this measure, as it was previously revealed women face difficulties in obtaining finance, thus, microfinance institutions can come into play, and create special conditions and programs that will tackle women-owned small businesses. Taking into account some peculiarities of female entrepreneurship such as risk-aversion and focus on social value creation, it can be concluded that the result of microfinance institutions' help will be twofold. First, since women tend to avoid high risks, they are more prone to pay back loans and interest on time, which is attractive to potential lenders. Secondly, women usually prioritize the social value of their business to economic one, thus, by enabling their businesses through microfinance societies will benefit immensely and will be able to solve the social and ecological needs that currently exist.

Last but not least, different NGOs can create special programs that will provide help with obtaining necessary financial resources and getting through governmental procedures for female entrepreneurs. In particular, such programs can tackle those female entrepreneurs who would like to solve social or environmental issues. NGOs that support female entrepreneurship can become a gender bridge linking women with necessary resources and build collaborative platforms enabling networking, communication and information exchange. These activities will promote gender equality and will deal with gender stereotypes reinforcing female entrepreneurs.

Conclusion

Entrepreneurship plays a considerable role in the economic development and economic growth of societies. Many researchers dedicated much attention to this field in order to investigate what types of entrepreneurship exist and what kind of factors are most favorable for certain groups of entrepreneurs.

This led to the increased interest in female entrepreneurship. Female entrepreneurship has been recognized to contribute to the overall economic and social well-being of societies through reducing unemployment and increasing Gross Domestic Product of the nations. In addition to that, it has been proved that women tend to prioritize social value of their businesses over the economic one. Thus, the development of the female entrepreneurship can improve the overall quality of life in nations.

Moreover, a number of articles confirmed that the phenomena of female entrepreneurship is unique and shall be studied separately. Analysis of existing literature revealed several peculiarities of female entrepreneurs. Firstly, women tend to be more risk-averse, lack confidence in their entrepreneurial skills, and place higher importance on human and social capital they possess when considering launching a business than their male counterparts. In addition, high number of women start their company in search of work-family balance which is not typical for men. Secondly, women far more often face difficulties in obtaining financial resources. Thirdly, women-owned businesses are usually smaller in size both in terms of number of employees and sales than the ones owned by men. In addition, female enterprises tend to bring less profit. Lastly, women are more influenced by socio-cultural environment and are more likely to refrain from entrepreneurial career path if the gender biases for this profession persist in societies.

After thorough analysis of existing literature on female entrepreneurship the research gap has been identified. It has been concluded that the majority of studies in this field focus rather on socio-cultural and/or human capital dimension, disregarding the importance of the institutional context. Studies that do investigate the influence of institutional factors, in its turn, tend to focus on some specific topics, e.g. impact of education, influence of financial environment, effect of socio-cultural norms rather than provide a bigger picture of the influence of the overall institutional context on the development of female entrepreneurship. Finally, the majority of papers conduct single-country analysis implementing qualitative methods.

Thus, the goal of this paper was to provide a comprehensive overview of the influence of institutional context on female entrepreneurship and conduct a comparative analysis between innovation-driven and efficiency-driven countries implementing a quantitative method.

In order to meet the identified goal an appropriate methodology has been developed and relevant analysis has been conducted. For this study the framework of Scott's institutional theory

has been used. Taking into account three pillars of the abovementioned framework, namely regulative, cognitive, and normative, and peculiarities of female entrepreneurship identified from the analysis of academic literature seven factors have been selected for further investigation in the models: finance availability, government regulations and taxes, governmental programs, access to physical infrastructure, entrepreneurial education at school, entrepreneurial education at university, and socio-cultural norms.

After factors have been chosen, seven hypotheses have been stated and tested first for innovation-driven and efficiency-driven economies combined, and then separately for two sets of countries. It was important to distinguish between these two groups of economies since they tend to possess different kind of institutional environment.

In order to conduct the comparative analysis quantitative method has been implemented. The dataset derived from Global Entrepreneurship Monitor for five consecutive years (2015-2019) has been used. After conducting necessary tests, random-effect model was chosen as the most appropriate statistical tool for this research.

As the result of the quantitative analysis several institutional factors have been recognized as significant, namely difficulty in obtaining finance (negative impact, both groups of countries), socio-cultural norms (positive impact, both groups of countries), entrepreneurial education at school (negative impact, innovation-driven countries only), entrepreneurial education at university (positive impact, innovation-driven countries only), physical infrastructure (negative impact, innovation-driven countries only), and government regulations (negative impact, efficiency-driven countries only).

Since some of the results contradicted the hypotheses stated in the first part of the paper, the obtained differences have been thoroughly discussed in this work. Summing up, it can be concluded that firstly, negative impact of financial availability is driven by the fact that despite the abundance of financial resources, women struggle to get access to them, which drives the negative effect. Secondly, governmental programs turned out to be not significant in all economies explored. This is due to the fact that programs tend to be gender-neutral, thus have limited influence on female entrepreneurs. Thirdly, government regulations are not significant in innovation-driven countries. According to a number of reports, in this set of countries governments tend to facilitate the process of new venture creation, thus, offsetting possible negative impact. Fourthly, physical infrastructure negatively effects female entrepreneurship. According to literature, different types of physical infrastructure influences differently enterprises depending on the sector they operate in and what kind of infrastructure those enterprises need, thus, the impact of this factor might require further investigation. Finally, with regard to influence of education,

literature suggests that education is closely connected with national cultures, thus, the effect of entrepreneurial education on entrepreneurial intentions can vary across nations.

Current paper provides a decent contribution to both theoretical and practical field. From theoretical standpoint, the executed analysis partially covers the research gap in the female entrepreneurship and gives basis for further research. However, there are several limitations of this work that are needed to be taken into account. First, data derived only from GEM dataset was used, which might not hold exhaustive information on the topic. Second, only national level data have been investigated, leaving room for further research of sub-national differences.

From practical standpoint, the paper provides a number of recommendations for two types of stakeholders: policy-makers and managers. With regard to implications for policy-makers, several recommendations have been made. First, it can be seen that solution of financial issue is twofold: dealing with negative stereotypes towards women and providing tailored financial tools. Thus, governments shall promote and encourage gender equality through a variety of channels, and provide tailored financial tools to secure access of female entrepreneurs to finance. Second, with regard to education, governments can think of making education more affordable and create special scholarships for women. Finally, as for regulations, in efficiency-driven economies policy-makers shall facilitate the process of venture creation by loosening government regulations.

Coming to managerial implications, several stakeholders can take them into account as well. First, with regard to education, different educational centers can exploit the demand from women and develop special courses for them specifically. In addition to that, universities can boost female entrepreneurship by promoting interdisciplinary knowledge and develop soft skills. Second, with regard to finance, microfinance institutions can create tailored programs for female entrepreneurs and ease the access to finance for them. Finally, NGOs can become collaborative platforms enabling knowledge exchange and financial aid.

All in all, it can be concluded that the goal of the research has been met and the research questions stated in the beginning have been answered.

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Appendices

Appendix 1. Breush-Pagan Lagrarian test

Complex model:

```
. hettest asum b2sum csum d1sum d2sum hsum isum

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: asum b2sum csum d1sum d2sum hsum isum

         chi2(7)      =    46.43
         Prob > chi2  =   0.0000
```

Innovation-driven countries:

```
. hettest asum b2sum csum d1sum d2sum isum hsum

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: asum b2sum csum d1sum d2sum isum hsum

         chi2(7)      =    66.41
         Prob > chi2  =   0.0000
```

Efficiency-driven countries:

```
. hettest asum b2sum d1sum d2sum hsum isum csum

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: asum b2sum d1sum d2sum hsum isum csum

         chi2(7)      =    37.13
         Prob > chi2  =   0.0000
```

Complex model:

Correlation matrix of coefficients of **xtreg** model

e(V)	asum	b2sum	csum	d1sum	d2sum	hsum	isum	_cons
asum	1.0000							
b2sum	0.0275	1.0000						
csum	-0.3194	-0.3131	1.0000					
d1sum	-0.2512	-0.2129	-0.0622	1.0000				
d2sum	0.0532	0.0979	-0.2517	-0.3397	1.0000			
hsum	-0.2742	-0.2071	-0.2078	0.3117	-0.4288	1.0000		
isum	-0.1716	-0.1967	0.1092	-0.2315	-0.3691	-0.1350	1.0000	
_cons	0.0851	-0.0948	0.0142	-0.2077	-0.0279	-0.1745	0.1204	1.0000

Innovation-driven countries:

Correlation matrix of coefficients of **xtreg** model

e(V)	asum	b2sum	d1sum	d2sum	hsum	isum	csum	_cons
asum	1.0000							
b2sum	0.0625	1.0000						
d1sum	-0.1634	-0.1699	1.0000					
d2sum	-0.0646	0.0115	-0.3415	1.0000				
hsum	-0.3202	-0.2174	0.2405	-0.3218	1.0000			
isum	-0.3292	-0.2185	-0.3001	-0.2078	-0.0234	1.0000		
csum	-0.1834	-0.2299	-0.0019	-0.3218	-0.3262	0.0634	1.0000	
_cons	0.0953	-0.0734	-0.1908	-0.0726	-0.1338	0.0958	0.0003	1.0000

Efficiency-driven countries:

Correlation matrix of coefficients of **xtreg** model

e(V)	asum	b2sum	d1sum	d2sum	hsum	isum	csum	_cons
asum	1.0000							
b2sum	0.0546	1.0000						
d1sum	-0.3234	-0.2451	1.0000					
d2sum	0.0889	0.1748	-0.3996	1.0000				
hsum	-0.2633	-0.2717	0.4133	-0.4372	1.0000			
isum	-0.0074	-0.1491	-0.0965	-0.5492	-0.1483	1.0000		
csum	-0.3329	-0.3215	-0.1868	-0.0699	-0.1243	-0.1234	1.0000	
_cons	0.0264	-0.1159	-0.2565	0.0064	-0.2169	0.1858	-0.0265	1.0000

Complex model:

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
asum	-1.365043	-1.950331	.5852879	.3689726
b2sum	-1.704641	-1.155297	-.5493432	.4678028
csum	-.7146026	-1.108617	.3940142	.4594033
d1sum	-2.032373	-1.997805	-.0345684	.4817572
d2sum	2.274717	2.27963	-.0049137	.5131405
hsum	-1.089825	-1.020137	-.0696878	.297962
isum	1.875085	2.240815	-.3657299	.4469774

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(7) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 6.29
Prob>chi2 = 0.5062

Innovation-driven countries:

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
asum	-.4456369	-1.221598	.7759615	.287249
b2sum	-.930088	-.1175175	-.8125705	.4123927
csum	-.871632	-.5461598	-.3254722	.4379949
d1sum	-1.686064	-2.125739	.4396754	.4139024
d2sum	1.613501	1.865254	-.2517532	.4419207
isum	.4605381	1.145748	-.6852096	.4156615
hsum	-1.067636	-1.688347	.6207112	.2844723

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(7) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 16.08
Prob>chi2 = 0.2244
(V_b-V_B is not positive definite)

Efficiency-driven countries:

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
asum	-2.262793	-2.175711	-.0870826	1.29146
b2sum	-3.393337	-2.932328	-.4610093	1.763935
d1sum	-1.435084	.8068057	-2.24189	1.952533
d2sum	2.063599	1.175125	.8884738	1.897469
hsum	-.9044341	-.5070685	-.3973656	1.072007
isum	2.611801	2.573579	.0382225	1.732087
csum	1.79825	.2094261	1.588824	1.766591

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(7) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 1.91
Prob>chi2 = 0.9649

Complex model:

```
Random-effects GLS regression                   Number of obs      =       231
Group variable: country                         Number of groups   =        78

R-sq:                                           Obs per group:
     within  = 0.4032                                         min =         1
     between = 0.2822                                         avg =       3.0
     overall = 0.3687                                         max =         5

                                                Wald chi2(7)       =    130.89
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

teafem	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
asum	-1.950331	.6185691	-3.15	0.002	-3.162704	-.7379581
b2sum	-1.155297	.5962957	-1.94	0.053	-2.324016	.0134205
csum	-1.108617	.6924053	-1.60	0.109	-2.465706	.2484726
d1sum	-1.997805	.7898985	-2.53	0.011	-3.545977	-.4496322
d2sum	2.27963	.8044394	2.83	0.005	.702958	3.856303
hsum	-1.020137	.5073939	-2.01	0.044	-2.014611	-.0256633
isum	2.240815	.5928517	3.78	0.000	1.078847	3.402783
_cons	15.29413	1.066721	14.34	0.000	13.2034	17.38486
sigma_u	5.2907722					
sigma_e	2.942481					
rho	.76376304	(fraction of variance due to u_i)				

Innovation-driven countries:

```
Random-effects GLS regression                   Number of obs      =       159
Group variable: country                         Number of groups   =        49

R-sq:                                           Obs per group:
     within  = 0.6235                                         min =         1
     between = 0.3697                                         avg =       3.2
     overall = 0.4078                                         max =         5

                                                Wald chi2(7)       =    194.93
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

teafem	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
asum	-1.221598	.6257977	-1.95	0.051	-2.448139	.0049425
b2sum	-.1175175	.531391	-0.22	0.825	-1.159025	.9239898
csum	-.5461598	.6770882	-0.81	0.420	-1.873228	.7809087
d1sum	-2.125739	.6910095	-3.08	0.002	-3.480093	-.7713857
d2sum	1.865254	.7741456	2.41	0.016	.347957	3.382552
isum	1.145748	.5388055	2.13	0.033	.0897082	2.201787
hsum	-1.688347	.5087714	-3.32	0.001	-2.685521	-.6911738
_cons	14.88188	.9385698	15.86	0.000	13.04232	16.72144
sigma_u	3.2910392					
sigma_e	2.2640326					
rho	.6787671	(fraction of variance due to u_i)				

Efficiency-driven countries:

Random-effects GLS regression — Number of obs = 72
Group variable: country — Number of groups = 29

R-sq:
within = 0.1593
between = 0.2155
overall = 0.2933

Obs per group:
min = 1
avg = 2.5
max = 5

Wald chi2(7) = 15.18
corr(u_i, X) = 0 (assumed) — Prob > chi2 = 0.0338

teafem	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
asum	-2.175711	1.26535	-1.72	0.086	-4.655751	.30433
b2sum	-2.932328	1.371526	-2.14	0.033	-5.620469	-.2441874
d1sum	.8068057	2.08814	0.39	0.699	-3.285874	4.899485
d2sum	1.175125	1.844579	0.64	0.524	-2.440184	4.790434
hsum	-.5070685	1.014307	-0.50	0.617	-2.495074	1.480937
isum	2.573579	1.49623	1.72	0.085	-.3589791	5.506136
csum	.2094261	1.768803	0.12	0.906	-3.257364	3.676217
_cons	13.54457	2.532101	5.35	0.000	8.581737	18.50739
sigma_u	6.2924513					
sigma_e	3.8798082					
rho	.72454708	(fraction of variance due to u_i)				