sciendo

Zagreb International Review of Economics & Business, Vol. 23, No. 1, pp. 35-49, 2020
© 2020 Faculty of Economics and Business, University of Zagreb and De Gruyter Open
All rights reserved. Printed in Croatia
ISSN 1331-5609; UDC: 33+65
DOI: 10.2478/zireb-2020-0003

Assessment of Women's Early-stage Entrepreneurial Activity in 2018

Iuliia S. Pinkovetskaia [*]
Tatiana V. Gromova [**]
Irina N. Nikitina [***]

***Abstract*:** *The analysis of the regularities characterizing the existing rate of female early-stage entrepreneurial activity, as well as the identification of reserves for female entrepreneurship growth is relevant nowadays. The purpose of the work is to assess the rates of entrepreneurial activity of women, their motivational preferences, and comparative analysis of female and male early-stage entrepreneurial activities. The study is based on the economic analysis of the data on 48 countries, presented in the Global Entrepreneurship Monitor report for 2018. Normal distribution density functions are used in the modeling process. The research reveals features of female entrepreneurship and the barriers to its development. The paper defines countries with high and low values of the considered indicators. The study estimates the existing rates of opportunity and necessity motivation of female entrepreneurs, presents the analysis of the ratio of female to male participation in early-stage entrepreneurial activity, and proves the hypothesis on substantial differentiation of these indicators across countries. The obtained knowledge can be used in future scientific research, in the educational process of bachelors and masters training. The scientific novelty lies in the study of the distribution of indicators characterizing female entrepreneurs' motivation and the existing gender gap in early-stage entrepreneurship. The study proposes new methods and tools for the analysis and presents a comparative analysis of the development of female and male early-stage entrepreneurship.*

***Keywords*:** early-stage entrepreneurial activity; female entrepreneurship; motivation; necessity-driven entrepreneurs; opportunity-driven entrepreneurs.

JEL classification: L26, O13, O25, P25

[*] Iuliia S. Pinkovetskaia is associate professor of the Economic analysis and state management department at Ulyanovsk State University, Russia. E-mail: judy54@yandex.ru
[**] Tatiana V. Gromova is professor of the Linguistics and foreign business communication department at Samara State University of Economics, Russia. E-mail: gromova73@yandex.ru
[***] Irina N. Nikitina is associate professor of the Linguistics and foreign business communication department at Samara State University of Economics, Russia. E-mail: i.n.nikitina@gmail.com

Introduction

Women can enter entrepreneurship for many of the same reasons as men: to support themselves and their families, to enrich their lives with careers and financial independence and so on. Societies differ in their perceptions and customs regarding women working in business (Global Entrepreneurship Monitor, 2011). Differences in entrepreneurial activity and entrepreneurial attitude are substantial across nations (Bosma, et al., 2007; Zhao, et al. 2012; Bjørnskov and Foss, 2013). Studies conducted by scientists demonstrate the positive impact of female entrepreneurs on economic growth, employment growth and reduction of social tension in many countries (Morozov, 2003; Fetsch, et al., 2015; Lewis, et al., 2014). According to the work (Woetzel, et al., 2015), the use of female entrepreneurs' potential, including female participation in the economy at the rate comparable to male, can increase the global gross domestic product by 26%.

The problem of a significant increase in the production of goods and services by female entrepreneurship requires an understanding of its features and differences from male entrepreneurship. To develop measures to increase the contribution of women to entrepreneurship and to achieve gender parity in entrepreneurial activity, it is necessary to study a wide range of issues related to female entrepreneurship. Therefore, the analysis of the regularities characterizing the existing rate of female entrepreneurial activity, as well as the identification of reserves for the growth of female entrepreneurship rate is relevant now.

The article is devoted to the study of women's involvement in entrepreneurship. The aim of the study is a comprehensive assessment of the women's participation in early-stage entrepreneurial activity and their motivational preferences in starting their own business in different countries.

The conducted research will provide new information on women's entrepreneurial activity. The availability of such information is necessary for potential entrepreneurs to make informed decisions about starting a business. In addition, government agencies need relevant data for the formation of development plans and programs for business sector.

The main body of the paper is organized as follows. Section two examines the literature describing the problems of entrepreneurial activity of women, their motivation, as well as the current difference between the female and male entrepreneurship rates in different countries. The third section presents the methodology of the study, its design, data source. The fourth section provides an analysis of the rates of female early-stage entrepreneurial activity for 2018. The fifth section presents the models that describe motivation of female entrepreneurs, as well as indicators that characterize gender gap in terms of entrepreneurial activity. The conclusion section completes the study.

Literature Review

A number of researches of the role of women and their involvement in entrepreneurial activity have been published in recent years (Aidis and Weeks, 2016; Golla, et al., 2011; Wang, 2015). Female entrepreneurs face more serious problems in starting and running their own businesses as compared to male entrepreneurs. Such problems are not unique for individual countries, they are pronounced both for developing and economically developed countries. Among the problems that female entrepreneurs face are objective and subjective ones. Objective problems are caused by difficulties in achieving a balance between entrepreneurship and personal life, including childcare, household and family responsibilities (Woldie and Adersua, 2004; Achtenhagen and Welter, 2003). Subjective problems are caused by sociocultural prejudices, institutional, legal and tax gaps in the legislation of many countries, as well as current stereotypes associated with the role of women, especially in patriarchal societies (Ogbor, 2000; Hamilton, 2013; Gupta, et al., 2009).

Roper and Scott (2009) use the surveys data on perception of financial barriers in the United Kingdom and conclude that women face with greater financial barriers to entrepreneurship than men. Wagner (2007) utilizes German data and finds that fear of failure is a significant factor deterring female entrepreneurship. Driga et al. (2009) find women to be less optimistic about their entrepreneurial skills.

Female entrepreneurship studies highlight the presence of a double burden on female entrepreneurs: work and family (Sciascia, et al., 2012). At the same time one of the advantages of entrepreneurial activity in comparison to hired labor for women is the possibility of using non-standard work schedules, which softens the problem of caring for children and elderly family members. Flexible schedules, as well as increased opportunities for work at home, provide a good balance between work, family life, and financial needs (Connelly, 1992).

Studying the motives for starting your own business is a popular topic in scientific research. The factors related to the lack of other opportunities to earn a living, are given in the article (McClelland, et al., 2005). The factors that determine necessity-driven entrepreneurship can include unemployment, poor career prospects, unacceptable working conditions, professional dissatisfaction, lack of childcare facilities. Along with necessity motivation, there is an opportunity (voluntary) motivation. The article (Muriel and Don, 2001) mentions such factors as the desire for independence, autonomy, self-realization, job satisfaction, as well as social goals, the desire for wealth as factors of opportunity motivation.

Female-to-male ratios in entrepreneurial activity differ in many countries (Bosma, 2013), however in some countries the gender parity is quite high (Kelley et al. 2012). The article (Jennings and Brush, 2013) gives the evidence that gender gap in entrepreneurship associated with the predominance of male business owners is still widespread. The paper (Demirguc-Kunt et al., 2015) indicates that there are

still significant gender differences in access to capital, bank accounts, and finance in many countries, while in economically developed countries such differences are practically absent.

The work (Klapper and Parker, 2011) gives the analysis of the types of economic activity with high female involvement in entrepreneurship. It states that women set up their business in labor-intensive sectors such as trade and services. Their share in capital-intensive industries, manufacturing industry, in particular, is significantly less. Arenius and Ehrstedt (2008) find gender to be related to the ratio of nascent entrepreneurs to potential entrepreneurs. Verheul et al. (2006) focus on explaining gender differences in entrepreneurial activity across countries. The paper (Muntean and Ozkazanc-Pan, 2015) examines some gender stereotypes, as well as individual, institutional and structural barriers to female entrepreneurial activity. Minniti and Nardone (2007) conclude about cross country gender differences in new business.

Methods, design and data

The following tasks were solved during the research:

- to conduct a comparative analysis of female participation in early-stage entrepreneurial activity in different countries in 2018;
- to asses female motivation for early-stage entrepreneurship;
- to evaluate the gender gap characterizing female and male early-stage entrepreneurial activity.

The solution of these tasks was based on the data of the Global Entrepreneurship Monitor (GEM) report. The GEM aims to organize countries studies on entrepreneurship development. The report (Global Entrepreneurship Monitor, 2019) includes results based on the Adult Population Survey (APS), i.e. between the ages of 18 and 64 years. The global monitoring process collected data on a wide range of indicators characterizing female and male entrepreneurship for 48 countries in 2018. Thus, the sample of countries considered in the research is 25% of the total number of independent countries. These 48 countries represent six geographical regions. The distribution of the countries by region is as follows: Europe – 20 countries, Latin America – 9 countries, East and South Asia – 7 countries, Middle East – 5 countries, Africa – 5 countries, North America – 2 countries. These countries belong to one of the three main groups in terms of population income: high-income – 30 countries, middle-income – 11 countries, low-income – 7 countries.

Total Early-stage Entrepreneurial activity (TEA) rates describe the proportion (%) of the number of women (men) between the ages of 18 and 64 who are in the process of starting a business or owning a new business for less than 42 months at the time of the survey, in the total number of women (men) of these ages in the country. This indicator measures entrepreneurial activity at the early stages of the process,

from nascent entrepreneurship through to new business ownership and management (Bosma, 2013). The assessment of female TEA motivation included two main types of motives, namely, opportunity and necessity motivation, and, accordingly, two types of entrepreneurs (McMullen et al., 2008; Acs and Amoros, 2008; Bosma and Schutjens, 2011). The first type is improvement-driven opportunity (IDO) entrepreneurs. These entrepreneurs are called also voluntary. To such include adult able-bodied citizens who take advantage of opportunities and seek to benefit from entrepreneurial activity as compared to employment. Benefits include an increase in income from their work, gaining independence in activities, improving social status, the possibility of self-realization and creative activity. The second type is necessity-driven entrepreneurs (motivated by necessity). These include citizens who are trying to start a business because of the lack of other ways to generate income (for example, to deal with job loss). Motivation of entrepreneurs affects entrepreneurial aspirations. Necessity-driven entrepreneurs (ND), with the emergence of employment opportunities for hired work (with comparable earnings) will prefer to switch to this job. Accordingly, businesses created by such entrepreneurs have low survival rates. The short-term horizon of activity leads to a lesser desire of owners to invest in the development and growth of their business. This is the most significant difference between IDO and ND entrepreneurs. IDO entrepreneurs direct all their efforts to the development and improvement of the business, maximizing its positive effect. IDO entrepreneurs are more likely to develop new markets, create innovative products and services, and increase the number of jobs.

The gender gap refers to systematic differences in the outcomes of men and women across a range of issues, including participation in the creation of new businesses. Gender gap measures difference in the early stage entrepreneurship men's and women's to gain a better understanding of how these differences can be narrowed. Closing the gender gap is constitutive of achieving gender equality, which can be defined as "a stage of human social development at which the rights, responsibilities and opportunities of individuals will not be determined by the fact of being born male or female, in other words, a stage where both men and women realize their full potential" (Lopez-Claros and Zahidi, 2005). Analysis of the gender gap (Baughn et al., 2006; The Global Gender, 2018 World Economic Forum) characterizing female and male entrepreneurial activity in specific countries, was based on the calculation of the corresponding ratios for each of the 48 countries.

To ensure comparability across countries, calculations were based on relative indicators. Three groups of indicators were considered.

The first group included the female TEA rates (% of adult female population) by all countries. The second group described female TEA motivation in all countries and included two indicators:

- female TEA opportunity rate (the share of opportunity-driven entrepreneurs in total number of female early-stage entrepreneurs);

- female TEA necessity rate (the share of necessity-driven entrepreneurs in total number of female early-stage entrepreneurs).

The third group of indicators was related to the gender gap evaluation of early-stage female and male entrepreneurial activity and included two indicators:

- ratio of female TEA to male TEA rates by each country under consideration;
- ratio of female TEA opportunity to male TEA opportunity rates by each country.

Considering previously published works (Barba-Sánchez and Atienza-Sahuquillo, 2017; Stephan and Uhlaner, 2010; Adachi and Hisada, 2017; Afandi and Kermani 2015) the following hypothesis was proposed and tested in the course of the study: the second (TEA motivation) and third (gender gap) groups of indicators have significant differentiation by country. To test this hypothesis, we modeled the distribution of indicators across 48 countries based on an estimate of normal distribution functions. The expediency of using normal distribution functions is determined by the following motives. Each female entrepreneur acts as an independent entity, defines goals and objectives taking into account the specific situation, and conducts risky economic activities. In all considered countries their number is large enough. Economic, historical, climatic, demographic, educational and other features of the development of specific countries have a significant impact on the indicators. They act independently of each other, so we can assume a probabilistic (stochastic) distribution of indicator values.

From the Chebyshev's theorem (Kramer, 1962) it follows that the values of individual random variables can have a significant variation, and their arithmetic average is relatively stable. A similar conclusion follows from the Central Limit Theorem (Jenish, Prucha, 2009) which states that the arithmetic mean of a sufficiently large number of independent random variables loses the character of a random variable. In the paper (Casella and Berger, 2001) it is pointed out that if the parameter is the result of the summation of many random weakly interdependent indicators, each of which makes a small contribution relative to the total, the distribution of such a parameter tends to a normal distribution with an increase in the number of observations. Thus the relative values of indicators characterizing the entrepreneurial activity across countries are random variables. They may have a significant variation, but we can predict their arithmetic mean.

Kramer's (1962) study states that individual random variables may have a significant variation, and their arithmetic mean is stable. We note that in accordance with the Lyapunov theorem the distribution of mean values of independent random variables approaches the normal distribution if the following conditions are met: all values have finite mathematical expectations and variance, none of the values sharply differ from the others. As Gmurman (2003) notes the distribution of average values of independent random variables rather quickly (already starting from ten of them) approaches the normal distribution. The number of women entrepreneurs in each of the countries related to specific countries varies from thousands to millions, which

is much more than the Gmurman's criterion. Thus, there are theoretical prerequisites for using the functions of normal distribution to describe the relative indicators of entrepreneurial activity across the countries.

Comparative analysis of female entrepreneurship in different countries

The first task solved in the process of our study was a comparative analysis of female involvement in early-stage entrepreneurial activity of different countries in 2018. At the same time, basing on the data of the GEM report, the ranking of female TEA rates of 48 countries was carried out. Female TEA rate is calculated as the percentage of the adult population aged 18–64 years who are in the process of starting a business (a nascent entrepreneur) or started a business less than 42 months old before the survey took place (owner-manager of a new business). The ranking results are presented in Table 1 in the descending order. In addition, the table shows the average TEA rate for countries under consideration.

Table 1: Ranking by countries the total early-stage entrepreneurial activity (TEA) of women, %

Country	TEA	Country	TEA	Country	TEA
Angola	40.7	United Arab Emirates	10.1	Spain	6.0
Guatemala	24.5	China	9.3	Bulgaria	5.6
Chile	21.2	Slovak Republic	9.0	Egypt	5.4
Madagascar	21.1	Taiwan	8.8	United Kingdom	5.4
Peru	20.9	India	8.7	France	5.3
Thailand	19.3	Luxembourg	8.7	Switzerland	4.7
Colombia	17.8	Saudi Arabia	8.5	Poland	4.5
Lebanon	17.4	Puerto Rico	8.4	Morocco	4.3
Brazil	17.3	Qatar	8.4	Japan	4.0
Sudan	17.1	Turkey	8.4	Sweden	4.0
Canada	17	Netherlands	8.3	Greece	3.9
Indonesia	14.1	Argentina	8.1	Russian Federation	3.9
Panama	13.9	Austria	7.9	Slovenia	3.8
United States	13.6	Ireland	7.5	Germany	3.3
Uruguay	12.3	Croatia	7.1	Cyprus	2.9
Republic of Korea	12.2	Iran	6.5	Italy	2.8
Average TEA rate on 48 countries					10.5

Source: Own calculations on GEM statistics

The data in table 1 show that female TEA rates are in a very wide range (from 2.8% to 40.7%) for considered countries. The average female TEA rate for all 48 countries is 10.5%. At the same time, in 16 countries, female TEA rates exceed

the average. It is interesting to note that among these countries 4 belong to low-income (Angola, Madagascar, Sudan, Indonesia), 6 countries belong to middle-income (Thailand, Lebanon, Guatemala, Colombia, Peru, Brazil) and 6 countries belong to high-income (Chile, Canada, Panama, United States, Uruguay, Republic of Korea). Thus, the female TEA rates are not related to the income of the population. The highest female TEA rates (more than 36.8%) are observed in 5 countries. These countries are located in Africa (Angola and Madagascar), as well as in Latin America (Guatemala, Chile and Peru).

Eight of the GEM sample countries show low (4% and less) female TEA rates. Seven of them are highly developed countries, where hired employees have good economic and social conditions, often better than start-up entrepreneurs (Nielsen et al. 2010,). Additionally, we may point out such aspect that hinder the development of female entrepreneurial activity in a number of European countries, as a few childcare facilities. This decreases women support and play a certain role in limiting female entrepreneurship. Moreover in a number of European countries, social and fiscal policies have a negative impact on the development of female entrepreneurship in terms of the level of social security associated with entrepreneurship. In particular, the document (Holst, 2001) identifies aspects of the German tax system that restrict female entrepreneurship. In some countries, such as Germany and Italy, there is a traditional distribution of labour, with men making the main contribution to income and women taking more care of children and older family members. That is why only 2.8% in Italy and 3.1% in Germany of the adult female population are engaged in early-stage entrepreneurial activities. At the same time, in economically developed countries such as the United States, and Canada, female TEA rates are significantly higher than in European countries, as these countries implement programs for the development of female entrepreneurship.

The main reason for the fact that in 32 of 48 discussing in the research countries female TEA rates are below average is the heavy workload of women in the family, as well as existing cultural, social and religious stereotypes. In addition, the majority of women have higher humanitarian and economic education. This creates certain difficulties when they organize enterprises of a technical and technological orientation that nowadays show the most high growth. Consequently, it is important to encourage young women to study such disciplines as natural science, technology, engineering and mathematics (known at schools and universities as STEM). We note that this aspect of stimulating the development of female entrepreneurship is considered among other measures in the European Parliament document (Women's Entrepreneurship, 2015).

Models of comparative analysis

As indicated in the "Methods, design and data" section, the models that describe the distribution of indicators characterizing female early-stage entrepreneurial activity in the countries under consideration are functions of the density of the normal distribution. Evaluation of the normal distribution density functions and its calculation procedure is presented in a number of works (McPherson, G., 1990; Pinkovetskaya, 2017; Pinkovetskaya, 2015). The development of these functions is based on the construction of the corresponding histograms. With a large number of empirical inputs (more than 40), it is useful to combine empirical data in groups for the convenience of information processing. To do this, the range of values of indicators is divided into a certain number of intervals. The number of intervals should be chosen so that, on the one hand, the diversity of the indicator values is taken into account, and on the other hand, the distribution pattern depended to a small extent on random effects. When choosing intervals of equal length, it is essential that the number of values of indicators in each of the intervals was not less than 3. It was allowed that this requirement was not met for the left and right end intervals. There are recommendations for calculating the number of intervals. For example, in the work (Reinhold and Garden, 1964) it is proposed to use the number of intervals equal to the square root of the number of observations. In our case, the number of countries under consideration is 48, therefore, it is necessary to create histograms with 7 intervals. I.e. empirical data are divided into 7 groups.

The second task of the study was to assess female TEA motivation in all GEM countries and included observation of two indicators:

- female TEA opportunity rate (the share of opportunity-driven entrepreneurs in total number of female early-stage entrepreneurs);
- female TEA necessity rate (the share of necessity-driven entrepreneurs in total number of female early-stage entrepreneurs).

The computational experiment on the economic and mathematical modeling of empirical data for 48 countries in question was based, as stated above, on the development of the normal distribution density functions.

The functions characterizing female entrepreneurs motivation and describing the share of opportunity-driven and necessity-driven entrepreneurs (x_1, % and x_2, %), respectively, in the total number of female early-stage entrepreneurs, are:

- female TEA opportunity

$$y_1(x_1) = \frac{514.295}{12.31 \times \sqrt{2\pi}} \cdot e^{\frac{-(x_1-69.29)^2}{2\times 12.31\times 12.31}}; \quad (1)$$

- female TEA necessity

$$y_2(x_2) = \frac{518.00}{12.98 \times \sqrt{2\pi}} \cdot e^{-\frac{(x_2-24.99)^2}{2\times 12.98\times 12.98}}. \quad (2)$$

The third task – the gender gap evaluation of early-stage female and male entrepreneurial activity was carried out, as mentioned above, on two indicators: the ratio of female TEA to male TEA rates and the ratio of female TEA opportunity to male TEA opportunity rates. The analysis was based on relative indicators, namely the ratio of female and male early-stage entrepreneurial activity (x_3), as well as the ratio of female TEA opportunity-driven entrepreneurs to male TEA opportunity-driven entrepreneurs (x_4). The developed functions of the normal distribution density are given below:

- ratio of female TEA to male TEA

$$y_3(x_3) = \frac{4.80}{0.19 \times \sqrt{2\pi}} \cdot e^{\frac{-(x_3-0.68)^2}{2\times 0.19\times 0.19}}; \quad (3)$$

- ratio of female TEA opportunity to male TEA opportunity

$$y_4(x_4) = \frac{3.90}{0.11 \times \sqrt{2\pi}} \cdot e^{-\frac{(x_4-0.94)^2}{2\times 0.11\times 0.11}}. \quad (4)$$

The verification of how well the normal distribution functions approximate the studied data is based on the application of the tests derived from the theory of mathematical statistics. Table 2 shows the actual values of statistics based on the results of the computational experiment.

Table 2: Estimated values of statistics

Function number	Estimated value by tests		
	Kolmogorov-Smirnov	Pearson	Shapiro-Wilk
1	2	3	4
(1)	0.05	2.37	0.97
(2)	0.04	0.64	0.98
(3)	0.09	4.23	0.94
(4)	0.04	1.32	0.98

Source: Own calculations

The authors used Kolmogorov-Smirnov, Pearson and Shapiro-Wilk tests. These tests allow us to compare the empirical distribution of the studied parameters with the theoretical, described functions of the normal distribution. They demonstrate the level of deviation of empirical data from the specified functions. Table 2 shows the estimated values of the corresponding statistics. The estimated statistics values for the Kolmogorov-Smirnov criterion (given in the second column of table 2) range from 0.05 to 0.09, which is less than the tabular value of 0.152 (with a significance level of 0.05). Similarly, the estimated values of the Pearson criterion (given in the third column of table 2) range from 0.64 to 4.23, which is less than the table value of

9.49. The estimated values of the Shapiro-Wilk criterion (given in the fourth column of table 2) range from 0.94 to 0.98. These values are greater than the table value of 0.93 (with a significance level of 0.01). Thus, all developed functions (1) - (4) have high quality in all tests and well describe approximate data.

Discussion of the modeling results

The normal distribution density functions make it possible to determine the average values of the considered female TEA rates. The corresponding indicators are given in Table 3. The table shows also the change intervals of the indicators under consideration (column 3), which are typical for the majority (68%) of the GEM sample countries. The intervals are estimated on the basis of average values of indicators and standard deviation values. To estimate the interval limits, the specified deviation is added to or subtracted from the average value of the indicator, respectively. The average values and the change intervals of the indicators in the table correspond to the density functions of normal distribution (1) - (4).

Table 3: Average value and change intervals

Indicators	Average value	Change interval
1	2	3
Female TEA opportunity, %	69.29	56.98-81.60
Female TEA necessity, %	24.99	12.01-37.97
Ratio of female TEA to male TEA	0.68	0.49-0.87
Ratio of female TEA opportunity to male TEA opportunity	0.94	0.83-1.05

Source: Own calculations

The data presented in Table 3 indicate the predominance of the opportunity motivation of modern female entrepreneurs in the absolute majority of countries. The highest rates of opportunity motivation of female entrepreneurs (from 82% to 95%) are in Luxembourg, Netherlands, Colombia, Canada, Panama, Switzerland, Poland, Cyprus. The female TEA opportunity rates of less than 57% (from 40% to 56%) are recorded in 6 countries: Guatemala, Brazil, Angola, Egypt, India and Russia.

The average rate of necessity motivation of female entrepreneurs, as shown in table 3, is 24.99%. For the absolute majority (84%) of the countries considered, this rate does not exceed 37.97%. For only 8 countries this figure is of great importance. These include Sudan, Saudi Arabia, Guatemala, Brazil, Egypt, India, Russia. A very low rate (1.3%) indicates a minimum number of Sweden women who start business out of necessity. This indicator for the United States, Luxembourg, Poland, Netherlands, Cyprus is less than 10%.

A comparative analysis of female and male TEA rates was based on two indicators, the ratio of female TEA to male TEA rates, and the ratio of female TEA opportunity to male TEA opportunity rates. The highest ratio of female TEA to male TEA rates (from 1.01 to 1.03) are in Chile, Peru and Canada. In these countries women participate in early-stage entrepreneurship more often than men. These countries are located in America. The ratio of female TEA to male TEA rates from 0.92 to 0.99 is noted in countries such as Netherlands, Madagascar, Sudan, Puerto Rico and Ireland. The minimum values of this ratio (0.38-0.44) are reported only in 5 countries: Switzerland, Argentina, China, India and Panama. In 40 countries, the values of the ratios of female to male TEA range from 0.5 and above. Thus, gender inequality rate in early-stage entrepreneurial activity in the vast majority of countries is less than 50%.

The average ratio of female TEA opportunity to male TEA opportunity rates for all countries under consideration reaches 0.94. The highest ratio of female TEA opportunity to male TEA rates (from 1.02 to 1.13) occur in fourteen countries: Sweden, Iran, Canada, Morocco, Poland, Qatar, China, Luxembourg, Netherlands, Turkey, Cyprus, Austria, Ireland and Lebanon. In these countries is significantly higher level of women opportunity motives than male counterparts. Low level of this indicator (less than 80%) was in 2018 in 5 countries: Argentina, Greece, Sudan, Angola and Russia. That is, in 43 countries out of 48, the ratios of female TEA opportunity to male TEA opportunity rates are between 0.8 and above. In general, we can conclude that at present the gender gap in opportunity motivation of women and men is relatively small.

As can be seen in Table 3, the hypothesis of a significant differentiation of indicators related to the second (motivation) and third (gender gap) groups are confirmed.

Conclusion

The scientific novelty of this paper lies in the study of the distribution of indicators characterizing the motivation of female entrepreneurs and the existing gender gap between female and male entrepreneurs.

The methodical approach proposed in the article for study of entrepreneurial activity of women, their motivational preferences, and comparative analysis of the female and male early-stage entrepreneurial activities can be used in substantiation of development programs for women entrepreneurial activity in various countries.

The methodology and tools that were used in the research process can be applied in similar studies for other time periods.

The practical significance of the research is as follows: it can be implemented in government activities in various countries, in the entrepreneurship sector of the national economies. The obtained new knowledge can be used in scientific research on women entrepreneurship problems. The results of the study can be used in educa-

tional process: in training of bachelors and masters, researchers, as well as specialists of public and municipal administration.

The social significance of the study is associated with the reduction of prejudices and stereotypes against female entrepreneurs and obtaining data confirming the possibility of self-realization of women through the creation of their own businesses.

Further research on female entrepreneurship may be related to the justification of measures for the development of this sector of the national economy and the provision of targeted support to female entrepreneurs by the authorities, financial institutions and public organizations. Moreover, further studies are related to the assessment of women entrepreneurship by various types of industries.

REFERENCES

Achtenhagen, L. & Welter, F. (2003). Female Entrepreneurship in Germany: Context, Development and Its Reflection in German Media. In J. Butler (ed.), New Perspectives on Women Entrepreneurs. Greenwich, CT: Information Age Publishing.

Acs, Z.J. & Amoros, J.E. (2008). Entrepreneurship and competitiveness dynamics in Latin America. Small Business Economics, 31(3), 305-322.

Adachi, T. & Hisada, T. (2017). Gender differences in entrepreneurship and intrapreneurship: an empirical analysis. Small Business Economics, 48(3), 447-486.

Afandi, E. & Kermani, M. (2015). Bridging the gender gap in entrepreneurship: An empirical analysis. Journal of Developmental Entrepreneurship, 20(2), 1-20.

Aidis, R. & Weeks, J. (2016). Mapping gendered is the Ecosystem: The Evolution of Measurement Tools for Comparative High-Impact Female Entrepreneur Development. International Journal of Gender and Entrepreneurship, 8(4), 330-352.

Arenius, P. & Ehrstedt, S. (2008). Variation in the level of activity across the stages of the entrepreneurial startup process-evidence from 35 countries. Estudios De Economia, 35(2), 133-152.

Bjørnskov, C. & Foss, N. (2013). How strategic entrepreneurship and the institutional context drive economic growth. Strategic Entrepreneurship Journal, 7(1), 50-69.

Barba-Sánchez, V. & Atienza-Sahuquillo, C. (2017). Entrepreneurial motivation and self-employment: evidence from expectancy theory. International Entrepreneurship and Management Journal. 13(4), 1097-1115.

Baughn, C.C., Chua, B. & Neupert, K.E. (2006). The normative context for women's participation in entrepreneruship: A multicountry study. Entrepreneurship: Theory and Practice, 30(5), 687-708.

Bosma, N., Jones, K., Autio, E. & Levie, J. (2007). Global entrepreneurship monitor: 2007 executive report. Babson Park, MA, Babson College, London Business School, London, UK.

Bosma, N. (2013). The Global Entrepreneurship Monitor (GEM) and its Impact on Entrepreneurship Research. Foundations and Trends in Entrepreneurship: forthcoming.

Bosma, N. & Schutjens, V. (2011). Understanding regional variation in entrepreneurial activity and entrepreneurial attitude in Europe. Annals of Regional Science, 1-32.

Casella, G. & Berger, R. (2001). Statistical Inference (2nd ed.). Duxbury.

Connelly, R. (1992). Self-employment and providing child care. Demography, 29, pp. 17-29.

Demirguc-Kunt, A., Klapper, L., Singer, D. & P. Van Oudheusden. (2015). The Global Findex Database 2014: Measuring Financial Inclusion around the World. Policy Research Working Paper 7255, World Bank, Washington, DC.

Driga, O., Lafuente, E., & Vaillant, Y. (2009). Reasons for the relatively lower entrepreneurial activity levels of rural women in spain. Sociologia Ruralis, 49(1), 70-96.

Global Entrepreneurship Monitor 2018-2019. (2019). Global Entrepreneurship Research Association (GERA).

Global Entrepreneurship Monitor 2010. (2011). Global Entrepreneurship Research Association (GERA).

Gmurman, V.E. (2003). Theory of probability and mathematical statistic, High school, Moscow.

Golla, A.M., Malhotra, A., Nanda, P. & Mehra, R. (2011). Understanding and Measuring Women's Economic Empowerment: Definition, Framework and Indicators. International Center for Research on Women, Washington, DC.

Gupta, V.K., Turban, D.B., Wasti, S.A., & Sikdar, A. (2009). The role of gender stereotypes in perceptions of entrepreneurs and intentions to become an entrepreneur. Entrepreneurship Theory and Practice, 33(2), 397-417.

Fetsch, E., Jackson, C. & Wiens, J. (2015). Women Entrepreneurs are Key to Accelerating Growth. Kauffman Foundation. Retrieved August 6, 2019, from http://www.kauffman.org/what-we-do/resources/entrepreneurshippolicy-digest/women-entrepreneurs-are-key-to-accelerating-growth

Hamilton, E. (2013). Entrepreneurship across generations: narrative, gender and learning in family business. Edward Elgar Publishing, Cheltenham.

Heinhold, I. & Gaede, K.W. (1964). Ingenieur statistic. München; Wien: Springler Verlag.

Holst, E. (2001). Institutionelle Determinanten der Erwerbsarbeit: Zur Notwendigkeit einer Gender-Perspektive in den Wirtschaftswissenschaften. DIW Diskussionspapier. Berlin: DIW.

Jenish, N. & Prucha, I. R. (2009). Central limit theorems and uniform laws of large numbers for arrays of random fields. Journal of Econometrics, 150(1), 86-98.

Jennings, J.E. & Brush, C.G. (2013). Research on women entrepreneurs: challenges to (and from) the broader entrepreneurship literature? The Academy of Management Annals, 7(1), 663-715.

Kelley, D., Herrington, M. & Singer, S. (2012). Global Entrepreneurship Monitor Executive Report. Babson Park, MA: Babson College.

Klapper, L.F. & Parker, S.C. (2011). Gender and the Business Environment for New Firm Creation. The World Bank Research Observer, 26 (2), 237-257.

Kramer, G. (1962). Mathematical methods of statistic, Princeton University Press.

Lewis, K.V., Henry, C., Gatewood, E.J. & Watson, J. (2014). Women's Entrepreneurship in the 21st Century: An International Multi-Level Research Analysis. Edward Elgar Publishing, Cheltenham.

Lopez-Claros A. & Zahidi S. (2005). Women's Empowerment: Measuring the Global Gender Gap. World Economic Forum. Geneva. Switzerland.

McClelland, E., Swail, J., Bell, J. & Ibbotson, P. (2005). Following the pathway of female entrepreneurs: A six country investigation. International Journal of Entrepreneurial Behavior & Research, 11(2), 84-107.

McMullen, J.S., Bagby, R.D. & Palich, L.E. (2008). Economic freedom and the motivation to engage in entrepreneurial action. Entrepreneurship: Theory and Practice, 32(5), 875-895.

McPherson, G. (1990). Statistics in Scientific Investigation: Its Basis, Application and Interpretation. Springer-Verlag.

Minniti, M. & Nardone, C. (2007). Being in Someone Else's Shoes: the Role of Gender in Nascent Entrepreneurship. Small Business Economics, 28(2–3), 223-238.

Morozov, V.A. (2003). Hoping for women. Female entrepreneurship as a basis for small business development. Russian Entrepreneurship, 3, 3-10.

Muntean, C.S. & Ozkazanc-Pan, S.C. (2015). A gender integrative conceptualization of entrepreneurship, New England Journal of Entrepreneurship, 1(19), 27-40.

Muriel, O. & Don, S. (2001). Why women enter into entrepreneurship: an explanatory model, Women in Management Review, 16(5), 232-247.

Nielsen, S., Klyver, K. & Evald M. (2010). Denmark, in: Fielden, S. and M. Davidson (eds.), International Research Handbook on Successful Women Entrepreneurs. Edward Elgar, Cheltenham.

Ogbor, J. (2000). Mythicizing and Reification in Entrepreneurial Discourse: Ideology Critique of Entrepreneurial Studies. Journal of Management Studies, 37(5), 605-635.

Pinkovetskaia, I.S. (2015). Modeling indicators of work aggregations of entrepreneurial structures in the regions: functions density of normal distribution. Problems of development of the territory, 6 (80), 93-107.

Pinkovetskaia, I.S. (2017). The analysis of revenue of small and medium enterprises in Russia: the management aspect, Management Issues, 2(45), 187-194.

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

Sciascia, S., Mazzola, P., Astrachan, J. & Pieper, T. (2012). The role of family ownership in international entrepreneurship: Exploring nonlinear effects. Small Business Economics, 38(1), 15-31.

Stephan, U. & Uhlaner, L. (2010). Performance-based vs socially supportive culture: A cross-national study of descriptive norms and entrepreneurship. Journal of International Business Studies, 41, 1347-1364.

The Global Gender Gap Report (2018). World Economic Forum.

Verheul, I., Stel, A.V. & Thurik, R. (2006). Explaining female and male entrepreneurship at the country level. Entrepreneurship and Regional Development, 18(2), 151-183.

Wagner, J. (2007). What a Difference a Y makes -Female and Male Nascent Entrepreneurs in Germany. Small Business Economics, 28, 1-21.

Wang, Q. (2015). Child care, work-family policy and female entrepreneurship. Social Science Research Network. Retrieved August 5, 2019, from available at: http://dx.doi.org/10.2139/ssrn.2669282

Woetzel, J., Madgavkar, A., Ellingrud, K., Labaye, E., Devillard, S., Kutcher, E., Manyika, J., Dobbs, R. & Krishnan, M. (2015). The Power of Parity: How Advancing Women's Equality Can Add $12 Trillion to Global Growth. McKinsey & Co, Washington, DC.

Woldie, A. & Adersua, A. (2004). Female Entrepreneurs in a Transitional Economy: Businesswomen in Nigeria, International Journal of Social Economics, 31(1/2), 78-93.

Women's Entrepreneurship (2015): closing the gender gap in access to financial and other services and in social entrepreneurship. European Parliament, Brussels.

Zhao, X., Li, H. & Rauch, A. (2012). Cross-Country Differences in Entrepreneurial Activity: The Role of Cultural Practice and National Wealth, Frontiers of Business Research in China, 6(4), 447-474.