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MODERATING EFFECT OF GENDER ON THE OPPORTUNITY RECOGNITION AND ENTREPRENEURIAL INTENTION

Pooreum Ryu ¹, Dohyeon Kim ²

^{1,2} Kookmin University, 77 Jeongneung-ro, Seongbuk-gu, Seoul, 02707, Republic of Korea

E-mails: ¹ m2018018@kookmin.ac.kr ; ² drkim@kookmin.ac.kr

Received 18 February 2020; accepted 30 June 2020; published 30 September 2020

Abstract. This study investigated the relationship between opportunity recognition and entrepreneurial intention at the national level. It hypothesized that the gender equality, measured based on national perceptions of women as human resources, would moderate this relationship. The data of 15 countries from the Global Entrepreneurship Monitor (GEM) and the Gender Gap Index (GGI) of the World Economic Forum (WEF) were used for the analysis. The results showed that opportunity recognition affects entrepreneurial intention. The analysis also suggested that gender had a moderating effect on this relationship, although the size of the gender moderation effect was not directly related to the level of gender inequality in the sampled countries.

Keywords: opportunity recognition; entrepreneurial intention; gender; GEM; APS; GGI

Reference to this paper should be made as follows: Ryu, P., Kim, D. 2020. Moderating effect of gender on the opportunity recognition and entrepreneurial intention. *Entrepreneurship and Sustainability Issues*, 725-740. [http://doi.org/10.9770/jesi.2020.8.1\(49\)](http://doi.org/10.9770/jesi.2020.8.1(49))

JEL Classifications: M13, O15, J16

1. Introduction

Recently, many countries have begun promoting entrepreneurship as the key driving force of economic growth (Lumpkin, Dess 1996; Acs 2006; Acs et al. 2018). Encouraging entrepreneurship requires an understanding of the process of starting a business and entrepreneurs' decision-making (Markman et al. 2002). Although previous studies have examined the initial process of founding a business (Gartner 1988; Shane, Venkataraman 2000; Sutter et al. 2019; Mitra 2020), empirical studies of the early stages of founding a business that include the discovery of opportunities remain scarce (Davidsson, Honig 2003; Gupta et al. 2014).

Opportunities are one of the most important research topics in entrepreneurship. Entrepreneurship behavior is initiated when potential entrepreneurs recognize entrepreneurial opportunities (Wang et al. 2013; Shane, Nicolaou 2015). In the 2000s, researchers emphasized the importance of the opportunities identified by entrepreneurs (Shane, Venkataraman 2000). Since then, researchers have examined where opportunities come from and how they are discovered and used (Foss, Klein 2018; Alvarez, Barney 2019; Shepherd et al. 2019). However, studies

showing how potential entrepreneurs' perceptions of opportunities affect their entrepreneurship decisions are still lacking (Hill, Birkinshaw 2010; Shane, Nicolaou 2015).

Although the importance of female workers in the national economy has been emphasized in recent years, finding female entrepreneurs remains difficult. Terjesen et al. (2015) found that men and women are not equal competitors in terms of opportunity recognition and resource access, meaning gender can affect the process of starting a business. Recent studies have considered gender equality to be a factor that explains economic differences between countries. Therefore, studying how gender equality affects the start-up process is meaningful. World Economic Forum (2017) suggested that when gender equality is improved or gender differences are reduced, entrepreneurship would be strengthened leading economic ripple effects. The authors are motivated to develop how gender equality engages in the entrepreneurial process in which opportunity recognition leads to entrepreneurial intention. To put in differentially, the study set out to analyze the effects of opportunity recognition on entrepreneurial intentions, and to determine whether gender moderates this relationship.

2. Background

2.1. Entrepreneurial Intention

Kruger et al. (2000) explained that intentions are the single best predictor of any planned behavior, including entrepreneurship. Bird (1988) described entrepreneurial intentions as an attempt to start a business or to create a new value. Schumpeter (1934) defined entrepreneurship as a process and regarded entrepreneurs as innovators who reintegrate resources and disrupt existing approaches by implementing new ones. As such, entrepreneurial intention can be seen as the first step in the process of starting a business and the foundation on which an entrepreneur creates a company (Veciana et al. 2005). Two representative studies of entrepreneurial intention (Shapiro 1975; Ajzen 1991) developed seminal models—Shapiro's SEE (Start-up Event) and Ajzen's TPB (Theory of Planned Behavior).

2.2. Opportunity Recognition

Opportunity recognition is a cognitive process that involves thinking, creating ideas, and solving problems for start-up businesses (Bird 1988; Ardichvili et al. 2003; Wasdani, Mathew 2014; Shane, Nicolaou 2015). Kirzner (1973) defined opportunity as the possibility of creatively combining resources and creating value to meet market demands. Similarly, Shane (2003) described entrepreneurship as the process of finding and organizing opportunities. Meanwhile, entrepreneurship research has shown that interest in discovering and exploiting opportunities has been increasing (Alvarez, Barney 2019; Foss, Klein 2018). Moreover, some studies have found connections between people who want to be entrepreneurs and valuable entrepreneurial opportunities (Venkataraman 1997; Shane, Venkataraman 2000; Cantner et al. 2020).

2.3. Gender Differences

Gender in entrepreneurship has been loosely studied through the lens of human resources (Gupta et al. 2014). However, interest in and studies of women's entrepreneurship and entrepreneurship-related gender differences have increased in recent years. Studies explaining gender differences in entrepreneurship have highlighted the formation of gender stereotypes from gender role expectations (Eagly 1987; Burgess, Borgida 1999). Gender and social roles are generated by countries' cultural values (De Vita et al. 2014; Kong Hye-won 2018). Women tend not to choose entrepreneurial careers because entrepreneurship is generally regarded as a field for men (Thébaud 2015). Thus, attitudes toward entrepreneurial intentions can be more positive for men than for women. Despite progress in recent years, gender differences in entrepreneurial activity still remain (Hechavarría et al. 2018; Boudreaux, Nikolaev 2019). And some studies have also found that men have higher entrepreneurial intentions than women (Zhao et al. 2005; Westhead, Solsvik 2016).

2.4. Gender Equality

Gender equality exists when one's gender has no impact on the social opportunities and life possibilities one can access. Seguino (2000) found a positive correlation between gender equality and economic growth. Klasen (2000) also found that gender inequalities in education and employment could slow economic growth. Meanwhile, the World Economic Forum reported that female workforces are important for sustainable economic growth. The GGI (Gender Gap Index) of the WEF (World Economic Forum) used in this study (WEF 2017) focuses on the development of female workforces for economic growth and consists of male-to-female ratios. The GGI is located between 0 and 1, with higher values indicating higher levels of gender equality.

3. Research Design

3.1. Hypothesis

3.1.1. Relationship between Opportunity Recognition and Entrepreneurial Intention

Opportunity recognition is a key factor in increasing the feasibility of starting a business (Bird, 1988; Ardichvili et al., 2003). The discovery and recognition of opportunities fuels entrepreneurial intentions, which critically affect decisions to start businesses (Hill, Birkinshaw 2010; Wasdani, Mathew 2014; Shane, Nicolaou 2015). Krueger (2009) found that perceived opportunities raise entrepreneurial intentions. Therefore, this study hypothesized that opportunity recognition will influence entrepreneurial intention.

Hypothesis 1. Opportunity recognition will positively (+) affect entrepreneurial intention.

3.1.2. Gender Moderating Effect

Fewer women participate in entrepreneurship than men in almost all countries, indicating that women's entrepreneurial intentions are relatively low (Arenius, Minniti 2005; De Bruin et al. 2006; Kelley et al. 2012). Douglas, Shepherd (2002) reported that women showed higher risk aversion and lower independence than men. Walter, Dohse (2012) found that women were influenced by the contexts of their countries and societies. A few more studies also suggest the causes of gender differences in entrepreneurial intentions. De Vita et al. (2014) found that perceptions of social gender roles differ based on countries' cultural values. Burgess, Borgida (1999) likewise noted that gender stereotypes are shaped by differences in cultural values and gender role expectations in different countries.

Therefore, this study hypothesized that gender will moderate the relationship between opportunity recognition and entrepreneurial intention

Hypothesis 2. The relationship between opportunity recognition and entrepreneurial intention will be weaker for women.

3.1.3. Relationship between the Gender Equality Level by Country and the Gender Moderating Effect Size by Country

Hypothesis 3 tests the relationship between gender equality level and the effect size of gender moderation on opportunity recognition and entrepreneurial intention in different countries. In the 2000s, some scholars argued that gender equality was an important factor in promoting economic growth (Lofstrom 2001; Esteve-Volart 2004). In addition, the WEF (2017) found that improving gender equality narrows gender gaps, thereby increasing economic ripple effects. Thus, if the extent of the effect of gender on the relationship between opportunity recognition and entrepreneurial intention differs between countries, is the difference related to countries' levels of gender equality? This study hypothesized that if the level of gender equality in a given country is low, the relationship between women's opportunity recognition and entrepreneurial intentions will be weakened, and the country's gender moderating effect size will increase.

Hypothesis 3. A country's gender equality level will have a negative relationship with the magnitude of the gender moderating effect size in said country. Research model is presented in figure 1 below.

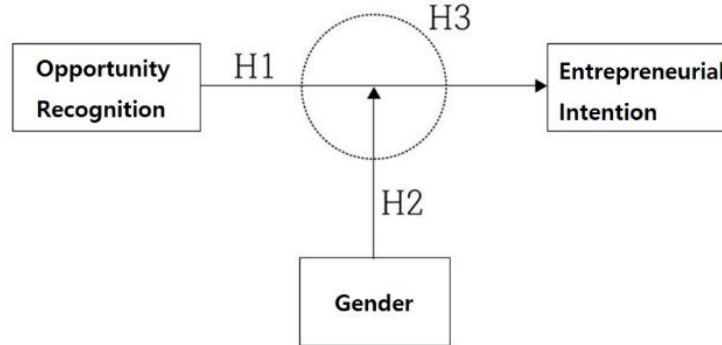


Figure 1. Research Model

4. Methodology

4.1. Data Collection and Sample Characteristics

4.1.1. Sample

This study used data from the 2017 GEM and the 2017 GGI (Gender Gap Index) of the WEF (World Economic Forum). The GEM is a survey conducted in about 50 countries annually, to analyze the relationship between entrepreneurship and national economic growth. The analyzed countries were selected based on two criteria: first, they had to be among the top 40 OECD countries for three consecutive years as of 2017; and second, they had to have participated in the GEM for three consecutive years. The control variables include age and family numbers (at the individual level) and the social status of entrepreneurs as a good career choice (at the national level)

4.1.2. Characteristics of the Sample

Table 1. Demographic Characteristics of the Sample

Variables	Factors	Frequency (No. of People)	Percentage (%)	Male (%)	Female (%)
Country	United States	1718	5.5	839(48.8)	879(51.2)
	Netherlands	1426	4.6	759(53.2)	667(46.8)
	France	1590	5.1	770(48.4)	820(51.6)
	Switzerland	1417	4.6	738(52.1)	679(47.9)
	Sweden	1430	4.6	758(53.0)	672(47.0)
	Poland	1029	3.3	591(57.4)	438(42.6)
	Chile	2998	9.7	1440(48.0)	1558(52.0)
	Australia	7627	24.6	3907(51.2)	3720(48.8)
	Japan	1229	4.0	700(57.0)	529(43.0)
	South Korea	1669	5.4	847(50.7)	822(49.3)
	China	3240	10.4	1627(50.2)	1613(49.8)
	India	2832	9.1	1578(55.7)	1254(44.3)
	Luxembourg	684	2.2	346(50.6)	338(49.4)
	Ireland	1323	4.3	676(51.1)	647(48.9)
	Israel	826	2.7	404(48.9)	422(51.1)

	Sub Total	31038	100	15980(51.0)	15058(49.0)
Gender	Male	15980	51		
	Female	15058	49		
Age	Mean	42.27			
	S.D	13.56			
Number of Family	Mean	3.61			
	S.D	1.51			
Entrepreneurship as a good career choice	No	11297	36		
	Yes	20083	64		
Social status of entrepreneurs	No	10014	32		
	Yes	21024	68		
	Total	31038	100		

The table 1 above shows the results of a frequency analysis of the general characteristics of the study subjects. Looking at the countries first, the US accounted for 5.5% (1718) of the sample, the Netherlands for 4.6% (1426), France for 5.1% (1590), Italy for 4.6% (1417), Switzerland for 4.6% (1430), Sweden for 3.3% (1029), Poland for 9.7% (2998), Chile for 24.6% (7627), Japan for 4.0% (1229), Korea for 5.4% (1669), China for 10.4% (3240), India for 9.1% (2832), Luxemburg for 2.2% (684), Ireland for 4.3% (1323) and Israel for 2.7% (826). Meanwhile, 51% (15980) of the study subjects were male and 49% (15058) were female. The mean age was 42.27 (SD = 13.56) and the average family size was 3.61 (SD = 1.508). Next, 46% (20083) viewed entrepreneurship as a good career choice and 36% (11297) held the opposite view.

4.2. Feasibility and Reliability Analysis of Measuring Tools

4.2.1. Feasibility and Reliability Analysis of Opportunity Recognition and Entrepreneurial Intention

Reliability analyses confirm whether survey respondents' responses provide accurate and consistent measures of a concept. The confidence value for opportunity recognition was .708, which shows a high level of confidence. Next, the reliability value for entrepreneurial intention was .811, which shows a high level of reliability.

4.2.2. Descriptive Statistics and Correlation Analysis

Table 2. Technical Statistics Analysis of Opportunity Recognition and Entrepreneurial Intention

	N	Min	Max	Mean	Std. deviation	skewness	kurtosis
Opportunity Recognition	31038	0	3	1.369	1.009	.134	-1.079
Entrepreneurial Intention	31038	0	3	.454	.757	1.612	1.795

Descriptive statistical analysis was conducted to determine the descriptive statistical values of the variables. As Table 2 shows, the mean opportunity recognition value was 1.37 and the standard deviation was 1.01. Meanwhile, the mean entrepreneurial intention value was .46 and the S.D was .76.

Table 3. Correlation Between Major Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GENDER(1)	1						
AGE(2)	.022**	1					
HHSIZE(3)	.011	-.203**	1				
NBGOODC(4)	-.001	.023**	.029**	1			
EQUALINC(5)	-.014*	-.002	-.007	.233**	1		
Opportunity Recognition(6)	-.088**	.011	.004	.186**	.131**	1	
Entrepreneurial Intention(7)	-.098**	-.149**	.114**	.086**	.039**	.247**	1

N=31038

Gender(0=Male, 1=Female), Age(years old), Number of Family(people),

Entrepreneur as a good career choice, Social status of entrepreneurs

*p<.05, **p<.01

Table 3 shows the results of the analysis of the relationship between opportunity recognition and entrepreneurial intention, showing the degree of linear relationship between the variables. First, the analysis showed a positive correlation of .247 ($p<.01$) between opportunity recognition and entrepreneurial intention. The higher the opportunity recognition, number of families, entrepreneur as a good career choice, and the social status of the entrepreneur, the higher the entrepreneurial intention will be. On the other hand, the entrepreneurial intentions decreased for older women. This is consistent with the previous studies as introduced in 2.3 and 2.4.

4.4. Hierarchical Regression

4.4.1. Regression Analysis

A hierarchical regression analysis was conducted to determine whether gender affected the relationship between opportunity recognition and entrepreneurial intention (Table 4).

Table 4. Hierarchical Regression Results (All)

DV	Stages	IV	β	t	VIF	DW	R ²	F
Entrepreneurial intention	1	AGE	-.007	-24.373**	1.044	1.145	.090	597.185**
		HHSIZE	.040	14.833**	1.045			
		NBGOODC	.070	7.713**	1.084			
		EQUALINC	-.001	-.156	1.064			
		Opportunity Recognition(A)	.176	41.661**	1.043			
	2	AGE	-.007	-24.096**	1.045	1.145	.095	174.519**
		HHSIZE	.040	15.089**	1.045			
		NBGOODC	.071	7.923**	1.084			
		EQUALINC	-.002	-.227	1.064			
		Opportunity Recognition	.171	40.380**	1.052			
		GENDER(B)	-.110	-13.211**	1.010			
Intention	3	AGE	-.007	-24.128**	1.045	1.145	.096	14.110**
		HHSIZE	.040	15.097**	1.045			
		NBGOODC	.072	7.951**	1.084			
		EQUALINC	-.003	-.287	1.064			
		Opportunity Recognition(A)	.179	37.669**	1.327			
		GENDER(B)	-.111	-13.248**	1.010			
		(A)×(B)	-.031	-3.756**	1.276			

*p<.05, **p<.01, Country = All

The analysis results showed that the explanatory power in the first stage of the model with opportunity recognition was 9.0%, and the explanatory power in the second stage with gender increased by 0.5% (.005) to 9.5%. The gender, along with control variables, had a significant influence a statistically significant influence ($p < .05$) on entrepreneurial intention. When the interaction term (opportunity recognition \times gender) was added, the explanatory power increased by 0.1% to 9.6%, a statistically significant increase ($p < .05$). This suggests that gender moderates the impact of opportunity recognition on entrepreneurial intention.

4.4.2. Regression Analysis for each country

Table 5 illustrates compares the change in R^2 between 2nd and 3rd stages of hierarchical regression analysis for each country. It is to determine whether the impacts of gender between opportunity recognition on entrepreneurial intention differs vary across by 15 sampled countries.

Table 5. Hierarchical Regression Analyses Results (all individual countries, 3 stages)

Country	Variables	β	t	ΔR^2 (L 2 \rightarrow 3)	R^2	F
	Interaction terms (stage 3rd)					
United States	Opportunity Recognition X Gender	-.060	-1.563	.001	.094	24.281
Netherlands	Opportunity Recognition X Gender	.044	1.444	.001	.095	21.124
France	Opportunity Recognition X Gender	-.051	-1.744	.002	.156	41.533
Switzerland	Opportunity Recognition X Gender	-.148	-4.295**	.011	.143	32.954
Sweden	Opportunity Recognition X Gender	-.076	-2.621**	.004	.088	19.569
Poland	Opportunity Recognition X Gender	.008	.203	.000	.064	9.800
Chile	Opportunity Recognition X Gender	-.044	-2.211*	.002	.038	14.642
Australia	Opportunity Recognition X Gender	.021	1.084	.001	.105	124.988
Japan	Opportunity Recognition X Gender	-.175	-3.415**	.008	.182	37.177
South Korea	Opportunity Recognition X Gender	-.049	-1.306	.001	.114	30.310
China	Opportunity Recognition X Gender	.007	.241	.000	.245	148.170
India	Opportunity Recognition X Gender	-.090	-3.074**	.003	.128	57.752
Luxembourg	Opportunity Recognition X Gender	-.099	-1.734	.004	.128	13.993
Ireland	Opportunity Recognition X Gender	-.053	-1.285	.001	.122	25.385
Israel	Opportunity Recognition X Gender	.082	1.391	.002	.027	3.203
* $p < .05$, ** $p < .01$, Country = All						

The analyses showed no statistically significant increases in explanatory power in the 2nd and 3rd stages for 10 countries—the United States, the Netherlands, France, Sweden, Chile, South Korea, China, Luxembourg, Ireland, and Israel. However, it showed statistically significant increases in explanatory power in the 2nd and 3rd stages for the remaining 5 countries—Italy, Switzerland, Poland, Japan, and India.

4.5. Post Hoc Analysis: T test

Table 6. Post-hoc Analysis Independent Sample T-Test Results

Factors	Mean		SD		t	p
	Gender Moderating Effect		Gender Moderating Effect			
	Significant	Not	Significant	Not		
	(5 countries, n = 9906)	significant (10 countries, n = 21132)	(5 countries, n = 9906)	significant (10 countries, n = 21132)		
O.R	1.289	1.405	1.048	.988	9.287	.000**
E.I	.258	.539	.637	.788	31.108	.000**
Gender	.467	.489	.499	.549	-2.768	.006**

*p<.05, **p<.01

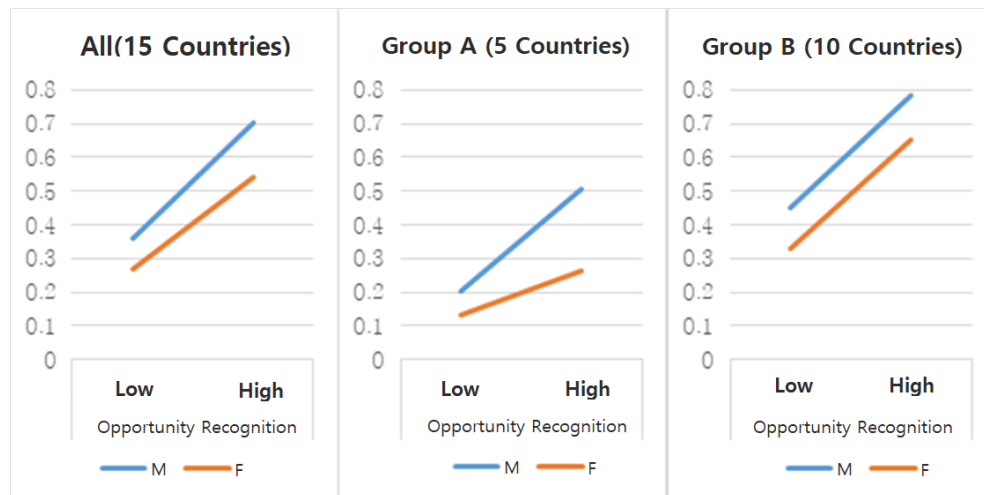
O.R =Opportunity recognition, E.I=Entrepreneurial Intention

- Countries with significant gender control effects (5): Italy, Switzerland, Poland, Japan, India

- Countries with no significant gender control effects (10): United States, Netherlands, France, Sweden, Chile, Korea, China, Luxembourg, Ireland, Israel

Presenting the results of a t-test of the gender control effects in the 15 sampled countries, Table 6 highlights the statistical significance of the difference between the two groups of countries.

The mean of opportunity recognition of Group A (defined as the group of countries with gender moderation) was 1.29 and that of Group B (defined as the group of countries without gender moderation) was 1.40. The difference was .29, which is statistically significant ($t = 9.29$, $p < .01$). In addition, the mean of entrepreneurial intention of Group A was .26 and that of Group B was .54. The difference was 0.28, again statistically significant ($t = 31.11$, $p < .01$).



X-axis: Opportunity Recognition, Y-axis: Entrepreneurial Intention

- Group A: Countries with significant gender control effects (Italy, Switzerland, Poland, Japan, India)

- Group B: Countries with no significant gender control effects (the United States, Netherlands, France, Sweden, Chile, South Korea, China, Luxembourg, Ireland, Israel)

Figure 2. Gender Moderating Effects on Opportunity Recognition and Entrepreneurial Intention

Figure 2 illustrates the moderating effect of gender on opportunity recognition (x-axis) and entrepreneurial intention (y-axis). In all countries, men had higher opportunity recognition, higher entrepreneurial intention by opportunity recognition, and gender control effects. Group A—Italy, Switzerland, Poland, Japan, and India—had relatively lower opportunity recognition and entrepreneurial intention than the other group, and gender moderating effect for women.

On the other hand, Group B—the United States, the Netherlands, France, Sweden, Chile, South Korea, China, Luxembourg, Ireland, and Israel—had higher levels of opportunity recognition and entrepreneurial intention than Group A. In these countries, men had higher opportunity recognition and entrepreneurial intentions than women, but the gender moderating effect is not statistically significant.

4.6. Correlation Analysis of Gender Moderating Effect Size and the Gender Gap Index

Pearson correlation analysis was used to determine the correlation between the effect size of gender moderation and the Gender Gap Index (GGI). If a gender moderating effect exists, the relationship between opportunity recognition and entrepreneurial intention will be weakened for women relative to men. This study attempted to find whether this gender moderating effects correlate the gender equality levels in each country, as measured by GGI.

To compare the gender moderating effect size, as discussed above, the effect size analysis developed by Cohen (1992) was used. Cohen's f^2 refers to the effect size normalized to the stated variance (R^2) ratio for the variance ($1 - R^2$) (Cohen 1988).

$$\text{cohen's } f^2 = \frac{R^2}{1 - R^2}$$

Table 7. Gender Moderating Effect Size and the WEF GGI

Country	GEM APS (2017)		WEF GGI (2017)				
	R^2	Cohen's f^2	GGI	Economic Participation and Opportunity	Educational Attainment	Health and Survival	Political Empowerment
United States	.094	.104	.718	.776	1	.973	.124
Netherlands	.095	.105	.737	.657	1	.970	.323
France	.156	.185	.778	.683	1	.977	.453
Switzerland	.143	.167	.692	.571	.995	.967	.234
Sweden	.088	.096	.755	.743	.993	.972	.314
Poland	.064	.068	.816	.809	.999	.969	.486
Chile	.038	.040	.728	.702	1	.980	.230
Australia	.105	.117	.704	.573	.999	.978	.266
Japan	.182	.222	.657	.58	.991	.980	.078
South Korea	.114	.129	.650	.533	.960	.973	.134
China	.245	.325	.674	.654	.963	.918	.160
India	.128	.147	.669	.376	.952	.942	.407
Luxembourg	.128	.147	.706	.667	1	.973	.184
Ireland	.122	.139	.794	.710	1	.971	.493
Israel	.027	.028	.721	.681	1	.971	.232

Cohen's f^2 (the gender moderating effect size) = $R^2/(1 - R^2)$

GGI = (Economic Participation and Opportunity + Educational Attainment + Health and Survival + Political Empowerment)/1

Table 7 and Figure 3 show the gender-regulated effect sizes (Cohen's f^2 value) by country as well as the GGI of the WEF (World Economic Forum). The correlations between the country indexes were not statistically significant.

WEF GGI ¹⁾			GEM APS ²⁾		
RANK	COUNTRY	GGI	RANK	COUNTRY	Cohen's f^2 square
1	Sweden	.816	1	Israel	.028
2	Ireland	.794	2	Poland	.040
3	France	.778	3	Sweden	.068
4	Switzerland	.755	4	Switzerland	.096
5	Netherlands	.737	5	United States	.104
6	Poland	.728	6	Netherlands	.105
7	Israel	.721	7	Chile	.117
8	United States	.718	8	South Korea	.129
9	Luxembourg	.706	9	Ireland	.139
10	Chile	.704	10	India	.147
11	Italy	.692	11	Luxembourg	.147
12	China	.674	12	Italy	.167
13	India	.669	13	France	.185
14	Japan	.657	14	Japan	.222
15	South Korea	.650	15	China	.325

1) WEF GGI: Sort by high gender equality (high gender gap index)

2) GEM APS: Sort by high gender equality (low gender moderating effect size)

Figure 3. Size and Ranking of GGI and Gender Moderating Effect Size

5. Results

The results of analysis can be summarized as follows. First, opportunity recognition had a positive (+) effect on entrepreneurial intention. Just as Krueger et al. (2000) argued that perceived opportunities increased entrepreneurial intentions, this study found that opportunity recognition had a positive (+) effect on entrepreneurial intention. Second, the analysis of the moderating effects of gender showed that the relationship between opportunity recognition and entrepreneurial intention was weaker for women. In addition, this study revealed between-country differences. The statistical significance of the differences between the two country groups may be attributed to cultural values or gender role expectations. De Vita et al. (2014) found that perceptions of social gender roles depend on countries' cultural values. For example, India is a society in which women's perceived opportunities and entrepreneurial intentions are lower than men's because gender inequality and conservative social practices prevail (Cho, 2011). Meanwhile, a study by Burgess, Borgida (1999) reported that gender stereotypes form from gender role expectations. Lee (2019), for example, argued that the gender stereotypes in Japan have influenced Japanese women's opportunity recognition and entrepreneurial intentions. That study inferred that perceptions of women's gender roles formed gender stereotypes under the influence of Japan's childbirth promotion policy and the male livelihood model.

Third, the gender equality level of the WEF GGI did not affect the gender moderating effect size calculated through the GEM. It can be inferred that the cause of the index is different from that of information. The WEF GGI is an indicator of women's development. It also focuses on gender gaps in four limited areas (economic participation and opportunity, educational attainment, health and survival, political empowerment). In other words, the factors affecting the strength of the effect of gender moderation calculated through the GEM are different from the four GGI perspectives and the nature of the information contained in the data may not be relevant.

6. Conclusions

This study confirmed the relationship between opportunity recognition and entrepreneurial intention. The analysis also showed that opportunity recognition and entrepreneurial intentions were weaker for women than men and measured the effect of gender moderation, however, it found no gender moderation effects in 10 of the 15 surveyed countries. In these 10 countries, women's opportunity recognition and entrepreneurial intentions were higher on average than in the other 5 countries. Finally, the analysis confirmed that there was no correlation between the gender moderation effects and the WEF GGI. The study thus confirmed the degree of female workers' participation in start-ups in each country.

6.1. Implications and Contribution

Taken together, these findings have three important implications related to levels of opportunity recognition, entrepreneurial intention, and the use of female human resources. First, the findings of this study highlight the importance—both practically and academically—of paying attention to the process of opportunity formation and utilization in the early stages of the start-up process. Recently, entrepreneurship has emerged as a new growth engine due to global economic slowdown. This study contributes to establishing a basis to support the fact that raising the level of opportunity recognition can strengthen entrepreneurship and lead to starting a business (Hill, Birkinshaw 2010; Wasdani, Mathew 2014; Shane, Nicolaou 2015). Second, this study provides a basis for justifying national policies related to the utilization of all human resources. It suggested that countries' cultural and social environments influence the effects of gender regulation on the relationship between opportunity recognition and entrepreneurial intention. This study also contributes to improve the level of gender equality in order to encourage entrepreneurship. Lastly, this study provides new insights about women and start-ups using country-specific data from start-ups' early stages. It has the academic value of examining the female entrepreneurship, a field that has, to this point, received scant attention. Another contribution of this study is that GEM APS and the WEF GGI were first used in the study of entrepreneurship. Although the gender equality has been emphasized in economic perspective as well as other societal perspective, the mechanism studies are not very plentiful. Especially, in the area of entrepreneurship, the studies linking the gender equality and entrepreneurial outcomes are very rare. This study may contribute to open the discussion.

6.2. Limitations of Research and Future Directions

This study had three limitations, which highlight areas that require further study. First, the number of countries studied was limited. This article examined the relationship between (1) opportunity perception and entrepreneurial intention and (2) the level of gender equality in the utilization of female human resources through limited secondary data. Future studies should include more countries with a wider variety of conditions. Second, this study was conducted with opportunity recognition as the sole independent variable among the factors that influence entrepreneurial intention. Follow-up studies should consider the various variables suggested by Ajzen's TPB or Shapero's SEE. Third, certain control variables were excluded from this study's analyses. Indeed, the personal- and social-level variables used in this study's analyses were by no means comprehensive. Future analyses of variables affecting entrepreneurial intention would be more meaningful if they included additional control variables such as children's status, education level, and salary.

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Pooreum RYU is a graduate student at Kookmin University Business School.

ORCID ID: orcid.org/0000-0002-0024-6794

Dohyeon KIM is a professor at the same school and the Dean of Graduate School of Global Entrepreneurship, Kookmin University. Their research interest mainly lies at the behavioural aspect of entrepreneurship including VCs investment decision, entrepreneurial orientation and corporate venturing.

ORCID ID: orcid.org/0000-0002-6009-9060

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