

## **Predicting the Effect of Intellectual Capital, Social Capital, and Resource Efficiency on Entrepreneurship Competitiveness: Evidenced from All Income Level Countries**

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### **Abstract**

*The aim of this explanatory study is to predict how social capital, intellectual capital, and resource efficiency would affect entrepreneurship competitiveness. Five-year available data from two sources were used (2015-2019). Data for resource efficiency, social capital, and intellectual capital were obtained from the Global Sustainable Competitive Index, which has been organized by SolAbility Sustainable Intelligence. Data for entrepreneurial competitiveness were taken from the Global Entrepreneurship Index. 71 countries were ultimately chosen after the two data sources were aligned to identify those with data adequate for the study from both sources. Researchers further classified the targeted countries as Low-Middle income (37 countries) and High Income (34 countries) to check their performance differences. This means that low, lower-middle, and upper-middle are all included in one category because the performance gap among them is insignificant and are referred to as low-middle income for the sake of this study. Inferential statistics model were used to analysis the data. Independent-t-test model was used to compare the performance of study variables between categorized countries. To explain the hypothesized influence of the predictors on entrepreneurship competitiveness, multiple linear regressions model (OLS) was used. Assumptions tests were checked before running the model. The finding of independent-t-test shows that there is statistically significant performance difference between the high income and low-middle income countries in terms of entrepreneurship competitiveness, social capital, and intellectual capital. Regression analysis result shows that the independent variables predict 58.6 % of the variance in the outcome variable. From the three predictors, social capital and intellectual capital have their own statically significant influence on entrepreneurship competitiveness. Thus, working on these variables up to the standard application can bring incremental competitive capacity for entrepreneurship. The researchers believe that the study is of significant importance to policymakers, program developers, entrepreneurs, researchers since it provides useful insight on how the predictors influence entrepreneurship competitiveness.*

**Key Words:** *Entrepreneurship Competitiveness, Social Capital, Intellectual Capital, Resource Efficiency, Low-Medium Income Countries, High Income Countries*

## **1. Introduction**

Sustainable development and entrepreneurship are interwoven multilevel phenomena that link social, environmental, and economic elements between entrepreneurial processes, market shifts, and significant economic progress. Regardless of their level of economic development, all countries have long been concerned with entrepreneurship and sustainable development as their top priority agenda. It has been a top priority to lessen the strain that unemployment, poverty, and social instability are putting on all low-income and some middle-income countries. High-income nations pay special emphasis on ensuring that their development is running sustainable. Politicians, decision-makers, and people are concerned not only with bringing in new entrepreneurs but also with ensuring the economy's steady growth. The research community has also been impacted by this steadily rising interest in entrepreneurship as a method of problem-solving and development (Audretsch, 2012).

Numerous entrepreneurial studies on various entrepreneurship-related topics have been carried out at various times. The issues are largely categorized as the entrepreneurial essence (Cieslik, 2017; Stevenson & Jarillo, 1990; Baumol & Schilling, 2008), the entrepreneurial environment, and the entrepreneurial activity's economic and social contribution (DemirUslu & Kedikli, 2019; Meyer & de Jongh, 2018; Parker, 2009; Valliere & Peterson, 2009). In order to better comprehend and explain the study, it is necessary to update the stated research dimensions.

To help society understand the illusive idea of entrepreneurship, numerous studies have been carried out. It has been the focus of heated discussion, and over time, several researchers from various fields have given it varied definitions. It is the act of innovation and execution of change through the use of a novel combination of resources, to name a few from the modern era of Schumpeterian (Bygrave & Zacharakis, 2011). It examines how, by whom, and with what opportunities goods and services are discovered (Shane & Venkataraman, 2000). It is an active process of invention, vision, and transformation (Kratko & Hodgett, 2004). Entrepreneurship, according to Bosma (2013), is any endeavor to start a new business or new initiatives, such as self-employment, a new business organization, or the growth of an existing business. Entrepreneurship, according to Drucker (1985), Barot (2015), Chang and Wyszomirski (2015), and many others, is the process of starting new enterprises or developing innovative ways to run ones that already exist. This is done by looking for and seizing chances (Cieslik, 2017; Stevenson & Jarillo, 1990; Baumol & Schilling, 2008). Entrepreneurship in the broad sense refers to the process of conducting business globally in innovative ways in response to globalization. These have led to the conceptualization of entrepreneurship in this study as the process of starting a new business and breaking into the formal local and international market.

The other research looked at the economic and social impact of entrepreneurship and came to the conclusion that it has a significant impact on long-term economic growth. Both theoretical and empirical investigations provide strong evidence for this reality. It promotes economic expansion by bringing fresh innovation to both national and international markets (Audretsch, 2002; Valliere & Peterson, 2009). Although economic growth has a significant impact on the emergence of entrepreneurship (Sabella, Farraj, Burbar, & Qaimary, 2014; Casares, 2018), it also creates jobs, boosts gross domestic product (GDP), reduces poverty, and improves the welfare of the entire society (Burke, 2011; Ivanovi-Djuki, Lepojevi, & Stevanovic, 2018). Currently, the influence that

entrepreneurial people can have on the entire planet is astounding. Today's life solution technologies are sourced from entrepreneurs who have cross bordering visions and performances.

Despite the fact that all nations with varied economies are motivated by and interested in entrepreneurship's socioeconomic advantages, the level of entrepreneurship competitiveness among them differs substantially for a variety of reasons. To mention few practical differences, according to the 2022 global entrepreneurship Index (GEI) which ranks nations with their relative performance scores on entrepreneurship ecosystem vitality using performance indicators, Ethiopia, Ghana, and South African from African countries stood at a dismal 111<sup>th</sup> (17.2), 91<sup>th</sup> (21.6), 58<sup>th</sup> (31.6), and 88<sup>th</sup> (22.4) respectively out of 137 countries. From Asian countries India, Philippines, Indonesia, and Sri-Lanka stood 78<sup>th</sup> (25.1), 86<sup>th</sup> (23), 75<sup>th</sup> (26), and 101<sup>th</sup> (17.1) respectively. From European Countries France, Germany, Denmark, and Spain stood 14<sup>th</sup> (67.1), 15<sup>th</sup> (66.1), 4<sup>th</sup> (79.3), and 31<sup>th</sup> (46.9) respectively. The United States of America stood first with five years average score of 86.8. Thus, these significant differences in entrepreneurship ecosystem ranks with scores between randomly selected countries indicate that there are indeed pressing issues behind this performance difference.

Linked to the aforementioned, the World Bank's Doing Business studies (2020) give a general picture of how entrepreneurship is impacted by regional variations in political and economic contexts. Another important factor is a nation's culture and its people's apparent desire to launch their own firms, which is social capital. The other factor that is thought to affect entrepreneurship competitiveness is intellectual capital (Bontis, 1998). It is the business people's intelligence that includes traits like the entrepreneurs' beliefs, attitudes, aptitudes, know-how, abilities, creativity, motivation, and commitment which are the result of partly differences in the administration of the educational systems. According to the research done by Acs, Szerb, and Autio (2014), what promotes entrepreneurial competitiveness is the connection between people's entrepreneurial attitudes, abilities, and ambitions. A policy report by Florian (2015) conducted in Europe highlighted how making efficient and effective use of the resources at hand could lead to competitive differences between nations.

These all the mentioned factors could be the causes of entrepreneurship competitiveness. However, some of these studies were done a decade ago, so their findings are less likely to be indicative of the current and the future, while others point to general economic conditions and political issues as the root causes of the disparity in entrepreneurship that has been occurring among countries with various economies. Even others like Acs, Szerb, and Autio (2014) stress individual level factors like entrepreneurial mindset and skills are keys to success. The missing research agenda is thought to be how disparities in resource management, social and intellectual capital creation and usage at macro level lead to disparities in entrepreneurship competition among nations.

Thus, using data from the Global Sustainable Competitive Index (GSCI) organized by SolAbility Sustainable Intelligence (2022) and Global Entrepreneurship Index (2022), the study seeks to close the aforementioned gap by targeting countries from all income economies. To this end, the study first characterized the data distribution for the targeted variables, then assessed whether or not the distribution differs significantly between low-medium countries and high-income countries, and

finally, the study looked at how the targeted parameters are affecting entrepreneurship competitiveness.

The results of this investigation will add more to the amount of knowledge already available. To be more explicit, there is a huge surge in demand for new business entry into their economy on the part of policymakers and program developers for entrepreneurship. This requirement compels them to learn the details of how the targeted variables impact their entrepreneurial endeavors. In order to provide a framework for a policy that lays the groundwork for future orientations, they can eventually benefit from this study's improved understanding of the current situation. Other researchers are anticipated to share a number of the study's fundamental concepts. They can use the study's findings to conduct more efficient empirical investigations using information about how those characteristics affect entrepreneurship, particularly in the formal sector. By highlighting various aspects of resource, social, and intellectual capital, the study will assist both current and aspiring entrepreneurs in strengthening their desire to engage in and grow their entrepreneurial activities. These elements could have a favorable or bad impact on their business. That depends on how proactive the key players are with them. As a result, the study will be useful to these entrepreneurs as a source of knowledge.

## **2. Literature Review**

### **Theoretical relationship among the study variables**

Social capital, intellectual capital, efficiency in using resources, and competitiveness of entrepreneurship are the study's variables. Several theories have been put forth by academics to account for the connection. These ideas have roots in anthropology, sociology, psychology, management, economics, and sociology.

The phrase "social capital" refers to the sum of the "actual and potential resources inherent within, accessible through, and generated from the network of relationships owned by an individual or social unit (Nahapiet and Ghoshal, 1998; Wang and Chen, 2013). Youndt and Snell (2004) define social capital as the strength of social links that can be used to support action as well as a group exchange of information. Social capital was first used by sociologists to express how having relationships with neighbors, friends, coworkers, and family may help people increase their social capital and wealth (Burt, 1997). Social capital, according to Jacobs (2016), is a relationship that has grown through time and forms a strong basis for group trust, cooperation, and collective action. The social elements of entrepreneurship, according to Castano (2015), are explained by the sociological theory of entrepreneurship. An entrepreneur may have a well-established company that meets all customer expectations if they take into account all social factors, including social taboos, conventions, culture, and other religious beliefs. Entrepreneurs are a crucial part of a wider social network structure that makes up their opportunity structure (Clausen, 2006). According to Shane and Eckhardt (2003), an individual could be able to see an entrepreneurial opportunity but may not have the social ties necessary to turn the chance into a new company venture. Stronger social ties to resource providers speed up the acquisition of resources and enhance the chance of opportunity exploitation, according to the literature on this subject. It is believed that having access to a wider social network may help solve this issue (Aldrich & Zimmers, 1986). Prasetyo,

Setyadharma, and Kistanti (2020) found that social capital competencies play a significant role in boosting entrepreneurial competitiveness of nations and suggested that focusing on social capital can raise the level of entrepreneurship competition. A study by Doh and Zolnik (2011) on the same topic demonstrates the close connection between social capital and entrepreneurship. A study done in the Visegrad nations (Poland, the Czech Republic, Slovakia, and Hungary) by Spirikova, Caganova, & Bawa (2015) demonstrates that the social capital can be understood not only as one of the most crucial elements in the success of entrepreneurial subjects but also as a significant source of competitive advantages.

*Hypothesis: Social capital development has statistically significant predicting effect on entrepreneurship competitiveness among the targeted countries.*

The cultural model of entrepreneurs is related to anthropological entrepreneurship theory. Anthropologists examine how people have changed over time. This makes them adept observers of society, and as a result, they advise entrepreneurs to take into account social and cultural factors in order to establish a successful venture (Baskerville, 2003). According to the cultural entrepreneurship paradigm, one's culture has an impact on new ventures. Cultural norms influence entrepreneurial attitudes like inventiveness, which influence behavior related to venture development. Individuals' attitudes and behaviors are influenced by their ethnicity and their culture reflects specific ethnic, social, economic, ecological, and political intricacies (Mitchell, Smith, Morse, Seawright, Peredo, & McKenzie.2002).

The other factor that is thought to affect entrepreneurship competitiveness is intellectual capital. It is the business people's intelligence (Bontis, 1998). It includes traits like the entrepreneurs' beliefs, attitudes, aptitudes, know-how, abilities, creativity, motivation, commitment, loyalty, resolve, knowledge, proactivity, leadership skills, adaptability, learning capacity, behavior, agility, and tendency for taking risks (Bozbura, 2004; Cabrita and Bontis, 2008; Chien and Chao, 2011). All of the characteristics are embedded in each individual entrepreneur and flow into one another as a result of practice, training, sharing of experiences, and education. Ultimately, they take on the characteristics of a specific society or country. Theories are at the foundation of intellectual capital. In psychological theories, the level of analysis is the individual (Landstrom, 1998). These concepts strongly emphasize the entrepreneurial traits that feed the aspiration for success that motivates entrepreneurs to succeed. The opportunity-based theory was anchored by Drucker (1985). He asserted that "the entrepreneur continually seeks for change, responds to it, and employs it as an opportunity" in his theory of entrepreneurship. A comprehensive conceptual foundation for entrepreneurship research is provided by an opportunity-based approach (Shane, 2000). An opportunity can be associated with technology, politics, legal, or competitors.

*Hypothesis: Intellectual capital development has statistically significant predicting effect on entrepreneurship competitiveness among the targeted countries.*

Availability of resources and efficient utilization of them are the other considered dimension to make entrepreneurship competitive. This variable is linked to resource based theory of entrepreneurship. According to the resource-based theory of entrepreneurship, founders' access to resources is a key indicator of opportunity-based entrepreneurship and new venture growth (Alvarez & Busenitz, 2001). Financial, social, and human resources are significant, according to

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this viewpoint (Aldrich, 1999). Thus, having access to resources makes it easier for a person to recognize and seize upon chances (Davidson & Honing, 2003). Views fall under the heading of resource-based entrepreneurship theories: financial, social, and human capital. Thus, access to resources enhances the individual's ability to detect and act upon discovered opportunities (Davidson & Honing, 2003). As mentioned above, financial, social, and human capital represent three classes of views under the heading of resources-based entrepreneurship theories. According to this notion, entrepreneurs have resources that are unique to themselves that make it easier for them to recognize new opportunities and gather fresh resources for a budding organization (Alvarez & Busenitz, 2001). Some people have better access to information and expertise than others, which makes them better equipped to spot and take advantage of chances (Shane & Venkataraman, 2000).

*Hypothesis: Resource intensity has statistically significant predicting effect on entrepreneurship competitiveness among the targeted countries.*

The innovativeness and productivity of a country are measured by its entrepreneurial competitiveness. Both innovation and economic theories of entrepreneurship depict this outcome variable. Innovation theory asserts that entrepreneurs are distinguished from other business person by their capacity for creative problem-solving and insight. Joseph Schumpeter, one of the finest economists, developed the well-known innovation theory that altered the viewpoint of the entrepreneur (Parker, 2012). According to this theory, businesspeople add their own originality and ingenuity to the fixed economy, bringing it to a new level of growth. Schumpeter also claimed that entrepreneurs contribute to innovation by reducing the cost of production and by boosting the demand for certain products. The economic theory of Richard Cantillon asserts that an entrepreneur fills the duties of both "producers" and "exchangers," believing that the economy is one of the sectors influenced by entrepreneurship. The supply chain of raw materials that are acquired and turned into completed goods for consumers is significantly impacted by an entrepreneur's actions.

The study employed three measuring indices from SolAbility Sustainable Intelligence to compare the competitiveness of various nations in terms of resource intensity, social capital, and intellectual capital (2022). Resource Intensity Competitiveness Scores are a measure of operational competitiveness in an environment where resources are limited. They are based on how effectively resources are used. The potential to create income and jobs through innovations in globally integrated marketplaces is measured by intellectual capital competitiveness scores. It covers metrics like employment, research and development performance indicators, infrastructure investment levels, and education levels. The social stability and overall well-being of the population, whether perceived or actual, make up a country's social capital. Social capital produces social coherence and a certain degree of consensus, which in turn creates a stable environment for the economy and guards against over-exploitation of natural resources. It is reflected in factors like income equality, resource equality, and gender equality, access to health care, violent crime, violent conflicts, individual happiness, and satisfaction with public service.

Two main tactics are involved to measure entrepreneurs competitiveness. The division is between metrics focused on the quality elements of entrepreneurship and quantity-type indices of

entrepreneurial activity. Quantity type (or output) indicators monitor the incidence of new enterprises or self-employment entry within populations. These measures define entrepreneurship as starting a new business organization or going into self-employment. These output indicators were modeled using the Total Entrepreneurial Activity (TEA) index from the Global Entrepreneurship Monitor (GEM) (Reynolds, Bosma, Autio, Hunt, De Bono, Servais, Lopez-Garcia, & Chin. 2005); the World Bank's Entrepreneurship Survey (World Bank 2011), and the Kauffman Index of Entrepreneurial Activity (KIEA), which counts the number of adult non-business owners who launch a new venture. GEI also measures entrepreneurship based on multidimensional views of entrepreneurship. The measures include both qualitative and quantitative aspects of entrepreneurship. GEI measurement is based on pillars that are related to the concept of a national system of entrepreneurship. Three latent indices were used by GEI to measure entrepreneurship. The indices are aspirations, aptitudes, and attitude. Opportunity perception, startup skill perception, risk acceptance, getting to know entrepreneurs through networking, perception of corruption, and cultural support make up the attitude index. Startup skills, technology observation, human capital development, and competitive skill serve as observed variables of ability. Product innovation, process innovation, and the rate of growth all serve as indicators of aspirations. This study directly used the quantified measures of these indices to compare entrepreneurship competitiveness between nations of different economic levels.

In conclusion, theories have been used to guide empirical research on entrepreneurship. The theories relevant to elements influencing the emergence and development of firms focused on entrepreneurship. The resources and mental composition of the business founder are connected to the majority of the elements. They are divided into three categories: human-related variables, social-related factors, and resource availability and effective use. Entrepreneurial competition among entrepreneurs in various environments may result from differences in these resources. This investigation drew from entrepreneurship theory which emphasizes the value of social capital, intellectual capital, and resource efficiency for entrepreneurship competitiveness. Theoretically, all of these variables may be grouped together under the headings of resource availability and efficient utilization, attracting and fostering intellectual capital, social capital, and the prevalent governance style of a specific country. This study intended to explain the relationship between sustainable competitiveness indices variables represented by (resource intensity, social capital, and intellectual capital) sources from SolAbility Sustainable Intelligence (2022) and entrepreneurship competitiveness indices sourced from GEI (2022).

### **3. Research Design and Methods**

#### **The Study Design and Approach**

This study employed both explanatory design to analyze the association between or among variables based on the given hypothesis and to characterize the actual performance of the underlie variables (Sekaran & Bougie, 2010; Kumar & Ranjit, 2005; Singh, 2006). Both quantitative and qualitative approaches were used. Utilizing quantitative data made it simpler for the researchers to draw a fair conclusion from the findings (Malhotra & Birik, 2000).

## **Sources of Data**

Data on each nation's entrepreneurial competitiveness was gathered from the Global Entrepreneurship Index (GEI, 2022). 137 nations are included under GEI along with their relevant entrepreneurship score information. The Global Sustainable Competitive Index (GSCI) developed by SolAbility Sustainable Intelligence (2022) provided the data for resource efficiency, social capital, and intellectual capital. GSCI is a non-profit initiative of Sol-Ability that focuses on sustainable intelligence using unconstrained, publicly available data. 71 countries were ultimately chosen after the two data sources were aligned to identify those with data adequate for the study from both sources. The raw entrepreneurship data from the source reveals that while high-income countries' performance appears to be higher, that of low-income, lower-middle-income, and upper-middle income level countries is evidently closer. Researchers further classified the targeted countries as Low-Middle and High Income Level for this study due to the performance gaps between them and the intent of the investigation. This means that low, lower-middle, and upper-middle are all included in one category and are referred to as low-middle for the sake of this study.

## **Variables Description**

Entrepreneurship score was measured using the data sourced from the Global Entrepreneurship Index. This report measures entrepreneurship performance around the world. This database provides five years annual data from 2015 to 2019 and includes cross-country time-series data (GEI, 2022). Entrepreneurship in this study context is any economic unit of the formal sector incorporated as a legal entity and registered in the country's registry. This performance indicator has long been widely used in literature to study entrepreneurship determinant factors (Dau & Cuervo-Cazurra, 2014). Entrepreneurship competitiveness among countries is considered in this study as the dependent variable.

In order to measure resource efficiency, social capital, and intellectual capital, the study used worldwide sustainable competitiveness indicators developed by SolAbility Sustainable Intelligence (2020). The main objective of this report is to measure the quality of sustainable indicators such as natural capital, quality of governance, resource intensity/efficiency, social capital, and intellectual capital. The last three were considered by this study as independent variables. The variables, their descriptions, measures and sources of data are depicted in the following table (1)



Table 1: Variable Descriptions

Variables	Description	Type
Entrepreneurship competitiveness	The five-year entrepreneurship ratio data was scored based on a country's entrepreneurship attitude, ability, and entrepreneurial aspirations. The last is considered as an outcome of the first two. It is represented by practical variables such as product innovation, process innovation, high growth and internationalization in terms exporting, licensing, opening new sales offices, and acquiring other businesses within and outside of its borders(GEI,2022)	Dependent variable(DV)
Resource efficiency	Present and past five years ratio data compiled from past and current availability and utilization capacity of countries reported in 2020 by SolAbility Sustainable Intelligence. Resources in this context refers natural, human, and financial regardless of how abundant or scarce they may be.	Independent variable(IV)
Social capital	Social capital is the total of a country's population's perceived or actual well-being and social stability. It is judged by how well it fosters social harmony and a particular degree of agreement, which in turn fosters a stable business climate and guards against resource overuse. SolAbility Sustainable Intelligence has historically produced comparative ratio statistics for nations (2022). It is reflected by observable factors like income equality, gender equality, crime control, violent control, freedom, and contentment with public services.	IV
Intellectual capital	Intellectual capital refers to a country's capacity to draw in, develop, and keep talent. It has been measured in terms of observable factors like as student enrollment, academic performance, school infrastructure, and research and development spending. It is evaluated based on how well it generates and maintains the population's wealth, jobs, and income. Based on a country's historical and present performance, comparative ratio data was developed by SolAbility Sustainable Intelligence (2022).	IV

### Method of Analysis

The study used inferential statistics because of the objective of the study to be achieved and the type of data. By dividing the targeted nations into Low-Middle and High Income categories, an independent t-test was utilized to compare their performance. To determine the strength of the correlations between the variables, Pearson correlation analysis model was utilized. To explain the hypothesized cause and effect relationship between the predictors and the result variable, the multiple linear regressions model (OLS) was used. Before using the regression, assumptions for linear regression were tested. The analysis was carried out with help of statistical Packages of Social Science (SPSS) version 25,

The model for multiple linear regressions is specified as follows.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon, \text{ where}$$

- Y: Entrepreneurship Competitiveness
- $x_1$  : Resource Efficiency
- $x_2$  :Social Capital

- $x_3$ : Intellectual capital
- $\beta_0, \beta_1, \beta_2,$  and  $\beta_3$  are coefficients of determination
- $\varepsilon$ : Error term

#### 4. Results and Discussion

A result section presents the findings obtained using inferential analysis models. The explanatory analysis was conducted using independent t-test and multiple linear regression models. The significance, importance, and applicability of the study's findings are demonstrated in the discussion section, and a conclusion was drawn as a result.

##### Comparing Countries (Low-Middle countries Vs. High income countries)

The statistical performance difference between nations in their two groups in terms of entrepreneurial competitiveness (ECOM), resource efficiency (RE), social capital (SC), and intellectual capital (IC) was examined using an independent sample t-test. The result includes group statistics and an independent sample test. The Group Statistics presents basic information on the findings of descriptive statistics. The group statistics in table (3) displays the category of the countries, the number of observations (N), the means, the standard deviation, and the standard error of the mean.

Table 3: Group Statistics Results

	Categories of Country	N	Mean	Std. Deviation	Std. Error Mean
ECOM	Low-Middle Income Countries	37	30.264	9.587	1.576
	High Income Countries	34	51.869	9.886	1.695
RE	Low-Middle Income countries	37	42.596	10.152	1.669
	High Income Countries	34	43.571	10.444	1.791
SC	Low-Middle Income Countries	37	42.545	6.196	1.019
	High Income Countries	34	54.608	5.185	0.889
IC	Low-Middle Income Countries	37	38.890	10.395	1.709
	High Income Countries	34	51.917	9.113	1.563

*ECOM (Entrepreneurship Competitiveness), RE (Resource Efficiency), SC (Social Capital), IC (Intellectual Capital)*

The average ECOM for Low-Middle and corresponding High-Income Countries, along with their standard deviations, are shown in the group statistics table (3) as (M = 30.264, SD = 9.587), and (M = 51.869, SD = 9.886), respectively. The average RE and the corresponding standard deviations are (42.596, SD=10.151) for Low-Middle income countries and (M=43.572, SD=10.444) for high income countries respectively. The average SC and the corresponding standard deviations are (42.545, SD= 6.196) for Low-Middle income countries and (M=54.608, SD=5.185) for high income countries respectively. The mean results of IC and the corresponding standard deviations are (38.890, SD=10.395) for Low-Middle income nations and (M=51.917, SD=9.113) for high income countries respectively.

At first appearance, there is a performance disparity between the indicated average outcomes. The t-test comparison analysis is used to determine if the difference is significant or not, and the results are shown in the following table (4).

### Independent sample t-test results

The independent t-test findings for each study variable are shown in line with their corresponding null (equal variance assumed) and alternative (equal variances not assumed) hypothesis in the independent sample t-test table (4).

Table 4: Independent sample t-test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval	
									Lower	Upper
ECOM	Equal variances assumed	1.069	.305	-9.345	69	.000	-21.605	2.312	-26.217	-16.993
	Equal variances not assumed			-9.333	68	.000	-21.605	2.315	-26.224	-16.986
RE	Equal variances assumed	.004	.951	-.399	69	.692	-.975	2.445	-5.853	3.903
	Equal variances not assumed			-.398	68	.692	-.975	2.44815	-5.860	3.910
SC	Equal variances assumed	1.626	.207	-8.854	69	.000	-12.063	1.362	-14.781	-9.345
	Equal variances not assumed			-8.921	68	.000	-12.063	1.352	-14.761	-9.361
IC	Equal variances assumed	.017	.896	-5.593	69	.000	-13.026	2.329	-17.672	-8.380
	Equal variances not assumed			-5.625	69	.000	-13.026	2.316	-17.646	-8.406

*ECOM (Entrepreneurship Competitiveness), RE (Resource Efficiency), SC (Social Capital), IC (Intellectual Capital)*

The difference between the ECOM scores for High Income Countries (M=51.869, SD=9.886) and Low-Middle Income Countries (M=30.264, SD=9.587) is significant;  $t(69) = -9.345, p=0.000$ . The null hypothesis is thereby disproved, and it is found that there are statistically significant performance disparities between the two categories. This means high income countries are relatively in a better entrepreneurship ecosystem performance position in developing favorable entrepreneurship mindset and ability to make their product and process innovation visible and viable. There is no statistically significant difference between the RE scores for high income nations (M=43.571, SD=10.444) and low-middle income countries (M=42.571, SD=10.151). As a result, the evidence is insufficient to rule out the null hypothesis. High income countries (M=54.608, SD=5.185) and Low-Middle Income countries (42.545, SD = 6196) have significantly different SC ratings;  $t(69) = -8.854, p=0.000$ . The null hypothesis is rejected as a result of this finding, and it is inferred that the development and use of social capital in the two categories differ significantly. High income countries (M=51.917, SD =9.113) and low-middle income countries (M=38.890, SD =10.395) have significantly different IC scores;  $t(69) = -8.921, p = 0.000$ . This result leads to the rejection of the null hypothesis and the conclusion that the development and application of intellectual capital for their competitiveness differ significantly.

### Correlation Analysis

Pearson correlation analysis was done among the variables with continuous data including the dependent variable to check the magnitude and direction of relationship among variables. It also indicates whether there is multicollinearity problem among independent variables to go for regression analysis. There are various suggested ways for determining the magnitude of correlation coefficients. Values in between are arbitrary and debatable, though most academics would probably agree that a coefficient of 0.1 indicates an insignificant relationship and  $> 0.9$  indicates

a very strong relationship. According to Hair, Babin, Money, and Sameoul's (2010) work, the cutoff points for correlation coefficients are described as follows: 0.91 to 1 is deemed "very strong," 0.71 to 0.9 is "strong," 0.41 to 0.7 is "moderate," 0.21 to 0.4 is "weak," and 0.01 to 0.2 is considered "very weak." This study based its interpretation of the data in table (5) on the aforementioned rule of thumb.

Table 5: Analysis of Person correlations

		ECOM	RE	SC	IC
ECOM	Pearson Correlation	1			
RE	Pearson Correlation	.024	1		
	Sig. (2-tailed)	.844			
SC	Pearson Correlation	.724**	-.012	1	
	Sig. (2-tailed)	.000	.923		
IC	Pearson Correlation	.670**	-.067**	.679**	1
	Sig. (2-tailed)	.000	.578	.000	

\*\**. Level (2-tailed), N=71. \*p < 0.05, \*\*p < 0.01,*

According to the correlation analysis results in table (5), social capital and intellectual capital are strongly correlated with entrepreneurship competitiveness at ( $r=.724$ ,  $p < 0.01$ ) and ( $r=.670$ ,  $p < .01$ ) respectively. Resource efficiency and entrepreneurship have insignificant correlation ( $r = .024$ ,  $r > .05$ ). The correlation results between the three predictor variables demonstrate that social capital has a moderately positive correlation with intellectual capital ( $r=.679$ ,  $p < .05$ ) and a very weak negative correlation with resource efficiency ( $r = -.012$ ,  $p > .05$ ). Resource efficiency and intellectual capital have weak and inverse relationship ( $r = -.067$ ,  $p > .05$ .) This suggests that major improvements in entrepreneurial competitiveness are linearly correlated with changes in social and intellectual capital. Additionally, the more strongly correlated the independent variables are, the more challenging it is to modify one without altering the others. It is difficult for the regression model to estimate the association between independent and dependent variables when the absolute values of correlation among or between independent variables exceed 0.8, according to Shrestha (2020). The result of correlation analysis result indicated in table (5) shows the issue of multicollinearity is not a problem in this investigation. Regression analysis can therefore be applied.

### Tests of Normality

Whether the continuous data for variables are normally distributed and suitable for linear regression analysis was covered in this section. Alternative approaches are available to guarantee this. Kolmogorov-Smirnov test and Shapiro-Wilk test are two of the most popular techniques. For sample sizes ( $n > 50$ ), the Kolmogorove-Smirnov test is chosen over the Shapiro-Wilk test (Mishra, Pandey, Singh, Gupta, Sahu, and Keshri,2019).When  $P > 0.05$ , the null hypothesis states that the data is normally distributed. Additionally, if a distribution's skewness or kurtosis test results are between the Z value of -1.96 and 1.96 at a confidence level of 95%, it is regarded as normal. The results of the normality test are shown in the table below (6)

Table 6: Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk			Skewness	Kurtosis
	Statistic	df	Sig.	Statistic	df	Sig.		
Resource Efficiency	.114	71	.024	.960	71	.022	1.133	1.165
Social Capital	.094	71	.200	.973	71	.129	0.709	1.55
Intellectual Capital	.048	71	.200	.991	71	.877	0.105	0.751

\*. This is a lower bound of the true significance. a. Lilliefors Significance Correction

Since there are more than 50 participants in this study, the Kolmogorov-Smirnov model is selected to test the normality. Except resource efficiency, the P- values of the result of the Kolmogorov-Smirnov normality test for all variables are greater than 0.05, as shown in table 6, and this leads to the conclusion that the data has an adequate normal distribution. Additionally, all variables' skewness and kurtosis test results fall within the recommended range of the Z-score Value of - 1.96 and 1.96. As a result, the null hypothesis is accepted, and it is concluded that the data are not out of the normal.

### Heteroscedasticity test

The Breusch-Pagan test is used to determine whether or not heteroscedasticity is present in the regression model. Here, the observed data's residual variation was evaluated for differences. According to Khaled, Lin, Han, Zaho, and Hao's (2019) study, there is no heteroscedasticity issue if the significant value is greater than 0.05. The idea holds that the residual value doesn't rise when the independent variable's values rise.

Table 7: Heteroscedasticity test

ANOVA(Analysis of Variance) <sup>a</sup>					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	12984.830	3	4328.277	.347	.791
Residual	835702.216	67	12473.167		
Total	848687.046	70			

a. Dependent Variable: ECOM), b. Predictors: (Constant), IC, RE, SC

The heteroscedasticity tests' F ratio in table (7) reveals whether or not the data have a problem with heteroscedasticity. The table's findings reveal that the value was  $F(3, 65) = .347, p(0.791) > 0.05$ . The finding supports that the null hypothesis is not rejected. This leads to the conclusion that the data are suitable for linear regression and that there is no heteroscedasticity issue.

## Regression Results

### Model Fitness Determination

The model summary table (8) shows the degree to which the predictors and dependent variable are associated. To assess how well the regression model fit the data, the table offers multiple correlation coefficient(R),  $R^2$ , adjusted  $R^2$ , and standard error of the estimate.

Table 8: Model summary results

Model	R	Model Summary		
		R Square	Adjusted R Square	Std. Error of the Estimate
1	.765	.586	.567	9.56550

- a. Predictors: (Constant), Intellectual Capital, Resource Efficiency, Social Capital  
 b. Dependent variable :Entrepreneurial Competitiveness

A good level of prediction between the independent and dependent variables is shown by the Multiple Correlation coefficient(R) of 0.765, as seen in the table (8). The percentage of the dependent variable's variance that the predictors can account for is known as the  $R^2$  (coefficient of determination). According to the coefficient of determination data, the three predictors accounted for 58.6% of the variance in the dependent variable, while the remaining 41.4% was due to variables other than those predicted by the model.

### Statistical significance of the model

The regression model's degrees of variability are revealed by the analysis of variance, which also serves as the foundation for tests of significance. The results in the ANOVA table measures how well the data fit the overall regression model The following table (9) shows its components, which are sum of squares, degree of freedom, mean square, F-value, and sign values.

Table 9: Analysis of variance (ANOVA)

Model	Sum of Squares	degree of freedom(df)	Mean Square	F	Sig.
Regression	8674.011	3	2891.337	31.600	.000
Residual	6130.423	67	91.499		
Total	14804.434	70			

- a. Dependent Variable: Entrepreneurship Competitiveness  
 b. Predictors: (Constant), Intellectual Capital, Resource Efficiency, Social Capital

According to the results in the table (9),  $F(3, 67) = 31.600, p(0.000) < 0.05$ , the three independent factors statistically and significantly predict the dependent variable. This indicates that the data fit the regression model well.

### Statistical significance of the Predictors

Statistical significance of each of the independent variables tests whether the unstandardized coefficients are equal to zero. That means for each of the coefficients,  $H_0: \beta = 0$  versus  $H_a: \beta \neq 0$  was conducted to investigate if each variable need to be in the model

Table 10: Coefficient table

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-23.290	8.327		-2.797	.007
Resource Efficiency	.074	.112	.052	.663	.510
Social Capital	.865	.187	.495	4.621	.000
Intellectual Capital	.418	.133	.338	3.143	.002

- a. Dependent Variable: Entrepreneurship Competitiveness

The above table (10) displays the t-value and corresponding p-value in the appropriate columns. According to the tests, resource efficiency ( $t = .663$ ,  $p = .510$ ) is not statistically significant predictor of entrepreneurship competitiveness. This result doesn't lead to the rejection of the null hypothesis. Social capital ( $t = .461$ ,  $p = .000$ ) and intellectual capital ( $t = .3143$ ,  $p = .002$ ) are statistically significant predictors of entrepreneurship competitiveness. Their results lead to the rejection of their respective null hypothesis and conclude that the development and application of both social and intellectual capitals creates significant competitiveness. The detailed of each is depicted in the estimated model Coefficient part as follows:

Predicted entrepreneurship competitiveness =  $-23.290 + 0.865$  (social capital) +  $0.418$  (intellectual capital) is the standard version of the equation to measure entrepreneurship competitiveness. Resource efficiency is omitted from the model since its contribution to predict the dependent variable is insignificant

When all other independent variables are held constant, each unstandardized coefficient in the model shows how much the dependent variable varies with each independent variable. In other words, there is a 0.865 increases in entrepreneurship competitiveness for every unit rise in social capital. There are 0.418 gains in entrepreneurship competitiveness for every one unit rise in intellectual capital development. There is an insignificant (0.074) increases in entrepreneurship competitiveness for every unit rise in the resource efficiency if it is included in the model.

The stronger predicting effect of social capital is supported by social and entrepreneurship studies (Clausen, 2006; Shane & Enkhardt, 2003; Aldrich & Zimmers, 1986) by stating an entrepreneur may have a well-established company that meets all customer expectations if they take into account all social factors, including social taboos, conventions, trust culture, and social ties. These social factors are entrepreneurs' growth opportunity structures. Stronger social ties to resource providers speed up the acquisition of resources and enhance the chance of opportunity exploitation, according to the literature on this subject.

Intellectual capital is the other strong predictor of entrepreneurship competitiveness in this study. When we talk the strong aspect of intellectual capital, it does mean the business people's intelligence (Inkinen .2015; Wang & Chen, 2013). It is characterized by traits like the entrepreneurs' beliefs, attitudes, aptitudes, know-how, abilities, creativity, motivation, commitment, loyalty, resolve, knowledge, proactivity, leadership skills, adaptability, learning capacity, agility, and tendency for taking risks (Bozburu, 2004; Cabrita and Bontis, 2008; Chien and Chao, 2011). All of the characteristics are embedded in each individual entrepreneur and flow into one another as a result of practice, training, sharing of experiences, and education modalities. Ultimately, they take on the characteristics of a specific society or country. Countries with such strong entrepreneurship education and training modalities are outshining in their intellectual capital attraction and development and so do in their entrepreneurship competitiveness.

Resource efficiency is the least predictor of entrepreneurship competitiveness in this study. When we mean resource efficiency, it does mean the ability of a nation to manage available resources (natural resources, human resources, and financial resources) efficiently regardless of whether the resource is scarce or abundant. Theoretically, the higher efficient use of resources the better new venture growth dynamics (Alvarez & Busenitz, 2001; Davidson & Honing, 2003; Shane & Venkataraman, 2000). However, the data used in this study shows weak contribution of resource

efficiency in predicting entrepreneurship competitiveness differences between the two categories of nations.

## **5. Conclusion and Recommendations**

The specific objectives of the study was to test whether the distribution of the study variables differs significantly between low-medium and high income countries, and to explain how each independent variable( social capital, intellectual capital, resource intensity) are affecting entrepreneurship competitiveness. The data for the predictor variables are obtained from the SolAbility-organized Global Sustainability Competitive Index (GSCI), whilst the data for entrepreneurship obtained from the Global Entrepreneurship Index (GEI). Because of the nature of the data, countries are categorized in to low-middle and high income categories by the researchers. Independent-t-test, and multiple linear regression models were used for analysis.

Independent-t-test statistics result led to conclude that there is statistically significant mean score difference between high and low-middle income countries in entrepreneurship competitiveness, in social capital, and in intellectual capital, whereas, the mean score difference between these two categories in resource intensity is statistically insignificant.

In order to investigate how independent variables influence entrepreneurial competitiveness, a multiple linear regression model was used. The results of the multicollinearity, normality, and hetetoscedasticity assumption test lead to the conclusion that the data were fit for running a regression model. The coefficient of determination result of the three predictors together in the regression analysis accounted for 58.6% of the variance in the dependent variable (entrepreneurship competitiveness), while the remaining 41.4% was due to variables other than those predicted by the model. The results of social capital and intellectual capital added statistically significant prediction capacity to the model with different degrees of contribution, whereas resource efficiency has an insignificant contribution to predict differences in entrepreneurship competitiveness.

The stronger the social capital in a given country, the greater the difference in inviting and actualizing the intention, creation, and development of entrepreneurship. When we say the strength of social capital, it does mean social stability and the entire population's actual or perceived well-being, which fosters social cohesiveness and a certain degree of consensus and, in turn, creates a stable environment for the entrepreneurship that forms the basis of a nation's economy.

Stronger intellectual capital development, including the entrepreneurs' beliefs, attitudes, aptitudes, know-how, abilities, creativity, motivation, commitment, loyalty, resolve, knowledge, proactivity, leadership skills, adaptability, learning capacity, agility, and tendency to take risks, can create a difference between countries in entrepreneurship development. All of the characteristics are embedded in each individual entrepreneur and flow into one another as a result of practice, training, sharing of experiences, and education. Thus, these are demanding the individual personality effort and system that enable successful entrepreneurs.

The findings of this inquiry will increase the body of currently known information. Many of the key ideas from the study are predicted to be shared by other scholars and policy makers. They can use the study's conclusions to carry out more fruitful empirical studies or policy by learning how



these factors influence entrepreneurship. The study will help both present and potential entrepreneurs in boosting their willingness to engage in and increase their entrepreneurial activities by highlighting various areas of resource, social, and intellectual capital.

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### **Authors' Contributions**

A collective effort produced the study. The introduction and study methodology were completed by Dr. Kenenisa Lemi. The literature review, data management, analysis, and writing up portions of the study were all completed by Dr. Mekonnen Bogale. Checking overall validity of the study, conclusion, and implications were completed by Dr. Reta Megersa. All authors have read and approved the final draft.

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### **Conflicting Interests**

The College of Business Economics at Jimma University granted authorization for the study to be carried out. The College expects the researchers to publish in journals that have acquired recognition internationally. One of those that has a connection to Jimma University is Springer. The authors have disclosed that they have no competing interests.

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