

# Trade Logistics and Entrepreneurial Ecosystems Nexus: A Global Empirical Analysis Just Before the COVID-19 Pandemic

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**Abstract:** *The study analyzes the empirical relationship between trade logistics' affability, measured as the Logistics Performance Index, and entrepreneurial ecosystems, measured as the Global Entrepreneurship Index Scores, at a worldwide level just before the COVID-19 pandemic. Specifically, we explore the empirical implications of friendly trade logistics to the entrepreneurial conditions of 123 economies during the year 2018. We designed the study as a cross-sectional correlational quantitative research. We got the research data from the World Bank's Development Indicators and the Global Entrepreneurship Index report of 2018. The study results indicate a significant positive relationship between the trade logistics' friendliness and entrepreneurial ecosystems. The study highlights trade logistics' friendliness as a major factor to consider among the criteria for gauging entrepreneurial ecosystems.*

**Keywords:** *Entrepreneurial-Ecosystems, Logistics-Performance-Index, Trade-Logistics*

## I. Introduction

### 1.1 Context and Motivation of the Study

Good trade logistics increasingly facilitate and benefit enterprises everywhere in the world in various ways that include enabling the movement of vital materials, such as inputs and finished goods, which are necessary for the growth of their enterprises [1]. Therefore, good affability of trade logistics is possibly one of the basic requirements for establishing auspicious entrepreneurial ecosystems in every economy of the world. This assumption is substantiated by a comparative overview of the recent Logistics Performance Index (LPI) - an excellent indicator of logistics' affability for all economies in the world [2], and the Global Entrepreneurship Index (GEI) Scores, which are suitable gauges of entrepreneurial ecosystems for 137 economies [3]. Generally, economies with high affability of logistics, apparently have better entrepreneurial ecosystems than their counterparts [2] [3]. Several previous studies have, indeed, highlighted the importance of trade logistics in the operations of entrepreneurs [4] [5] [6]. However, we have not identified any empirical study that underscores the affability of trade logistics as a major determinant of entrepreneurial ecosystems at a global level in the recent past. Therefore, this study is a novel analysis of the empirical relationships between the logistics' affability, measured as LPI, and the entrepreneurial ecosystems, computed as GEI scores, at a global scale in the recent past.

### 1.2 Research Problem Statement

Although good trade logistics significantly and progressively facilitate enterprises in various ways everywhere in the world [1], there is no study that underscores the affability of trade logistics as a key determinant of the entrepreneurial ecosystems at a global level in the recent past. A casual overview of the Logistics Performance Index [2] and the Global Entrepreneurship Index scores [3] indicates that generally economies with high affability of trade logistics seemingly have better entrepreneurial ecosystems than their counterparts. Indeed, several earlier

studies have highlighted the increasing and worldwide importance of trade logistics in enabling entrepreneurs' operations [4] [5] [6]. However, no known previous study specifically analyses and highlights the empirical significance of trade logistics' affability in shaping the entrepreneurial ecosystems of all economies of the world in the recent past. Thus, this study focuses on a novel and topical analysis of the empirical relationship between the affability of trade logistics, measured as LPI, and the entrepreneurial ecosystems, computed as GEI scores, for all the economies in the world during the year 2018.

### **1.3 Purpose and Objective of the Study**

The purpose of the study is to analyze the empirical relationships between the affability of trade logistics (measured as LPI) and the entrepreneurial ecosystems (measured as GEI scores) of all the economies in the world in the recent past.

The specific objective that guides the study is: to find out whether there is a statistically significant empirical relationship between the LPI and the GEI scores of all the sampled economies for the year 2018.

The specific objective stated above transforms into the following key research question: *Is there a statistically significant empirical relationship between the LPI and the GEI scores of all the sampled economies for the year 2018?* This key research question is addressed simultaneously with the following null hypothesis -  $H_0$ : *There is no statistically significant empirical relationship between the LPI and the GEI scores of all the sampled economies for the year 2018.*

### **1.4 Contribution and Significance of the study**

The study presents empirical facts and figures that can pragmatically inform and guide the development of policies for the improvement of entrepreneurial ecosystems at national, regional, and worldwide levels.

The study presents concrete guidance for all economies, and especially the economies with unfavorable entrepreneurial ecosystems, on how to improve their respective entrepreneurship environments. The study also divulges the undesirable effects of adverse entrepreneurial ecosystems on the establishment and prosperity of entrepreneurs and their consequential advantages such as increased employment opportunities in every country on the globe.

The study also provides a concrete basis for research evolution, strategy formulation, and academic works that are particularly related to logistics management and entrepreneurial ecosystems.

### **1.5 Contextual and Operational Definitions of Core Terms**

The core terms of the study are contextually and/or operationally defined as follows:

*Entrepreneurship*: Entrepreneurship is contextually defined as "the dynamic, institutionally embedded interaction between entrepreneurial attitudes, entrepreneurial abilities, and entrepreneurial aspirations by individuals, which drives the allocation of resources through the creation and operation of new ventures." This definition is adopted from the Global Entrepreneurship Development Institute (GEDI) [3].

*Entrepreneurial ecosystem*: The entrepreneurial ecosystem refers to the increasingly complex and interdependent factors that influence innovative, productive, and rapidly growing new ventures. The entrepreneurial ecosystem is not just the abundance or endowment of particular key factors of production or resources that shape economic performance, it is also the manner in which that economic activity is configured, or organized, within geographic

space. They consist of multiple interactive elements, all of which need to be in sync in order for innovative and high-growth firms to prosper [3]. Entrepreneurial ecosystem is also defined as the elements – individuals, institutions, or organizations – external to the individual entrepreneur that is conducive to, or inhibitive of, the choice of a person to become an entrepreneur, or the probabilities of her or his success following launch. Individuals and organizations representing these elements are referred to as entrepreneurship stakeholders [7]. In brief, in the context of this study, the entrepreneurial ecosystem refers to the environmental (macro-economic, social-cultural, political-legal, physiological, and technological) factors that influence the growth and prosperity of enterprises in a country or region.

*Global Entrepreneurship Index (GEI) Score:* The GEI measures the affability and dynamics of entrepreneurial ecosystems at a national, regional, and global level [3]. The GEI score is, thus, a measure of both the affability of entrepreneurship in a country, for 137 countries, and the extent and depth of the supporting entrepreneurial ecosystem. The GEI defines country-level entrepreneurship as the National System of Entrepreneurship that constitutes the dynamic, institutionally embedded interaction between entrepreneurial attitudes, abilities, and aspirations, by individuals, which drives the allocation of resources through the creation and operation of new ventures” [3]. The GEI strives to measure only productive entrepreneurship that both creates wealth and is scalable. GEI proposes five levels of index building as it includes the GEI super-index measuring entrepreneurship at the country level, three sub-index (attitudes, abilities, and aspirations), 14 pillars, 28 variables, and 49 indicators. All pillars contain an individual and an institutional variable component. Therefore, the GEI score represents the performance of the involved countries in terms of the affability of their entrepreneurial ecosystem. In other words, the Global Entrepreneurship Index Score is an important tool to help countries accurately assess and evaluate their respective ecosystems [3]. In brief, the GEI is an annual index that measures the health of entrepreneurship ecosystems in 137 economies. It then ranks the performance of these against each other to provide a picture of how each economy performs in both the domestic and international context.

*Logistics Performance Index (LPI):* The Logistics Performance Index is an interactive benchmarking tool established by the World Bank to assist countries in identifying the challenges and opportunities they face in their performance on trade logistics and what they can do to improve their performance [2]. The LPI focuses on measuring the trade and transport facilitation friendliness of a particular country, and in so doing, helping them to identify key barriers to, and opportunities for, improvement. The LPI summarizes the performance of over 155 countries through six dimensions that capture the most important aspects of the logistics environment- namely: 1. Customs; efficiency of the customs clearance process. 2. Infrastructure; affability of trade and transport-related infrastructure. 3. International Shipments; ease of arranging competitively priced shipments. 4. Logistics Affability; competence and affability of logistics services. 5. Tracking and Tracing; ability to track and trace consignments. 6. Timeliness; the frequency with which shipments reach the consignee within the scheduled or expected time (Jaramillo *et al.*, 2018). The LPI 2018 allows for comparisons across 160 countries [2]. The LPI is grounded on a worldwide survey of operators on the ground (global freight forwarders and express carriers), providing feedback on the logistics “friendliness” of the countries in which they operate and those with which they trade. They combine in-depth knowledge of the economies in which they operate with informed qualitative assessments of other economies where they trade and experience of global logistics environment. Feedback from operators is augmented with quantitative data on the performance of key components of the logistics chain in the country of work (Rankings, 2018). The LPI comprises, therefore, both qualitative and quantitative measures and helps form profiles of logistics friendliness for these countries. It measures performance along the logistics supply chain within a country and offers two different positions, namely: international and domestic. The International LPI provides qualitative evaluations of a country in six areas by its trading partners—logistics professionals working outside the country; while the Domestic LPI presents both qualitative and quantitative assessments of a country by logistics professionals working inside it. It includes detailed information on the logistics environment, core logistics processes, institutions, and performance time and cost [2].

*Trade logistics:* This refers to the management process that includes the entire flow of goods and information between suppliers and companies and between customers and companies. It also includes the internal flow of goods. It is, thus, a network of services that support the physical movement of goods, trade across borders, and commerce within borders. It comprises an array of activities beyond transportation, including warehousing, brokerage, express delivery, terminal operations, and related data and information management. The main goal of trade logistics is to ensure the availability of goods at the point of sale (Jaramillo *et al.*, 2018).

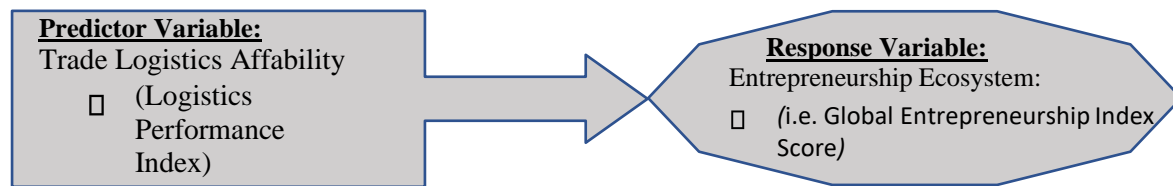
## **1.6 Conceptual and theoretical framework**

The conceptual and theoretical framework of the study emerges from a diagnostic and comparative overview of the global LPI presented as Development Indicators presented by the World Bank and the GEI scores presented by the Global Entrepreneurship Development Institute for the year 2018. The theoretical framework is also considerably substantiated by previous studies and works on the relationship between trade logistics and entrepreneurial ecosystems [2][8][9][10][11][12].

Several academic researchers have investigated entrepreneurial ecosystems and the factors that influence these ecosystems. Spigel (2017) suggests that ecosystems require cultural attributes (a culture of entrepreneurship and histories of successful entrepreneurship), social attributes that are accessed through social ties (worker talent, social networks, investment capital, and entrepreneurial mentors), and material attributes grounded in a specific place (physical infrastructure, universities, government policies, open local markets and support services [13]. Stam (2015) distinguishes between framework conditions of ecosystems (physical infrastructure, market demand, formal institutions, and culture,) with systematic conditions of networks, finance, leadership, knowledge, talent, and support services [14. These observations indicate that entrepreneurial ecosystems are influenced by various factors, which possibly include trade logistics.

Cavallo *et al.* (2019) observe that in order to explain or create sustainable entrepreneurship, one isolated element in the ecosystem is rarely sufficient [7]. In regions that have extensive amounts of entrepreneurship, including Silicon Valley, New York City, Boston, and Israel, many of the ecosystem elements are strong and typically have evolved in tandem. Likewise, the formation of these ecosystems suggests that governments or societal leaders who want to foster more entrepreneurship as part of economic policy must strengthen several such elements simultaneously. Nevertheless, recent research shows that government policy is often limited in what it can do to develop entrepreneurial ecosystems [15]. These observations justify the consideration of trade logistics as another significant determinant of the entrepreneurial environment. Isenberg (2010), based on cases from around the world, observes that entrepreneurs are most successful when they have access to the human, financial, and professional resources they need, and operate in an environment in which government policies encourage and safeguard entrepreneurs [16]. Such a description of the environment in which entrepreneurship tends to thrive implies that trade logistics, being a professional service, is probably among the basic components of a typical entrepreneurial ecosystem.

A worldwide comparative overview of the LPI and the GEI scores apparently shows that, generally, economies with high GEI scores have higher LPI than their counterparts. Thus, the conceptual framework of the study is derived from a supposition that the state of the entrepreneurial ecosystem, as shown by GEI scores, has a significant and positive explanatory (causal) relationship with the friendliness of trade logistics, as indicated by LPI for any country. Apparently, this relationship has not been analyzed in the recent past based on the geographical scope, units of analysis, and key research variables that stimulate this study. Consequently, the conceptual framework of the study is as shown in Fig. 1 below:



Source: Author's concept

**Figure 1. The Conceptual Framework**

Fig. 1 shows the relationships of the key variables that are conceptualized to be fundamental to the dynamics of the interrelationships which are analyzed in this study. The predictor and response variables shown in Fig. 1 are correspondingly derived from the Global Entrepreneurship Index report published by Global Entrepreneurship Development Institute (GEDI) and the *Development Indicators* published by the World Bank [2] [3].

## II. Methodology

The research is designed as a cross-sectional, desk-top, quantitative analysis that employs a triangulation of correlational, associational, hypothesis-testing, comparative approaches to investigate the empirical relationships between the friendliness of trade logistics (measured as LPI) and the entrepreneurial ecosystems (i.e. GEI scores) for all the economies in the World during 2018. The units of analysis are the sovereign economies as identified by the World bank during the year 2018.

Data on entrepreneurial ecosystems is drawn from the Global Entrepreneurship Index report published by the GEDI while data on trade logistics is derived from the *Development Indicators* that are presented by the World Bank as LPI of all economies in the world for 2018. Data for the year 2018 was preferred to that of subsequent years as the most recent referral statistics because of the impact of the Coronavirus/COVID-19 pandemic greatly disorganized the socio-economic status of most economies in the world. The main data for the study are principally quantitative.

The study population and universal sample size comprise 123 economies, which were purposively selected to cover all the economies in the world with the pertinent and complete data sets, in order to attain a comprehensive global comparative analysis of the key research variables for the year 2018.

The key research variables are measured precisely according to their respective sources. The GEI scores that serve as the criterion variable for the study are computed in exactly the same way as given by the Global Entrepreneurship Development Institute [3]. Likewise, the LPI, considered as the predictor variable is measured exactly as given by *Development Indicators* that are published by the World Bank for the year 2018 [2]. As explained by the World Bank, the international LPI is a summary indicator of logistics sector performance that combines data on six core performance components into a single aggregate measure. The six core components are 1) The efficiency of customs and border clearance, 2) The quality of trade and transport infrastructure, 3) The ease of arranging competitively priced shipments, 4) The competence and quality of logistics services, 5) The ability to track and trace consignments, and 6) The frequency with which shipments reach consignees within scheduled or expected delivery times. The LPI is constructed from these six indicators using principal component analysis (PCA), which is a standard statistical technique used to reduce the dimensionality of a dataset. In the LPI, the inputs for PCA are country scores averaged across all respondents who provide data on a given overseas market. Scores are normalized by subtracting the sample mean and dividing by the standard deviation before conducting the PCA. The output from PCA is a single indicator—the LPI—that is a weighted average of those very scores. The weights are chosen to maximize the percentage of variations in the LPI's original six indicators that are accounted for by the summary indicator. To compose the

international LPI, normalized scores for each of the six original indicators are multiplied by their component loadings and then summed. The component loadings represent the weight given to each original indicator in constructing the international LPI. As the loadings are similar for all six, the in-international LPI is close to a simple average of the indicators. Even though PCA is re-run for each version of the LPI, the weights remain very steady from year to year. There is, therefore, a high degree of comparability across the various LPI editions [2].

The validity and reliability of the study arise from using the most pertinent and authentic sets of empirical data that were systematically, studiously, conscientiously, and ethically assembled and corroborated by the GEDI and the World Bank, which are both dependable, professional, and ethical organizations. For instance, the GEI methodology, on which some of the data in this study is based, has been validated by rigorous academic peer review and has been widely published by reliable media such as *The Economist*, *The Wall Street Journal*, *Financial Times*, and *Forbes* among others [3]. However, several studies have noted that, due to the nature of the methodology of the LPI, where it is comprised of subjective answers of different logistics operators, it tends to be skewed and undervalues some countries with a statistically better logistics system [17]. Furthermore, studies have shown that the LPI is much more influenced by social, rather than economic factors [18].

Analysis of data was generally quantitative, in technique, using the Statistical Package for Social Scientists (SPSS) computer software to emerge with descriptive and inferential statistics. Being principally quantitative, the study is predominantly linked to the POSITIVISM research paradigm.

### **III. Presentation, Analysis, and Discussion of Results**

The research results are analyzed and discussed as descriptive and inferential (i.e. correlations and regressions) statistics, as presented below.

#### **3.1 Descriptive Statistics Results**

Descriptive statistics have been applied to show the relationships between the study variables and the results generally show that economies with comparatively high LPI, on average, have significantly higher GEI Scores than their counterparts. These findings are illustrated in Table 1, Fig. 2, and Fig. 3 below.

**Table 1: Average LPI and GEI Scores for the 10 Economies with the Highest and 10 Economies with the lowest Trade Logistics Affability in 2018**

10 Economies with the highest Trade Logistics Affability in 2018			10 Economies with the lowest Trade logistic Affability in 2018		
Country	LPI_2018	GEI Score_2018	Country	LPI_2018	GEI Score_2018
Germany	4.20	65.93	Angola	2.05	14.41
Sweden	4.05	73.11	Burundi	2.06	11.83
Belgium	4.04	63.70	Sierra Leone	2.08	12.30
Austria	4.03	66.02	Libya	2.11	18.93
Japan	4.03	51.52	Gabon	2.16	24.99
Netherlands	4.02	68.15	Guinea	2.20	12.91
Singapore	4.00	52.70	Liberia	2.23	15.73
Denmark	3.99	74.31	Venezuela, RB	2.23	13.78
United Kingdom	3.99	77.75	Senegal	2.25	19.21
Finland	3.97	67.90	Myanmar	2.30	13.63
<b>Averages/Mean</b>	<b>4.03</b>	<b>66.11</b>	<b>Averages/Mean</b>	<b>2.17</b>	<b>15.77</b>

Source: Global Entrepreneurship Index report published by GEDI and Development Indicators published by the World Bank for the year 2018

Table 1 above shows that, on average, the 10 economies with the highest LPI (i.e. averaging 4.03) have significantly higher GEI scores (i.e. averaging 66.11) than their counterparts with the lowest LPI (i.e. averaging 2.17) whose average GEI score is only 15.77. This observation is corroborated by the worldwide comparative results shown in Table 2 and the graphical illustrations shown in Fig.2 and Fig.3 below.

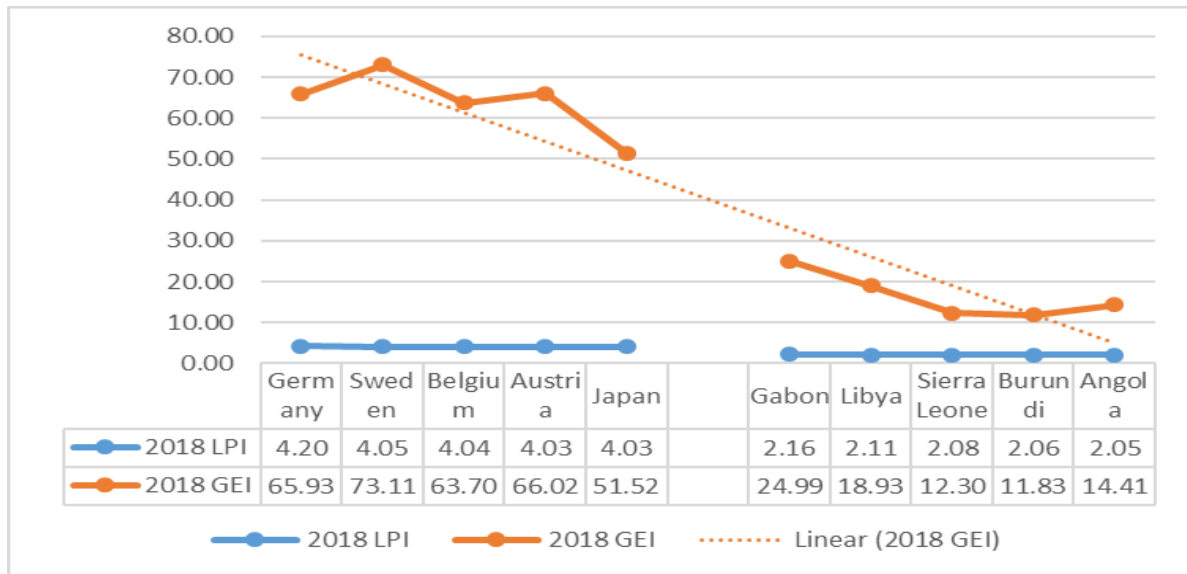
Table 2 below shows that most of the economies (i.e. over 55% of the economies) with LPI that is below the worldwide average of 2.99 also have GEI scores that are below the universal average of 34.92. This, also, denotes that there is a significant and positive relationship between the LPI (i.e. *trade logistics' affability*) and GEI scores (i.e. Friendly Entrepreneurship environment) as opposed to the null hypothesis of the study.

Table 2. A Global Comparison of LPI & GEI Scores for 123 Economies 2018

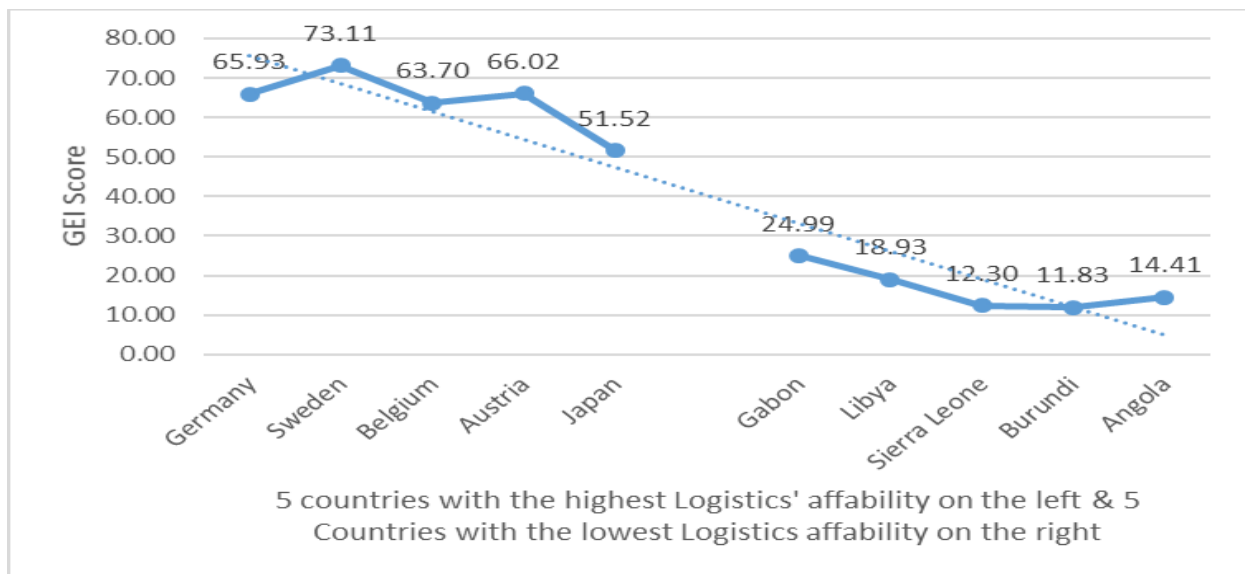
Economy	LPI	GEI	Economy	LPI	GEI	Economy	LPI	GEI
Germany	4.20	65.93	India	3.18	28.38	Burkina Faso	2.62	13.17
Sweden	4.05	73.11	Cyprus	3.15	47.96	Armenia	2.61	22.83
Belgium	4.04	63.70	Indonesia	3.15	20.99	Cameroon	2.60	15.45
Austria	4.03	66.02	Turkey	3.15	44.51	Honduras	2.60	18.68
Japan	4.03	51.52	Romania	3.12	38.18	Sri Lanka	2.60	21.88
Netherlands	4.02	68.15	Croatia	3.10	34.02	Malawi	2.59	12.22
Singapore	4.00	52.70	Mexico	3.05	26.40	Mali	2.59	15.86
Denmark	3.99	74.31	Bulgaria	3.03	27.79	Bangladesh	2.58	11.84
U.K	3.99	77.75	Slovak Republic	3.03	44.87	Cambodia	2.58	17.65
Finland	3.97	67.90	Lithuania	3.02	51.12	El Salvador	2.58	16.75
U. A. E.	3.96	53.48	Saudi Arabia	3.01	40.25	Uganda	2.58	12.85
Hong Kong	3.92	67.35	Brazil	2.99	20.33	Ghana	2.57	21.18
Switzerland	3.90	80.45	Rwanda	2.97	21.46	Tunisia	2.57	42.44
United States	3.89	83.61	Colombia	2.94	38.16	Kyrgyz Republic	2.55	19.82
France	3.84	68.51	Bahrain	2.93	45.07	Morocco	2.54	29.18
Spain	3.83	45.30	Philippines	2.90	24.09	Nigeria	2.53	19.75
Australia	3.75	75.45	Argentina	2.89	24.02	Zambia	2.53	19.58
Italy	3.74	41.41	Ecuador	2.88	20.49	Jamaica	2.52	22.21
Canada	3.73	79.25	Kuwait	2.86	42.81	Moldova	2.46	21.22
Norway	3.70	56.61	Iran, Islamic Rep.	2.85	26.85	Algeria	2.45	24.70
Czech Rep.	3.68	43.40	Serbia	2.84	26.45	Georgia	2.44	25.76
Portugal	3.64	48.79	Ukraine	2.83	26.78	Chad	2.42	8.98
Luxembourg	3.63	58.24	Egypt, Arab Rep.	2.82	25.88	Pakistan	2.42	15.64
China	3.61	41.14	Bosnia & Herz.	2.81	20.71	Trinidad & Tobago	2.42	24.41
Korea, Rep.	3.61	54.18	Kazakhstan	2.81	29.69	Guatemala	2.41	18.48
Poland	3.54	50.42	Kenya	2.81	18.39	Gambia, The	2.40	16.08
Ireland	3.51	73.72	Latvia	2.81	40.48	Madagascar	2.39	14.01
Qatar	3.47	55.01	Costa Rica	2.79	33.27	Bolivia	2.36	20.43
Hungary	3.42	36.38	Paraguay	2.78	18.72	Guyana	2.36	16.36
Thailand	3.41	27.44	Russian Fed.	2.76	25.22	Tajikistan	2.34	20.03
South Africa	3.38	32.90	Benin	2.75	13.30	Mauritania	2.33	10.89
Chile	3.32	58.52	Montenegro	2.75	31.19	Myanmar	2.30	13.63
Estonia	3.31	54.77	Lebanon	2.72	31.51	Senegal	2.25	19.21
Israel	3.31	65.44	Brunei Dar..	2.71	34.30	Liberia	2.23	15.73
Slovenia	3.31	53.82	Lao PDR	2.70	17.79	Venezuela, RB	2.23	13.78
Panama	3.28	27.75	Macedonia	2.70	29.12	Guinea	2.20	12.91
Vietnam	3.27	23.18	Jordan	2.69	36.54	Gabon	2.16	24.99
Iceland	3.23	74.15	Peru	2.69	28.43	Libya	2.11	18.93
Malaysia	3.22	32.73	Uruguay	2.69	34.98	Sierra Leone	2.08	12.30
Greece	3.20	37.12	Albania	2.66	24.21	Burundi	2.06	11.83
Oman	3.20	46.90	Dominican Rep.	2.66	24.25	Angola	2.05	14.41
						<b>Averages/Mean</b>	<b>2.99</b>	<b>34.92</b>



Source: [2][3]



**Figure 2 The GEI scores and lpi for the 5 most & 5 least logistics-friendly economies for 2018**



**Figure 3 GEI scores for the 5 most & 5 least logistics-friendly economies for 2018**

From Fig. 2 and Fig. 3 above, it is graphically evident that economies with lower LPI (i.e. less Trade Logistics' affability) do generally have significantly poorer GEI scores (i.e. unfriendly entrepreneurial ecosystems) than their counterparts. This manifests a significant and positive relationship between the LPI (i.e. trade logistics' affability) and the GEI Scores (i.e. entrepreneurial ecosystem) of all the economies in the world for the year 2018. These findings concur with some earlier studies conducted by different entities although the main study variables, units of analysis, research designs, time, and geographical scopes of these earlier works differ from those of this study [9] [10] [11] [19]. Consequently, the outcomes of the descriptive statistics generally vindicate the rejection of the

null hypothesis  $H_0$  and instead confirm the study's supposition that, the world over, trade logistics' affability significantly relates to entrepreneurial ecosystems.

### 3.2 Correlation Results

The relationship between trade logistics' affability (gaged as LPI) and the status of entrepreneurial ecosystems (measured as the GEI Scores) for all the sampled economies was analyzed using a Pearson product-moment correlation coefficient. Preliminary analyses were conducted to ensure there is no violation of the assumptions of normality, linearity, and homoscedasticity. There was a strong, positive correlation between the two variables [ $r = .86, n = 123, p < .01$ ], with high levels of LPI associated with high levels of GEI scores. The results got from this Pearson product-moment correlation are as shown in Table 2 below.

**Table 3. Pearson Product-Moment Correlations Between the LPI and the GEI Scores of 123 Economies in 2018**

	GEI Scores	LPI
GEI Scores	1.000	
LPI	.857**	1.000

\*\* Correlation is significant at the 0.01 level (2-tailed); N= 123

Table 3. above shows that, trade logistics' affability (presented as LPI) is significantly correlated to entrepreneurial ecosystem (defined by the GEI Scores). These results, with a  $p < .01$ , validate the rejection of the study's null hypothesis  $H_0$  which states that there is no significant relationship between the LPI and the GEI Scores. This outcome is fundamentally similar to the results of previous studies that were conducted by other authorities [9] [10] [11] [19][12]. However, the focus, methodologies, and premises (i.e. study variables, research designs, units of analysis, time, and geographical latitudes) of those previous studies are different from those of this study. Therefore, economies are bound to improve their respective entrepreneurial ecosystems as they improve their trade logistics' affability.

### 3.3 Regression Results

A simple linear regression was performed to predict the economies' GEI Scores based on their respective LPI for all the economies that are sampled for this study by using the model stated below.

$$(1): y = \beta_0 + \beta_1 x + \varepsilon$$

Where:  $y$  = GEI Scores, PPP;  $\beta_0$  = is the y-intercept of the regression line;  $\beta_1$  = the slope coefficient for the predictor variable;  $x$  = LPI; and  $\varepsilon$  = the random disturbance effect.

The results of the linear regression are as presented in Table 4 below.

**Table 4. Regression Analysis Summary for GEI Scores Predicting GNI Per Capita, PPP**

Variable	B	95%CI	$\beta$	t	p
(Constant)	-54.24	[-64.16, -44.42]		-10.93	0.000
LPI	29.86	[26.62, 33.09]	0.86	18.28	0.000

R<sup>2</sup> = 0.73  
 R<sup>2</sup> adjusted = 0.73  
 Number of Observations = 123

Note: CI = Confidence Interval for B

A significant regression equation emerged as ( $F(1,121) = 334.117, p < .000$ ) with an R<sup>2</sup> of .734. As shown in Table 4, the economies' predicted GEI score is equal to  $-54.241 + 29.857$  (Trade logistics' affability) GEI scores when trade logistics' affability is measured as LPI. Economies' GEI scores increased by 29.857 for each LPI unit of the trade logistics' affability. The  $p < .000$  infers that the results to be interpreted therefrom are dependable. Therefore, LPI predicts GEI scores fairly well in the study sample. Thus, the results from the regression analysis indicate a significant association between the LPI and the GEI Scores. With a  $p < 0.05$ , it means the null hypothesis H<sub>0</sub> and of the study is rejected. These results are largely similar to the findings of previous studies [22][8][19][9][10][11][12]. However, the earlier studies were based on different sets of study variables and research designs, units of analysis, and geographical and time scopes. In summary, the results from the regression analysis generally show that there is a significant relationship between the trade logistics' affability (measured as LPI) and the entrepreneurial ecosystems (computed as GEI Scores) of all the sampled economies for the year 2018.

## IV. Conclusions, Lessons, and Recommendations

### 4.1. Conclusion and Inferences

The outcomes of the study presented in section 3.0 above generally show that there are significant empirical relationships, correlations, and associations between the friendliness of trade logistics (gaged as LPI) and the entrepreneurial ecosystems (measured as GEI scores) of every economy in the world. The friendlier (more affable) an economy's trade logistics (i.e. higher LPI) is, the more favourable the entrepreneurial ecosystem (higher GEI score) of such an economy is likely to be. Consequently, the null hypothesis of the study is rejected. A relative analysis of empirical data of 123 economies for the year 2018 largely shows that economies with higher LPI higher (i.e. more affable/friendly trade logistics), correspondingly have higher GEI scores (i.e. more friendly/favourable entrepreneurial ecosystems) than their counterparts. Therefore, any economy is very likely to improve its entrepreneurial ecosystem (i.e. attain higher GEI scores) if and/or when it improves her trade logistics (i.e. realizes higher LPI). In other words, an economy can improve her entrepreneurial ecosystem through improving its trade logistics.

### 4.2 Recommendations and Lessons

Basing on the findings and conclusions of the study, we recommend that all economies, and particularly those with unfriendly trade logistics, do consciously, industriously and zealously improve their respective trade logistics as a policy for improving their entrepreneurial ecosystems. The specific and hands-on procedures that are recommendable for improving the trade logistics include committing each economy to relentlessly establish feasible policies and facilitation for instituting, improving and sustaining: - efficiency of the customs clearance processes; affability of trade and transport-related infrastructure; ease of arranging competitively priced local and international shipments; appropriate competence and responsiveness of logistics service-providers; ability to track

and trace consignments; and high frequency with which shipments reach the consignee within the scheduled or expected time.

#### **4.3 Limitations of the Study and Recommendations for Future Research**

The study was restricted to a cross-sectional research that centres on only the year 2018 yet there are alternatives of using longitudinal/ time series approaches. Also the study is limited to quantitative research techniques while there are options for using qualitative and/or mixed methodologies. The study is also limited in the study variables to analyze the relationship between LPI and GEI scores as the only indicators of trade logistics' affability entrepreneurial ecosystem while there are other variables/ indicators that may be analyzed. Therefore, in order to corroborate, enlarge, bolster, validate, indorse, and/or contest this study, future or ensuing researchers may:

- Use various time scopes and approaches such as longitudinal (panel data/ time series) analyses, and qualitative or triangulated/ mixed approaches.
- Investigate the relationships between and/or among other variables, sub-variables, and/or indicators of trade logistics' affability and entrepreneurial ecosystems;
- Broaden, narrow, or change the geographical scope and units of analysis of the study and use different research designs and investigative approaches such case studies.

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