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ON THE RELATION BETWEEN ENTREPRENEURSHIP AND QUALITY MANAGEMENT

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A B S T R A C T

Healthy business ecosystems are necessary for competitive advantage, the major force of the trade economy, and free markets. Business sustainability requires entrepreneurship skills, knowledge, and competencies, as well as standardization of processes, procedures, etc., which relate to quality management patterns. Entrepreneurship can be measured, and so can quality management. Most international, regional, and local business organizations, individual businesses, as well as several researchers, assert that there is a connection between entrepreneurship and quality management, especially with ISO standards.

Therefore, it is necessary to research the relations between entrepreneurship and quality management to provide a clear insight into the issue. This study is based on a regression analysis between the Entrepreneurship Index (E Index) and ISO Standards Index to verify Hypothesis H1 (There is not any relation between E Index and ISO Standards Index) against Hypothesis H0 (There is a strong relation between E Index and ISO Standards Index). The results of the research show that entrepreneurship requires scientific management of factors of production, employing skills, knowledge, and competencies, as well as using quality management principles, to achieve a competitive advantage, so, a connection and relations between entrepreneurship and quality management (ISO standards), is indispensable. It can be stated from the conducted research that there is no relation between entrepreneurship and ISO standards yet, even though it is highly needed and should exist to promote sustainable entrepreneurship with no support at all.

1. INTRODUCTION

In this critical analysis, relations between entrepreneurship and International Standards of quality management are investigated, as they are important factors in healthy business ecosystems.

There is supposed to be a strong relationship between entrepreneurship and quality management principles, especially with ISO standards, considering that disruption and uncertainty continue in multiple business sectors; but, as most entrepreneurs know well, with disruption comes opportunity and it is clear that entrepreneurs have been grasping pandemic-related opportunities and building resilience while living with the pandemic has certainly raised awareness of the business opportunities it brings in its wake (GEM - Global Entrepreneurship Monitor, 2022).

This was the core issue to be investigated in this research, using quantitative methods, combined with a

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regression analysis on relations between the Entrepreneurship Index and ISO standards index.

Also, there were have taken into account other sources to have thorough research such as classified existing data and materials about entrepreneurship, quality management, and ISO standards, the updated ones together with the previously published works and scholarly articles books, as well as online libraries.

There are strong and sustained relations between quality management / ISO standards and the climate of doing business (Ceko, 2016a). There are strong and sustained relations between the climate of doing business and life quality, which is already verified scientifically (Ceko, 2016b). Improving quality management systems / respecting ISO standards parallel with doing business regulations / doing business climate, can improve the life quality of citizens.

Worldwide countries recently are facing problems that affect the development and performance of businesses, entrepreneurship activity, development and economic growth, sustainable development, and life quality.

Establishing quality institutions, quality infrastructure, and doing business worldwide, using ISO standards, will have a positive impact on entrepreneurship activities and doing business as it leads to increasing economic growth and improving the quality of life of citizens in a wider perspective, as a part of long-term sustainable development.

2. MATERIAL AND METHODS

2.1. Entrepreneurship

Entrepreneurship is the creation or extraction of economic value (Diochon & Anderson, 2011; Gaddefors & Anderson, 2017; Glynn & Stowe, 2003; Alvarez & Busenitz, 2001). With this definition, entrepreneurship is viewed as change, generally entailing risk beyond what is normally encountered in starting a business, which may include other values than simply economic ones.

An entrepreneur is an individual who creates and/or invests in one or more businesses, bearing most of the risks and enjoying most of the rewards. The process of setting up a business is known as entrepreneurship. The entrepreneur is commonly seen as an innovator, a source of new ideas, goods, services, and business/or procedures. In the field of economics, the term entrepreneur is used for an entity that can translate inventions or technologies into products and services. In this sense, entrepreneurship describes activities on the part of both established firms and new businesses.

As an academic field, entrepreneurship accommodates different schools of thought. It has been studied within disciplines such as management, economics, sociology, and economic history (Lindgren & Packendorff, 2009; Neergaard & Ulhøi, 2007).

Entrepreneurship is the act of being an entrepreneur, or the owner or manager of a business enterprise who, by risk and initiative, attempts to make profits. Entrepreneurs act as managers and oversee the launch and growth of an enterprise. Entrepreneurship is the process by which either an individual or a team identifies a business opportunity and acquires and deploys the necessary resources required for its exploitation.

Regardless of the firm size, big or small, they can take part in entrepreneurship opportunities. The opportunity to become an entrepreneur requires four criteria. First, there must be opportunities or situations to recombine resources to generate profit. Second, entrepreneurship requires differences between people, such as preferential access to certain individuals or the ability to recognize information about opportunities. Third, taking on risks is a necessity. Fourth, the entrepreneurial process requires the organization of people and resources (Shane, 2003).

The entrepreneur uses their time, energy, and resources into creating value for others. They are rewarded for this effort monetarily and therefore both the consumer of the value created and the entrepreneur benefit.

Strategies that entrepreneurs may use include:

1) Innovation of new products, services, or processes;
2) Listen to customer feedback and adapt;
3) Continuous process improvement (CPI) ;
4) Exploration of new business models;
5) Finding solutions for problems;
6) Use of technology;
7) Use of business intelligence;
8) Use of economic strategies;
9) Development of future products and services;
10) Optimized talent management;
11) Entrepreneurial marketing strategies for interactive and innovative networking (Qureshi, 2015; Adel et al., 2020).

These strategies are part of the quality management subject too (Ceko & Mecalla, 2017).

For the period of pandemics and post-pandemics, several entrepreneurship challenges have been identified (GEM - Global Entrepreneurship Monitor, 2022), including that in some countries one in two adults agreed their household income had decreased, comparing 2021 to 2019 (pre-pandemic), Total Early-stage Entrepreneurial Activity (TEA; GEM's most well-known indicator, representing the percentage of adults that are starting or running a new business) has typically decreased and this has also been the case for levels of Established Business Ownership (EBO; the percentage of adults aged 18–64 owning or managing a business for more than 42 months), in a quarter of the GEM economies, over half of those starting or running a new business expect to employ no one but themselves in five years. This may be indicative of high levels of informal "survival" businesses, created during economic hardship when no other alternatives or social safety nets are available, and when people resort to entrepreneurship as

their only fallback solution. Consistent with crises throughout history, the COVID-19 pandemic crisis surfaced new opportunities for entrepreneurs around the globe, however, despite positive perceptions of the ease of starting a business, self-confidence in their skills and abilities, and other factors, many entrepreneurs were constrained by the fear of failure (GEM - Global Entrepreneurship Monitor, 2022).

2.2. Business Sustainable Management

Entrepreneurship and quality management are subjects of a discipline called Business sustainable management, which is concerned about:

- The global state, what needs to change, and how to bridge the sustainability gap through rewiring the economy.
- Why sustainability is good for business, and the importance of good leadership in achieving change.
- Policy instruments, international agreements, and the role of business and civil society in shaping a zero-carbon economy.
- The value chain: Implementing business models and processes for sourcing, producing, and consuming sustainably.
- The role of innovative design, planning, and technology in facilitating sustainable business.
- How to effectively communicate sustainability strategies and goals to internal and external stakeholders.
- How businesses can work together with corporate, government, and non-profit actors to bring about large-scale change in the sustainability space (University of Cambridge, 2022)..

2.3. Entrepreneurship Index

The Entrepreneurship Index, compiled by the CEO WORLD magazine, evaluates a total of 100 economies that collectively account for 95 percent of the global gross domestic product (CEO World Magazine, 2022). The overall ranking considers a wide range of factors to create an overall “best countries for entrepreneurship” index, including innovation, competitiveness, infrastructure, labor skills, access to capital, and openness for business.

Starting a business anywhere takes grit, determination, and a marketable idea, but certain economies make it just a little bit easier for entrepreneurs to get off the ground. If you’re looking for the best country to build a business, you may not have to look far.

To determine the rankings, researchers compiled, analyzed, and compared countries across 6 key categories: innovation, competitiveness, labor skills, infrastructure, access to capital, and openness for business.

To evaluate those dimensions, researchers looked at 18 indicators that fell into one of the 6 categories. An index has been created scoring the individual indicators on a scale of 1-100. Each indicator was given equal weighting within each of the 6 categories with some indicators being comprised of 2-3 sub-indicators that were also weighted equally.

The rankings are the result of a rigorous analytical exercise, incorporating multiple data sources, without relying on investment promotion agencies (IPA) and Government Industry trade data submissions.

The margin of sampling error for the full sample of 120,000 respondents is plus or minus 1.2 percentage points. In addition to sampling error, one should bear in mind that as in all survey research, there are possible sources of error, such as coverage, nonresponse, and measurement error, that could affect the results (University of Cambridge, 2022).

2.4. International Standards Organization and Business Sustainability

The International Organization for Standardization (ISO) refers to Sustainability as the ability to maintain or develop performance in the long term. Looking at it through a different lens, sustainability has to do with maintaining businesses financially, socially, and environmentally. Sustainability broadly consists of three components:

- Business Sustainability (economic/financial);
- Environmental Sustainability; and
- Social Responsibility.

Two types of ISO Standards are helpful for the successful implementation of Sustainability practices:

- Certifiable standards
- Guidance standards.

2.5. International Standards Organization and Business Sustainability

According to CEO World Magazine (2022) governments, industry, consumers, the economy, society, environment, can benefit from using ISO standards as per below.

2.5.1 Government

Regulators can rely on ISO standards as a solid base on which to create public policy that helps further Sustainable Development Goals (SDGs) such as human rights, water, and energy efficiency, public health, and more. Recognized the world over, International Standards also help governments achieve their national and international commitments.

2.5.2 Industry

Industry plays a key role in achieving all the SDGs and ISO standards help it do that by providing guidelines

and frameworks on everything, from employee health and well-being to energy consumption, to resilient and eco-friendly infrastructures.

2.5.3 Consumers

While contributing to the SDGs ranks high on the agenda of business leaders and politicians, many of the benefits are felt at the local community level. Reduced poverty, improved health, cleaner and more abundant water, and safe and secure infrastructures are just some of the benefits to be gained from implementing ISO standards.

2.5.4 Economic

ISO International Standards promote economic sustainability by facilitating international trade, improving a country's national quality infrastructure, and supporting sustainable business practices (A quality infrastructure is a system contributing to governmental policy objectives in areas including industrial development, trade competitiveness in global markets, efficient use of natural and human resources, food safety, health, the environment, and climate change). They cover everything from efficient farming methods to anti-bribery management systems.

2.5.5 Social

ISO International Standards promote social sustainability by helping countries and communities improve the health and well-being of their citizens. They cover all aspects of social welfare, from healthcare systems and related products to social inclusion and accessibility.

2.5.6 Environmental

ISO International Standards promote environmental sustainability by helping businesses and countries manage their environmental impact. They cover such aspects as implementing an environmental management system, measuring and reducing greenhouse gas emissions and energy consumption, and encouraging responsible consumption.

2.6. Quality Management, Doing Business, and Global Trends on ISO Certificates

Quality management is the act of overseeing all activities and tasks needed to maintain a desired level of excellence. This includes creating and implementing quality planning and assurance, as well as quality control and quality improvement. Quality management ensures that an organization, product, or service is consistent. It has four main components: quality planning, quality assurance, quality control, and quality improvement (Rose, 2005). Quality management is focused not only on product and service quality but also on the means to achieve it. Quality management, therefore, uses quality assurance and control of processes as well as products to achieve more consistent quality. Several means to achieve quality management are between doing business regulations and rules, ISO certificates included, which are focused more on the quality of procedures private and public subjects follow, which at the end of the day brings a higher quality of products and services (Ceko, 2013).

Because societies need regulation—and businesses, as part of society, are no exception, ISO certificates finally are part of business and trade regulations since they are the minimum requisites for characteristics of processes, products, and services to be used by private and public entities/subjects to be acceptable from their clients and markets. Without this standard,s modern private and public entities cannot exist. And where markets are s left without standards, they would produce poor outcomes and finally low life quality for citizens. When starting a new business, or entering a new phase of enterprise development, entrepreneurs need to establish certain procedures and standards, allowing the business to live beyond minimum frontiers, e, export, and import, participate in public procurement procedures, and finally attract as many as possible clients, for higher profits and achieving other business objectives. Standards are the heart of all these issues, facilitating business transactions and allowing businesses to operate effectively. With 1 609 294 certificates issued worldwide in 2014, there is a slight up on the previous year, which demonstrates a moderate growth for almost all the ISO management systems standards around the world, confirming trends observed over the last two years. This market stabilization is, however, offset by three good performers exhibiting more sustained growth. Albeit less impressive than in previous years, ISO 50001 for energy management demonstrates a 40 % growth rate, led once again by Germany, responsible for 50 % of the 6 778 certificates reported. Similarly, food management standard ISO 22000 continues to deliver reliable performance with a 14 % growth rate, while ISO 16949 for the automotive sector shows accelerated progression with a commendable 8 %, signaling that economic recovery in the auto industry is holding up (International Organization for Standardization, 2014).

Table 1. ISO Survey Executive Summary. 2020 (International Organization for Standardization, 2020).

ISO standards	Total valid certificates	Total number of sites
ISO 9001 – QMS	916,842	1,299,837
ISO 14001 – EP	348,473	568,798
ISO 45001 – HSW	190,481	251,191
ISO/IEC 27001 – ISM	44,499	84,181
ISO 22000 – QSGF	33,741	39,894
ISO 13485 – H	25,656	34,954
ISO 50001 – EE	19,731	45,092
ISO 20000-1 – IT	7,846	9,927
ISO 22301 – BC	2,205	4,662
ISO 37001 – ABMS	2,065	5,946
ISO 39001 – RTS	972	2,341
ISO 28000 - SRMS	520	968

When compared with the 2019 edition, the results are consistent when looking at the overall figures for most of the countries. The overall results show an increase, from 2019, of 18% in the total number of valid certificates for the 12 management system standards covered in the survey. Part of this significant increase is due to the important growth in the certification to ISO 45001; this standard was published in 2018 and consequently had a limited number of certifications in the previous edition of the survey. The rate of increase for ISO 9001 and ISO 14001 has been greater compared to previous years with +4% for ISO 9001 and + 12% for ISO 14001 mainly due to an important increase in China. Similarly, to the previous editions of the survey, the results show some fluctuations at the country level that are explained by factors related to the participants such as the non-participation of some certification bodies for those specific countries. In the 2020 survey, this is the case particularly for ISO 9001 and ISO 14001 for Belgium, Korea, Mexico, Ireland, and the Philippines and for ISO 28000, China (International Organization for Standardization,, 2020) (Table 1).

The most important thing related to this paper is the declaration of the International Standards Organization that the ISO Survey is not a database, but just a list of ISO certificates issued and a list of countries based on alphabetic order, neither based on the number of certificates issued per country ISO (International Organization for Standardization, 2020).

2.7. How ISO Standards Help Companies and Bring Benefits to their Clients

As it is stated in the GEM Report Policymakers could allay much of this fear by drawing greater attention to entrepreneurial success stories both large and small and implementing risk-mitigating initiatives that reduce real and perceived impediments for startups (GEM - Global Entrepreneurship Monitor, 2022), besides other factors, ISO standards help on this issue.

ISO standards have helped various companies and our clients have benefited because of:

Reduced risk: The underlying reason for ISO compliance is that entrepreneurial companies are at a greater risk than established organizations – and thus have a more compelling case for minimizing risk. If a young company doesn't have policies, processes, and procedures that are standardized, it risks wasting its precious resources. And that doesn't result in just missing the numbers – it can mean going out of business.

Builds in consistency: It isn't enough for fledglings to operate with a "general knowledge" of the details involved in turning out first-rate products or services. Typically the founders and a few employees have the needed knowledge but it is not communicated consistently across the organization. ISO standards, by contrast, put policies, processes, and procedures in writing so that everyone is aware and able to work within common directives.

Measures ROI: In addition, ISO standards serve as a checklist against which a young company, whose financial talent and systems might not yet be up to par, can measure critical entrepreneurial objectives, namely return on investment or ROI.

Builds credibility: Finally, standards function as an imprimatur, convincing partners to engage with, and customers net to buy from, an untested entity.

2.8 Methodology and methods (Research framework, the purpose of the case study)

The framework of the research was the relationship between Entrepreneurship Index (E Index) and the ISO standards Index from a global perspective and global ecosystem.

Given the lack of numerical, statistical, and algebraic arguments on relations between the E Index and the ISO Standards Index, this study adopts a building mode theory and aims to investigate the following research questions:

1) Ho: There is a strong connection/relation between E Index and the ISO standards Index.
2) H1: There is not a strong connection/relation between E Index and the ISO standards Index.

considering that there is little research on relations between the E Index and ISO standards Index, listed in the literature review of this paper research, and considering that theoretical approaches on relations between entrepreneurship and ISO standards, and specifically between E Index and ISO standards Index, as well as numerical, statistical and algebraic arguments on relations between them, doesn't exist.

Specifically, while acknowledging the importance of connections/relations between entrepreneurship and ISO standards, prior empirical research impresses with declarations that this connection exists, but does not explain statistically if there is any connection/relation between them, thus, a theory was needed, supported by analysis and evidence. Therefore, with this critical analysis, an exploratory approach was adopted, using a single in-depth case study approach, appropriate for building an in-depth understanding of a phenomenon and allowing closer investigation of theoretical constructs.

2.8.1 Case selection

The case was selected based on three main criteria: a theoretical approach, suitability of relations, and practical positive impacts on relations between the E Index and ISO standards Index.

The case project ran in stages: (1) identifying needs for entrepreneurship, (2) identifying needs for quality management, and ISO standards certification, and (3) identifying the rank of the countries for Entrepreneurship and the Rank of countries for ISO standards Index.

2.8.2 Data collection

Data for E Index has been gathered from Entrepreneurship Report 2021, an annual ranking of countries by their achievement on the subject, compiled by the CEOWORLD magazine (CEO World Magazine., 2022).

Data for the number of businesses registered worldwide has been gathered from HitHorizon (Hithorizons, n.d.).

Data for the ISO standards Index has been gathered from the ISO certificates (Chartered Quality Institute, 2021).

To prepare the ISO standards Index I have divided the number of ISO certificates issued per country by the number of businesses registered in the country, resulting in the ISO standards Index per country, preparing the list of countries based on this Index.

2.8.3 Data analysis

A correlation and regressive analysis (inferential statistics) between these Indexes for 91 countries worldwide were performed.
In the table 2, 91 countries are listed for the E Index, and ISO Standards Index (prepared by the author of this article as per the explanation given in the paragraph above).

Based on these data and information from secondary resources, a regression between E Index and ISO certificates issued per country was built. Data from ISO about ISO standards certificates issued worldwide (taken from ISO report) didn't help directly, because an Index was needed, so the Index divided the number of ISO standards certificates issued per country by the number of business entities in the country, finding the ISO standards Index, as explained above.

3. RESULTS

After listing countries per this Index, regression analysis between the E Index and ISO Standards Index was drafted, based on which, it can be stated that the relations between the E Index and ISO Standards Index are not high, verifying the H1 hypothesis which was: "There is no relation between E Index and ISO Standards Index, against Ho that was: "There is a strong relation between E Index and ISO Standards Index", which is a hypothesis that comes from the highly estimated situation from international organizations and believes of people who work on these subjects, which could never prove this hypothesis statistically.

In table 2, countries are listed as per the E Index, which served as the "Y" at the regression procedures, and ISO standard Index which served as the "X" at regression procedures, handled in an excel program.

Table 2. List of countries based on the E Index (CEO World Magazine, 2022) and the ISO Standards Index (drawn from the author of this paper)

No	Country	E Index	ISO standards Index
1.	USA	42.88	0.00095
2.	Germany	41.05	0.021
3.	UK	35.8	0.00884
4.	Israel	34.25	0.018
5.	UAE	31.01	0.01185
6.	Poland	29.75	0.00656
7.	Spain	29.01	0.0146
8.	Sweden	28.16	0.00575
9.	India	25.47	0.00082
10.	France	25.34	0.0054
11.	Australia	25.05	0.00576
12.	Estonia	24.64	0.0071
13.	Ireland	24.37	0.0136
14.	Malaysia	23.6	0.011497
15.	S. Arabia	22.98	0.003433
16.	Canada	21.8	0.0052
17.	Philippines	21.62	0.00544
18.	Denmark	21.42	0.0071
19.	Switzerland	21.34	0.022
20.	Japan	20.71	0.011234
21.	Singapore	20.05	0.0153
22.	China	20.04	0.004338

23.	Austria	19.92	0.0173
24.	Portugal	19.73	0.0114
25.	Belgium	19.72	0.00467
26.	Italy	19.46	0.021
27.	New Zealand	18.55	0.00321
28.	Thailand	18.32	0.00505
29.	Colombia	18.25	0.00558
30.	Bulgaria	18.05	0.0129
31.	Chile	17.41	0.0293
32.	Czech Rep	17.37	0.0207
33.	Mexico	17.37	0.00209
34.	Norway	17.22	0.00695
35.	Cyprus	17.16	0.0053
36.	Argentina	16.96	0.00951
37.	Latvia	16.76	0.01173
38.	Serbia	16.55	0.0189
39.	Brazil	16.4	0.003433
40.	Romania	16.25	0.0144
41.	Hungary	16.19	0.009254
42.	Netherlands	16	0.0072
43.	Indonesia	15.42	0.000018
44.	Greece	15.23	0.034
45.	Croatia	15.2	0.0149
46.	S. Africa	15.12	0.00196
47.	Luxembourg	15.05	0.00231
48.	Rwanda	14.96	0.000389
49.	Turkey	14.95	0.00132
50.	Slovenia	14.86	0.0127
51.	Slovakia	14.8	0.0166
52.	Russia	14.79	0.001895
53.	Belarus	14.71	0.0494
54.	Iceland	14.65	0.0136
55.	Peru	14.65	0.00162
56.	Qatar	14.54	0.078
57.	Armenia	14.41	0.00124
58.	Malta	14.4	0.00596

59.	Morocco	14.32	0.01886
60.	Moldova	14.23	0.001201
61.	Kenya	14.2	0.000219
62.	Nigeria	14.11	0.000014
63.	Azerbaijan	14.07	0.144
64.	Finland	14	0.0082
65.	Kazakhstan	13.87	0.001995
66.	Albania	13.16	0.0043
67.	N.R.Macedonia	13.59	0.0191
68.	Georgia	13.57	0.011355
69.	Lithuania	13.55	0.0099
70.	Ukraine	13.53	0.001213
71.	Vietnam	13.44	0.0131
72.	Jordan	13.38	0.00282
73.	Tunisia	13.38	0.00212
74.	Ghana	13.35	0.00317
75.	Bahrain	13.34	0.0093
76.	Sri Lanka	13.18	0.001904
77.	Dominican Rep	13.16	0.00311
78.	Costa Rica	13.06	0.00428
79.	Bangladesh	12.99	0.00126
80.	Jamaica	12.91	0.00406
81.	Lebanon	12.8	0.00354
82.	Iran	12.66	0.0288
83.	Cameroon	12.65	0.00046
84.	Egypt	12.59	0.00094
85.	Uganda	12.59	0.000144
86.	Trind&Tob.	12.52	0.0048
87.	Algeria	12.28	0.000343
88.	Ethiopia	12.27	0.00113
89.	Zambia	12.27	0.00004
90.	Pakistan	12.24	0.022
91.	El Salvador	12.18	0.00147

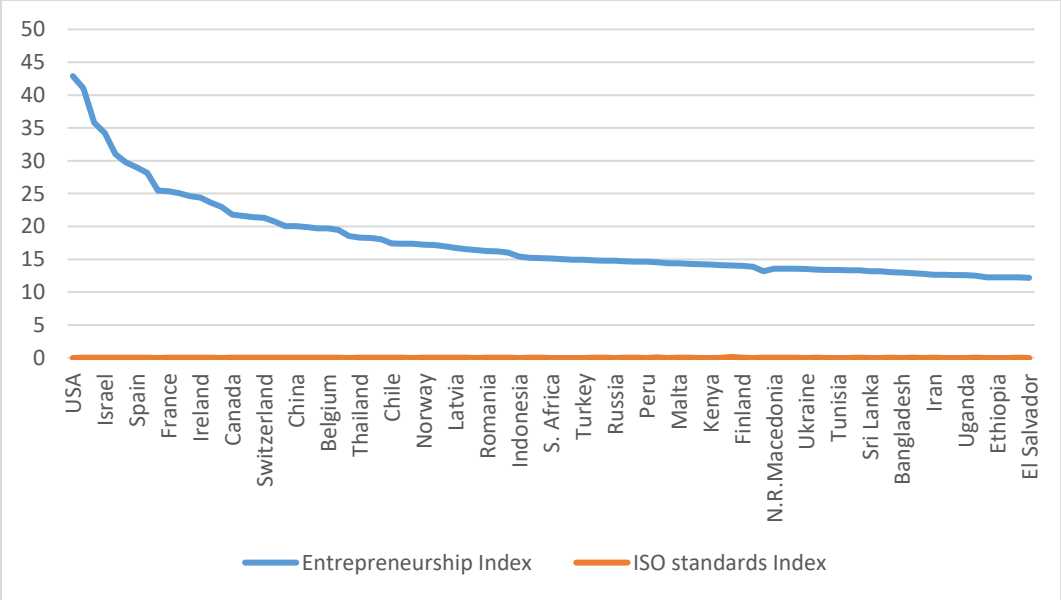

Figure 1. Missing relations between E Index and ISO standards Index (graphic is drawn from the author of this paper).

Table 3. Summary Output

SUMMARY OUTPUT	
REGRESSION STATISTICS	
Multiple R	0.49836
R Square	0.248363
Adjusted R Square	0.237127
Standard Error	16.04706
Observations	90

Table 4. Anova

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	7572.848	7572.848	29.4082	5.08E-07
Residual	89	22918.21	257.508		
Total	90	30491.06			

Table 5. Coefficients

	Coefficients	***Standard Error***	***t Stat***	***P-value***	***Lower 95%***	***Upper 95%***	***Lower 95.0%***	***Upper 95.0%***
Intercept	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
0.00095	434.2485	80.07633	5.422933	4.98E-07	275.1386	593.3585	275.1386	593.3585

In figure 1 a correlation analysis, in a graphical mode is given, where is shown there is no connection/relation between E Index and the ISO standards Index.

In the three tables 3, 4, and 5, statistical results about missing connections/relations between E Index and ISO Standards Index are given, where $R^2 = 0.248363$ shows a weak connection/relation between these two Indexes.
With these results, it has been verified in practice there is no connection/relation between E Index and ISO Standards Index.

4. DISCUSSION

In this study, by making use of a regressive analysis, it was verified statistically that there is no relation between E Index and ISO Standards Index, but this doesn't mean the relations are not needed, or they can't be achieved in the future. The question is when these relations will be achieved and verified, and what is needed next.
It is true and we all, World Bank, United Nations, and ISO including, do believe that entrepreneurship is important for economic growth and there is an improving ISO standard certification process all around the globe, but the question is how we can better match and adopt the entrepreneurship activity with ISO standards.

Scientific management of factors of production creates opportunities for improving entrepreneurship climate and business activity, applying quality management principles and ISO standards, as efficient and effective tools, and this is needed, immediately, but scientific management of factors of production requires ISO standards application in a wider approach and not only for private subjects which are looking to participate in public procurements as well as for exporting goods accompanied with ISO certificates, so, a real connection and relations between the E Index and ISO standards should exist.

4.1 Implications for Theory and Practice

About the theory, based on the final results of this research, a new window has been opened for further research in the field of relations between entrepreneurship and quality management, and especially between E Index and ISO Standards Index, considering them as a tool for a life quality improvement all around the world.

4.2 Contribution

The contribution of this paper, mostly on the field of relations between entrepreneurship and ISO standards, shows that international organizations, those mentioned in this paper, should carefully investigate the issue of building research relations between concepts, especially between important concepts and principles like those of Entrepreneurship and Quality management principles too.

This critical analysis article emphasizes the economic and social importance of Entrepreneurship and ISO standards, for current and future generations.

4.3 Limitations and Further Research

This research has been undertaken using plenty of data about the E Index and offering for the first time information about the ISO Standards Index for the period of 2020.

Further research is needed to verify these relations, which must be stronger in the future, to make Entrepreneurship Index and ISO Standards Index real tools for life quality improvement all around the world.

5. CONCLUSION AND RECOMMENDATIONS

Scientific management of factors of production creates opportunities for entrepreneurship activities, applying quality management principles and ISO standards, as efficient and effective tools, and this is needed, immediately.

Scientific management of factors of production requires ISO standards application; so, a connection and relations between the Entrepreneurship Index (E Index) and ISO standards should exist, for healthier business ecosystems.

The general outcome of the research is looking forward to achieving and maintaining entrepreneurship activities, applying quality management principles and ISO standards, as efficient and effective tools, as an immediate need, all parties should look forward to making sure building relations and connections between Entrepreneurship Index and ISO Standards Index, which currently doesn't exist.

There are no strong and sustained relations between sustainable development and quality management/ISO standards.

Improving quality management system / respecting ISO standards parallel with working on improving the business climate and strengthening entrepreneurship activities, shall have a real indication of life quality improvement all around the globe.

There is no relation between entrepreneurship and ISO standards, even though it is assumed that it should exist to promote sustainable entrepreneurship with no support at all.

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