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Corruption, culture and effects on national innovation in international societies

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Abstract: This study aims to examine the effects of corruption perception and cultural dimensions on national innovation in international societies. To achieve this, data from the Corruption Perception Index (CPI) provided by the non-governmental organization Transparency International, information on Hofstede's Cultural Dimensions, and data available in the Global Innovation Index (GII) reports were utilized for a total of 59 countries spanning from 2010 to 2022. The panel regression method was employed, with national innovation as the dependent variable and corruption perception and cultural dimensions as independent variables. The findings indicate that in societies where there is a higher perception of corruption, i.e., where fewer corrupt acts are tolerated, there are better national innovation indices. Additionally, countries characterized by lower power distance, greater individualism, lower uncertainty avoidance, higher long-term orientation, and greater indulgence exhibit superior national innovation indices. These findings contribute to various market stakeholders by signaling interactions on how corruption can negatively influence innovation generation within a society, and how intrinsic cultural aspects of these nations impact this innovation index, which may represent a country's level of competitiveness on a global scale. The results are relevant as they provide insights for policymakers regarding the effects of corrupt practices on innovation, which in turn affects the country's competitive image in international markets.

Keywords: national innovation, cultural dimensions, corruption perception, competitiveness.

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Introduction

The necessity for an economy to be competitive, coupled with the constant technological advancement, underscores the importance of innovation as a critical economic factor for countries (Aytekin et al., 2022). Thus, innovation stands out as one of the key drivers for addressing demographic, social, environmental, and

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economic challenges, contributing to the transformation of a society (Guillén & Deckert, 2021).

As pointed out by Aytekin et al. (2022), efficiency in innovation is crucial and stands as one of the determinants of the global competitive process, aiding economies in keeping pace with development and technological change. Consequently, the Global Innovation Index (GII) was established, which has become a widely recognized index globally, aimed at measuring the innovation competitiveness of a society (Huarng & Yu, 2022).

However, due to the development and implementation of technological changes, as well as the need for a digitally and electronically integrated financial system, corruption has become highly prevalent in these environments (Cepik et al., 2009). From the perspective of Brown and Cloke (2004), economic globalization through technological advancements has provided numerous opportunities for illicit enrichment, as it has become challenging to police the instant transfer of resources globally, particularly in capital markets with low levels of regulation.

Corruption stems from various political and legal aspects of a country, as well as from economic and structural policies, the role of institutions, human development, and the process of globalization (Agyei-Mensah & Buertey, 2019). Thus, corruption is considered capable of affecting the economic development of a country, being regarded as one of its major obstacles (Cepik et al., 2009). Therefore, a potential association between innovation through technologies and corruption is observed, as both are capable of influencing the economic development of a nation.

Some studies indicate that corruption perceived by society is also influenced by cultural aspects of a society. Yeganeh (2014) describes how cultural values influence the level of corruption perceived by societies, while Achim (2016) identifies certain cultural dimensions that affect levels of corruption perception in various countries. Finally, Souza and Silva (2022) suggest that countries with lower corruption perception, i.e., those allowing more corrupt acts, tend to be more affected by cultural dimensions.

From the perspective of innovation, Espig et al. (2021) indicate that the analysis of cultural context is necessary for understanding the divergences observed in competitiveness through innovation. Similarly, Guillén and Deckert (2021) emphasize the importance of observing cultural differences as factors associated with countries' innovation indices. Therefore, it is evident that culture represents an important aspect to be considered when identifying factors that can influence both levels of corruption and levels of innovation in economies.

Therefore, based on the discussions presented, this study poses the following research question: What are the effects of corruption perception and cultural dimensions on national innovation levels in international societies? Thus, the present research aims to examine the effects of corruption perception and cultural dimensions on national innovation in international societies.

Such a study becomes relevant by providing insights into aspects related to the innovation levels of societies, which can serve as a basis for governmental authorities seeking to achieve economic development through investments in innovation,

aiming for a more competitive scenario internationally. Therefore, it is expected to contribute primarily to policymakers by signaling the adverse effects that corrupt practices have on innovation generation, as well as on the cultural aspects of countries.

1. Literature Review

1.1. National innovation

The increasing globalization and changes in competitive dynamics underscore the crucial importance of innovation and its efficient management as determining economic factors for countries' success (Aytekin et al., 2022). The effectiveness of innovation is regarded as a vital element for achieving economic prosperity and maintaining competitiveness in international markets.

In 2007, the INSEAD Business School, Cornell University, and the World Intellectual Property Organization (WIPO) jointly developed the Global Innovation Index (GII), marking a significant milestone in assessing innovative potential within national socioeconomic systems and promoting the development of innovative policies (Crespo & Crespo, 2016).

The GII, a comprehensive index, consists of sub-indices of Innovation Inputs and Innovation Outputs. Each of these sub-indices encompasses various essential conditions for innovative success, such as Institutions, Human Capital and Research, Infrastructure, Market Sophistication, Business Sophistication, Knowledge and Technology Outputs, and Creative Outputs (Huarng & Yu, 2022). The measurement of innovation competitiveness by the GII has become increasingly prevalent as more countries recognize innovation as an economic driver (Androniceanu, A.-M. et al, 2020).

Scholars are deeply engaged in understanding the intricate relationships within the structure of the GII, investigating causal relationships between variables and examining them from various perspectives (Huarng & Yu, 2022). Since its introduction, the GII has become a widely adopted framework for comparative analysis of national innovation competence (Yu et al., 2021).

However, the introduction of the GII not only brought about an evaluation methodology but also emphasized the importance of innovative national policies in shaping national innovation strategies (Wonglimpiyarat, 2010). Furthermore, it highlighted the political challenges associated with these policies, prompting deeper reflection on new approaches to drive innovation.

Innovation, as one of the engines of progress, emerges as a fundamental tool for addressing demographic, social, environmental, and economic challenges, playing a crucial role in transforming the status quo through the implementation of new ideas (Guillén & Deckert, 2021). Technology and technological progress, coupled with innovation, not only enhance productivity but also contribute significantly to global economic development (Androniceanu, 2019).

Currently, the Innovation Index plays a crucial role for developing economies, providing a clear insight into the overall innovation performance of a country (Aytekin et al., 2022). This index, composed of numerical indicators, summarizes the innovative capacity of institutions, researchers, businesses, and regions.
The efficiency in the innovation process is intrinsically linked to the optimized use of resources dedicated to seeking new solutions, both at the enterprise level and on a national scale (Blanco & Goel, 2023). In conclusion, innovation and its effective management are fundamental elements in a constantly evolving world, where technological progress and global competition demand innovative strategies to drive economic growth and address the challenges of the 21st century.

1.2. Perception of corruption – economic perspective

Economic globalization, while offering numerous opportunities, has also opened doors to illicit enrichment on an international scale. Deregulated capital markets, which allow for instant transfer of finances worldwide, become fertile ground for corrupt practices (Brown & Cloke, 2004).
The technological evolution, which brought along the digital integration of the financial system, not only facilitated transactions but also provided new means for corruption, now permeating the virtual realm as well (Cepik et al., 2009). This scenario raises crucial questions about adapting control strategies to the increasing complexity of these digital transactions.
Meanwhile, the link between low economic development and high levels of corruption in both public and private spheres fuels debates about whether corruption is indeed one of the greatest obstacles to economic development (Cepik et al., 2009). This dilemma underscores the need to understand the dynamics between economic factors and the perpetuation of corruption.
The proliferation of corruption is notable when monopoly power combines with discretion and low accountability. However, there is hope for mitigating corruption when economic rents are not subject to the discretionary power of some public officials, and when strict accountability rules are applied to monopolistic activities (Asongu, 2014).
Viewing corruption as a constantly evolving phenomenon is crucial. Its transformation into a legalized practice, through discretionary decisions of the State, is particularly concerning (Monteverde, 2021). The presence of discretionary power in public officials, legislators, and members of the judiciary creates an environment conducive to risks, vulnerabilities, and bribery opportunities (Monteverde, 2021).
In the economic landscape, governmental decisions, although based on legal frameworks, often result in unequal income distribution in favor of pressure or interest groups. This phenomenon, referred to as the 'Corruptive Phenomenon,' is characterized by unethical behavior and intrinsic injustice (Monteverde, 2021).
In summary, corruption is a multifaceted phenomenon, rooted in the political, legal, and economic aspects of a country, structural policies, human development, and globalization (Agyei-Mensah & Buertey, 2019). Understanding and addressing this

problem require a comprehensive analysis that transcends borders, and global and local efforts are imperative to create a more transparent and ethical environment.
In the Brazilian context, the perception of corruption is linked to the inefficiency of the government, resulting from the lack of accountability of public administrators regarding questionable practices. This culminates in cultural and political issues, as well as reduced social participation in various initiatives (Avritzer & Filgueiras, 2011). The perception of corruption, as stated by Souza and Silva (2023), can be a good indicator relative to the level of corruption in a country, as the more a country perceives illicit acts related to corruption, the less they accept such acts, resulting in greater monitoring by citizens.

1.3. Perception of corruption – culture perspective

Culture, in its complexity, weaves a web that transcends borders and plays a crucial role in various spheres, shaping not only interactions between superiors and elders but also influencing business dynamics and propensity for corruption and innovation (Guillén & Deckert, 2021).
As businesses enter the global marketplace, they face unique pressures and demands, strongly influenced by the cultural nuances of each locality (Ortas & Gallego-Álvarez, 2020). Cultural adaptation becomes imperative to understand the complexities of how to communicate, evaluate, persuade, and decide in culturally diverse contexts.
In this context, Hofstede's national culture model emerges as an essential tool, capturing the complex collective preferences that distinguish countries from one another (Ortas & Gallego-Álvarez, 2020). These cultural distinctions reveal their influence not only in traditional means of interaction but also permeate ethical aspects, such as the perception of corruption.
The correlation between cultural dimensions and the perception of corruption is evident, especially in countries with lower corruption perception, where cultural dimensions play a predominant role (Souza & Silva, 2023). Significant cultural values directly influence the level of perceived corruption in different societies, consolidating the idea that culture shapes ethics and integrity in the global scenario (Yeganeh, 2014).
Furthermore, cultural orientation is a determining factor for innovation. Cultures that foster cooperation, effective communication, risk acceptance, and future vision tend to be more innovative (Espig et al., 2021). Therefore, countries and companies seeking to promote innovation should align their cultural beliefs and values, creating an environment conducive to the development of new ideas.
Companies operating in diverse cultural contexts are inevitably shaped by the national culture of these countries, reflecting in their business practices and strategies (Yousuf & Aldamen, 2021). Cultural dynamics, manifested in dimensions such as Power Distance, Individualism, Masculinity, Uncertainty Avoidance, Long-Term Orientation, and Indulgence, play an intrinsic role in shaping the business mindset and how societies deal with power, social relationships, time, and individual freedom

(Hofstede, 2011; Guan et al., 2005). This complex interconnection of culture, corruption, and innovation underscores the pressing need for a comprehensive understanding of culture as a driving force that shapes behavior, ethics, and the ability to innovate on a global scale. Therefore, based on the literature regarding the existing relationships between cultural dimensions, corruption perception, and national innovation, a general research hypothesis has been outlined as follows:

H_1: Corruption perception and cultural dimensions significantly affect national innovation in international societies.

2. Methodological Procedures

2.1. Sample and data collection

In order to investigate the effects of corruption perception and cultural dimensions on national innovation in international societies, the countries listed in the Global Innovation Index (GII) platform were selected as the population. The GII is an index developed and published by the World Intellectual Property Organization (WIPO) since 2013. The selection was based on countries with data available up to the year 2022. The criteria for the exclusion of countries in the sample used are presented in Table 1.

Table 1. Exclusion criteria for sample selection

Number of Countries with Information on the GII Platform in 2022	132
(-) Countries without GII in one of the Years Analyzed	(1)
(-) Countries without all Cultural Dimensions	(72)
(=) Final number of countries contained in the sample	59

Source: Author's processing

The data on the Corruption Perceptions Index (CPI) for 2022 were extracted from the Transparency International's Corruption Perceptions Index (CPI) conducted by Transparency International. As indicated in the study by Donchev and Ujhelyi (2014), the CPI is a valuable indicator for assessing the political stability of a country by measuring the perception of corruption, which reflects the image of public officials in society. On the other hand, information related to cultural dimensions was acquired through the Geert Hofstede platform, which provides data on the cultural dimensions proposed by Hofstede (1980).

2.2. Variables and statistical models

The research's variable of interest is represented by the measure of innovation. As pointed out by Huarng and Yu (2022), the Global Innovation Index (GII) consists of seven sub-indices, namely: Institutions (INS), Human Capital and Research (HCR),

Infrastructure (INF), Market Sophistication (MS), Business Sophistication (BS), Knowledge and Technology Outputs (KT), and Creative Outputs (CR). Therefore, these attributes will be treated as dependent variables in the research.
Como independent variables, we will analyze the attributes related to the Corruption Perceptions Index (CPI), as well as Hofstede's Cultural Dimensions (HCD), which are: Power Distance (PD), Individualism (IND), Masculinity (MAS), Uncertainty Avoidance (UAI), Long-Term Orientation (LTO), and Indulgence (IDG) (Hofstede, 1980). Table 2 describes the variables used in the research:

Table 2. Definition of dependent and independent variables

Variables	Definition	Location
Dependent Variables		
Global Innovation Index (GII)	Index popular that aims to measure the country's innovation competitiveness and ranges from 0 to 100 (Huarng & Yu, 2022).	*Global Innovation Index*
Institutions (INS)	Index representing the institutional structures that provide good governance and adequate levels of protection and incentives, ranging from 0 to 100 (Huarng & Yu, 2022).	*Global Innovation Index*
Human Capital and Research (HCR)	Index representing the level and standard of education and research activity in an economy, ranging from 0 to 100 (Huarng & Yu, 2022).	*Global Innovation Index*
Infrastructure (INF)	Index representing information and communication technologies, overall infrastructure, and ecological sustainability, ranging from 0 to 100 (Huarng & Yu, 2022).	*Global Innovation Index*
Market Sophistication (MS)	Index representing the availability of credit and an environment that supports investment, access to the international market, competition, and market scale, ranging from 0 to 100 (Huarng & Yu, 2022).	*Global Innovation Index*
Business Sophistication (BS)	Index representing the level of business sophistication to assess how conducive companies are to innovation activity, ranging from 0 to 100 (Huarng & Yu, 2022).	*Global Innovation Index*
Knowledge and Technology (KT)	Index representing all variables that are outcomes of inventions and/or innovations, ranging from 0 to 100 (Huarng & Yu, 2022).	*Global Innovation Index*
Creative (CR)	Index representing the role of creativity attributes for innovation, ranging from 0 to 100 (Huarng & Yu, 2022).	*Global Innovation Index*
Independent Variables		
Corruption Perceptions Index (CPI)	The corruption perception index reveals levels of corruption in the public sector ranging from 0 (highly corrupt) to 100 (not corrupt) (Donchev & Ujhelyi, 2014).	*Transparency International*

Variables	Definition	Location
Power Distance (PD)	Degree of tolerance for inequality in wealth and power ranging from 0 to 100 (Guan et al., 2005).	*Geert Hofstede*
Individualism (IND)	Degree to which individuals are integrated into groups ranging from 0 to 100 (Hofstede, 2011).	*Geert Hofstede*
Masculinity (MSC)	Measure of the extent to which society emphasizes masculine values of performance ranging from 0 to 100 (Guan et al., 2005).	*Geert Hofstede*
Uncertainty Avoidance (UAI)	Measure of the extent to which people exhibit discomfort with ambiguous situations ranging from 0 to 100 (Guan et al., 2005).	*Geert Hofstede*
Long-Term Orientation (LTO)	Choice of focus on which people will employ their efforts, leading to conservative behavior, ranging from 0 to 100 (Hofstede, 2011).	*Geert Hofstede*
Indulgence (IDG)	Measure where a society allows relatively free gratification of basic and natural human desires, ranging from 0 to 100 (Hofstede, 2011).	*Geert Hofstede*

Source: Source: Author's processing

Based on the information provided in the table above, there are eight dependent variables and seven independent variables. For the analysis of these variables, a panel data regression model will be used, due to the analysis of cross-sectional cuts (countries) over a period of 10 years (2013 to 2022). Both the measures of innovation and corruption perception have cross-sectional variations over time. Only the cultural dimensions do not vary over time and are considered fixed.
In total, results will be generated for eight regression models, with variations only in their dependent variables, which vary according to their innovation dimensions. Here is the general model that will be adopted in this research:

$$GII_{it}/INS_{it}/HCR_{it}/INF_{it}/MS_{it}/BS_{it}/KT_{it}/CR_{it} = \alpha_0 + \beta_1 CPI_{it} + \beta_2 PD_i + \beta_3 IND_i + \beta_4 MSC_i + \beta_5 UAI_i + \beta_6 LTO_i + \beta_7 IDG_i + \mu_{it} \quad (1)$$

The results generated in this research for the identified regression models will be conducted using the statistical software Stata®.

3. Results

3.1. Descriptive results

The results related to descriptive statistics aim to provide information about the measures of central tendency (mean, median, minimum, and maximum) and dispersion (standard deviation and coefficient of variation) of the dependent and

independent variables of the study. Therefore, Table 3 provides the results for the six descriptive statistics for the set of variables in this research.

Table 3. Definition of dependent and independent variables

Variable	Mean	Median	Minimum	Maximum	Standard Dev.	Coef. of Var.
GII	44.620	44.400	19.700	68.400	10.941	0.24520
INS	72.059	73.600	31.100	95.900	14.939	0.20732
HCR	42.817	42.400	7.7000	73.300	13.819	0.32275
INF	51.016	52.150	19.800	69.900	10.189	0.19972
MS	52.804	50.950	23.600	88.600	12.226	0.23154
BS	40.744	38.400	14.900	69.800	12.050	0.29575
KT	36.841	34.500	0.9000	95.000	14.461	0.39254
CR	38.939	38.800	9.4000	73.700	12.074	0.31008
CPI	57.332	56.000	25.000	92.000	19.430	0.33890
PD	58.441	61.000	11.000	104.00	20.740	0.35488
IND	47.322	46.000	13.000	91.000	23.020	0.48646
MSC	48.627	49.000	5.0000	110.00	20.361	0.41871
UAI	66.966	70.000	8.0000	112.00	23.462	0.35035
LTO	50.220	49.874	13.098	100.00	21.605	0.43021
IDG	46.056	45.536	0.0000	97.321	21.232	0.46099

Notes: GII - Global Innovation Index; INS - Institutions; HCR - Human Capital and Research; INF - Infrastructure; MS - Market Sophistication; BS - Business Sophistication; KT - Knowledge and Technology; CR - Creativity; CPI - Corruption Perception Index; PD - Power Distance; IND - Individualism; MSC - Masculinity; UAI - Uncertainty Avoidance; LTO - Long-Term Orientation; IDG - Indulgence. Source: Research data.

Based on the results from the table above, it is initially observed that the variables have similar dimensions, both in terms of position and dispersion. Therefore, based on these measures, there is no need for outlier treatment.
All indicators, whether related to innovation, corruption, or culture, have means ranging from 36.84 (innovation - knowledge and technology generation) to 72.05 (innovation - institutions). Therefore, it is noted that the lowest and highest means are related to attributes of innovation itself. Regarding measures of dispersion, it is observed that the highest standard deviations and coefficients of variation are associated with cultural dimensions, indicating that these variables are more dispersed than the measures of innovation and corruption.

3.2. Tests of validation and diagnostics of the regression models

In order to identify if the regression models have statistical validity, tests for normality, heteroscedasticity, and multicollinearity were conducted for the eight regression models. Table 4 provides the results of the tests for each of the regression models analyzed.

Table 4. Tests of Validation of the Regression Models

Models	Heteroscedasticity	Normality	VIF (Minor ~ Major)
Model 1	0.0001	0.7792	1.117 ~ 2.700
Model 2	0.0001	0.0003	1.117 ~ 2.700
Model 3	0.0001	0.7849	1.117 ~ 2.700
Model 4	0.0001	0.1216	1.117 ~ 2.700
Model 5	0.0001	0.0048	1.117 ~ 2.700
Model 6	0.0001	0.6017	1.117 ~ 2.700
Model 7	0.0079	0.0001	1.117 ~ 2.700
Model 8	0.0001	0.0003	1.117 ~ 2.700

Notes: The results of the heteroscedasticity and normality tests represent the p-values obtained in the tests. The results of the multicollinearity test are represented by the Variance Inflation Factors (VIF).

Source: Source: Author's processing

Based on the results of the tests identified above, it is observed that for all models, the null hypothesis of homoscedasticity in the residuals is rejected (p-value < 0.05). This indicates that for all models, it is necessary to use robust standard errors through correction by the HAC matrix. As for the normality test, it is observed that for models 2, 7, and 8, the null hypothesis of errors with a normal distribution is rejected, while for the others, there was no rejection. Due to the number of observations (N > 585), this assumption can be relaxed for the mentioned models. Finally, regarding the multicollinearity test, it is observed that the highest VIF for all models was 2.7. This means that none of the independent variables are related to each other, and thus they are permissible in the models.

Based on the diagnostic tests for panel selection, the Chow, Breusch-Pagan, and Hausman tests determined the use of fixed or random effects for the models. However, due to the cultural variables having only cross-sectional variation, they end up being hidden in the models by fixed effects. Therefore, it was decided to adopt the standard of random effects for all panel regressions, in order to maintain comparability between the models and to prevent cultural dimensions from being hidden from the analyses.

3.3. Regression models results and discussion

Analyses will be conducted for eight regression models, aiming to verify the effects of corruption perception and cultural dimensions on the levels of innovation in world economies. Eight innovation measures are analyzed, representing either the global innovation index or its seven attributes. The results of these inferences are presented in the following Table 5.

Table 5. Regression Models with Panel Data

Variables	GII	INS	HCR	INF	MS	BS	KT	CR
Constant	24.3781	35.0710	23.6784	26.8491	41.0866	22.6006	9.7433	15.6906
	(0.0001)***	(0.0001)***	(0.0229)**	(0.0025)***	(0.0001)***	(0.0019)***	(0.2087)	(0.0209)**
CPI	**0.1214**	**0.4282**	0.0021	**0.2255**	**0.2035**	0.0224	**0.1480**	**0.2081**
	(0.0200)**	**(0.0001)*****	(0.9731)	**(0.0032)*****	**(0.0078)*****	(0.7702)	**(0.0169)****	**(0.0287)****
PD	**−0.0738**	−0.0342	**−0.1503**	−0.0195	−0.0176	**−0.0997**	−0.0396	−0.0692
	(0.0715)*	(0.5320)	**(0.0346)****	(0.7148)	(0.7902)	**(0.0283)****	(0.5489)	(0.1015)
IND	**0.1249**	**0.1466**	**0.1694**	**0.0834**	0.0442	**0.0956**	**0.1323**	**0.1084**
	(0.0042)***	**(0.0110)****	**(0.0334)****	**(0.0971)***	(0.5287)	**(0.0867)***	**(0.0314)****	**(0.0355)****
MSC	−0.0206	−0.0439	−0.0438	−0.0178	0.0226	−0.0247	0.0227	−0.0486
	(0.4455)	(0.2094)	(0.3773)	(0.5283)	(0.6231)	(0.4757)	(0.6679)	(0.1156)
UAI	**−0.0811**	0.0182	−0.0582	−0.0043	**−0.1728**	**−0.1210**	**−0.1204**	−0.0250
	(0.0146)**	(0.7067)	(0.3729)	(0.8974)	**(0.0001)*****	**(0.0114)****	**(0.0022)*****	(0.5101)
LTO	**0.225**	**0.0996**	**0.2961**	**0.1259**	0.0902	**0.3166**	**0.2997**	**0.1840**
	(0.0001)***	**(0.0416)****	**(0.0001)*****	**(0.0044)*****	(0.1478)	**(0.0001)*****	**(0.0001)*****	**(0.0003)*****
IDG	**0.1481**	0.0738	**0.2375**	0.0708	**0.1069**	**0.2512**	**0.1394**	**0.1091**
	(0.0037)***	(0.2267)	**(0.0041)*****	(0.2353)	**(0.0507)***	**(0.0001)*****	**(0.0236)****	**(0.0836)***
N	590	590	590	590	590	590	585	590
R^2	0.7647	0.7589	0.5681	0.6059	0.5248	0.6523	0.5382	0.5977
Panel	Random	Random	Random	Random	Random	Random	Random	Random
HAC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The values outside the parentheses represent the coefficients, while the numbers inside the parentheses represent the p-values. ***, ** and * represent significance levels of 1%, 5% and 10%, respectively. The highlighted values in bold represent the interactions where there was statistical significance.

Source: Author's processing

The results provided above indicate that, overall, countries with a higher perception of corrupt acts, meaning those that tolerate less corruption, are the ones with greater innovation capacity, reflected in better global indices. When analyzing the particularities of innovation, it is observed that societies with a higher perception of corruption have better institutional investments, infrastructure, and market sophistication, and generate greater knowledge and technology, as well as having better indicators of creativity. These findings are important as they provide insights into the positive effects that less corrupt countries (through higher corruption perception) have on various innovation indicators, both in investments and production.

The findings above contribute to the discussion conducted by Cepik et al. (2009), who suggest that corruption can be one of the major obstacles to economic development. According to Espig et al. (2021), innovative activities constitute one of the main drivers for the economic and social development of a country. Additionally, Aytekin et al. (2022) comment that innovation is vital for a country to develop economically. Thus, it is observed that in countries that tolerate more corrupt acts due to low perception, they tend to be penalized in innovation generation, and consequently in economic development.

Regarding cultural dimensions, it is observed that countries: with greater power distance have lower innovation indices; more individualistic countries have better innovation indices; those with higher uncertainty avoidance have lower innovation indices; those with a greater long-term orientation have better innovation indices; and more indulgent countries have better innovation indices. Therefore, it is observed that cultural aspects of power distance and uncertainty avoidance tend to negatively affect innovation aspects, both overall and specific, while aspects of individualism, long-term orientation, and indulgence tend to positively influence economies for investment and innovation generation. These findings are relevant as they help understand how cultural traits contribute to countries becoming more competitive.

The results are supported by the study of Espig et al. (2021), which indicates that: a) the lower the power distance, the greater the efforts of countries to promote equality of power among people, increasing access to information and stimulating innovation; b) individualism, in the context of patriotism and nationalism, drives innovation at the national level; c) the profile of uncertainty avoidance is contrary to the entrepreneurial profile, meaning individuals take fewer risks in implementing innovative ideas; d) a long-term oriented mindset, which translates into preparing citizens through education for a promising future, is a crucial element for fostering an innovative profile; and e) indulgent cultures stimulate innovation as a continuous means of meeting demands associated with entertainment and quality of life.

Therefore, the findings obtained in this study are supported by a broad body of literature, which indicates that economic development and competitiveness depend, among other factors, on innovation, and innovation can be affected by aspects related to society's perception levels of corruption, as well as traits related to the culture of these societies.

4. Conclusions

This research aimed to examine the effects of corruption perception and cultural dimensions on national innovation in international societies. To achieve this goal, information from the Global Innovation Index (GII) reports for a total of 59 countries from 2010 to 2022 was used, along with data from the Corruption Perception Index (CPI) by Transparency International, and Hofstede's Cultural Dimensions (1980).

The results highlight that countries with higher perception of corrupt acts tend to have lower innovation capacity, as reflected in global indices covering institutional investments, infrastructure, market sophistication, knowledge, technology, and creativity. These findings provide insights into the positive influence of transparency and ethics on innovation generation and, consequently, on economic development. In the context of cultural dimensions, it is observed that countries with lower power distance and higher individualism exhibit better innovation indices, while those with higher uncertainty avoidance tend to register lower innovation. Additionally, countries with long-term orientation and indulgent culture display better innovative performance.

The results obtained in this research have significant implications for various market stakeholders, offering valuable insights into the complex interactions between corruption, innovation, and cultural characteristics within a society. These conclusions are particularly relevant for policymakers, businesses, and other stakeholders as they provide an in-depth understanding of how crucial factors can influence the business environment and the global competitiveness of a country.

By highlighting the interactions between corruption and innovation generation, the findings alert to the negative impacts that corrupt practices can have on the development of new ideas and advancements. This not only hampers a country's ability to excel in terms of innovation but also affects its competitive position internationally. The relationship between corruption and innovation, as highlighted in the results, provides valuable insights for designing anti-corruption strategies aimed at boosting creativity, entrepreneurship, and research.

Furthermore, by exploring cultural influences on innovation, the findings provide guidance for policymakers in promoting a culture conducive to generating new ideas. Understanding how specific cultural traits can drive or hinder innovation allows for the implementation of measures that cultivate environments favorable to technological development and competitiveness. In summary, the findings of this research have broad implications, providing a deeper understanding of how corruption and culture can shape a society's innovation capacity. These insights are crucial for guiding strategies and policies that promote ethical, transparent, and innovative environments, contributing to a country's sustainable competitiveness on a global scale.

This study has some limitations, primarily related to the use of cultural dimensions that do not exhibit temporal variation. Another limitation of the study is the absence of other variables that could control variations in innovation, whether related to the

macroeconomic environment or others. Therefore, for future studies, it is suggested to use other measures that can represent cultural traits but have temporal variations, as well as the use of macroeconomic variables to control effects on countries' innovation.

Conflict of Interest

The author declares that the research was conducted without any commercial or financial relationships that could be construed as a potential conflict of interest.

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The author listed has made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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