

Chapter 11

National Culture and Its Relationship With Innovation and Corruption

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ABSTRACT

Innovation is a driver of economic growth, wealth and prosperity. On the other hand, corruption emerges as a worldwide problem responsible for sapping resources, inequality, human suffering and poverty. This study hypothesizes that national culture, measured using Hofstede's six cultural dimensions, have an impact on corruption and innovation, and that highly corrupt nations are less innovative. Data were obtained from Hofstede's, Transparency International, and Global Innovation websites for the year 2012. The findings support the claim that most national culture aspects have an impact on corruption, although their impact on innovation is less measurable. Corruption was found to have a strong and negative effect on innovation. Our results draw attention to the usefulness of Hofstede's six-dimension framework in research and the need for further analysis on how corruption influences innovation through mechanisms other than national culture.

INTRODUCTION

National culture is a set of characteristics, attitudes, norms and values that distinguish members across organizations, institutions or countries (Hofstede, 2001), influencing all aspects of social and individual life. Cultural differences can be one explanation as to why some nations exhibit higher levels of economic development or corruption than others. For example, societies that emphasize freedom and creativity are expected to be more innovative than strictly formalized cultures. Corruption is also expected to be higher in cultures where individuals focus on power rather than on human relationships.

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Culture is the foundation on which a society is built and has an impact on people's lives. The individual's role in society is likely to influence the decision to create new businesses, to act entrepreneurially and to live within the boundaries of the law. Extant research examining the culture-innovation link is extensive (e.g., Azar & Drogendijk, 2016; Dantas, Moreira, & Valente, 2015; Efrat, 2014; Gaygisiz, 2013; Mihaela, Claudia, & Lucian, 2011; Shane, 1992, 1993; Steel, Rinne, & Fairweather, 2012; Taylor & Wilson, 2012; Turró, Urbano, & Peris-Ortiz, 2013), however, most studies do not use the updated six-dimension of Hofstede's cultural framework (which includes pragmatic versus normative and indulgence versus restraint to the previous power-distance, individualism, masculinity and uncertainty-avoidance dimensions), nor the Global Innovation Index (GII) that captures the multi-dimensional facets of innovation and provide the tools that can assist in tailoring policies to promote long-term output growth, improved productivity, and job growth; instead, the majority of studies carried out to date have used the 'old' four cultural dimensions and traditional measures of innovation (e.g., number of patents or investment in R&D) (e.g., Efrat, 2014). The relationship between national culture and corruption has also been subjected of several studies (e.g., Barr & Serra, 2010; Davis & Ruhe, 2003; Huster, 1999; Sanyal, 2005; Sims, Gong, & Ruppel, 2012; Yeganeh, 2014), nonetheless, extant research lacks the use of complete cultural frameworks and findings are still inconsistent.

Although research supports the relationship between corruption and innovation (e.g., Anokhin & Schulze, 2009; Ulman, 2013), no studies have used the Corruption Perception Index (CPI) and GII simultaneously. As such, the aim of this study is to address the above-mentioned gaps and: (1) model the culture-corruption-innovation relationship, in order to understand how culture influences innovation; (2) to provide additional findings on which cultural variables influence corruption; (3) to measure corruption and innovation using CPI and GII respectively, given they are some of the most up-to-date and comprehensive measures for those variables; and (4) finally, examine the relationships among national culture, corruption and innovation altogether. For that, Hofstede's six cultural dimensions are going to be used to measure culture.

We have structured this book chapter as follows. After this introductory section, the background reviews literature on innovation, national culture, and corruption. The following section presents the theoretical assumptions and the hypotheses. Then, the method section describes the measures, the datasets used and the methodology adopted, followed by the results. Finally, we discuss the results found and present the conclusions.

BACKGROUND

Innovation

Innovation is a driver of economic growth, and prosperity (Turró et al., 2013). In a globalized world of commerce and trade, nations seek the "innovation imperative", in other words, the need to produce successful innovation at individual, business, and national levels, as a way for nations and business to leave their mark in the world (Steel et al., 2012). Several definitions can be found in the literature regarding innovation. Schumpeter (1942) identified three stages when entering a technological market: invention, innovation and adoption. Invention is an act of intellectual creativity, as such, some inventions never go beyond ideas. Innovation occurs when an invention succeeds in the market. Finally, adoption is the acceptance of an innovation by the market. While inventions and innovations occur at the firm or industry

levels, adoption happens at the market level. For Frankelius (2009), innovation is something original, new, and important in any field that breaks into a market or society. The OECD (2005) define innovation as the implementation of a new or significantly improved product, a new process, a new marketing method or a new organizational method in business practices or workplace organization.

Innovation can be understood both at micro, meso and macro level. When the unit of analysis is the organization, innovation is understood as following a micro perspective (Dantas & Moreira, 2011; Moreira, 2014). Following this perspective, innovation can be classified into two categories: incremental and radical, in which the former emerges from practice and continuous improvement (Dantas & Moreira, 2011; Moreira, 2014) and the latter emerges when a new product, process or organizational solution is developed and/or introduced onto the market (Carrizo-Moreira & Leonidivna-Karachun 2014).

At a meso level, innovation is intrinsically connected to learning and change (Edquist, 1997) and follows an interdisciplinary perspective involving institutions, socio-economic and political determinants that emphasize and interdependent process in which innovation stems from the interactions of actors (Heidenreich, 2004; Moreira, Carneiro, & Tavares, 2007; Moreira & Vale, 2016).

At a macro level, innovation is analyzed from the national institutional perspective in which industrial dynamics and national perspectives play a key role (Boschma & Martin, 2010). Which this perspective innovation has an impact on economic growth and job creation.

In 2007 the Global Innovation Index (GII) was created by INSEAD, seeking new metrics and approaches to better capture the richness of innovation in society, and go beyond the traditional measures of innovation such as ‘the number of research articles’ or ‘the level of R&D’. This index established itself as a reference among innovation indexes and has evolved into a valuable benchmarking tool (Cornell University, INSEAD, & WIPO, 2013). The Global Innovation Index is based on two sub-indexes: innovation inputs and outputs. The innovation input is made up by five pillars (institutions, human capital and research, infrastructure, market sophistication, and business sophistication) capturing elements related to the regulatory and business contexts. The innovation output is based on two pillars (knowledge and technology outputs, and creative outputs), with a particular focus on the quality of the social and business infrastructure expected to result from innovation, along with the number of patents issued and trademarks granted.

Summing up, innovation is related to the notion that something new has been created and subsequently accepted by the market. Traditionally, this has been measured through the number of patents, R&D, or the amount of scientific articles. The development of GII in 2007 provided a more accurate measurement tool (which has since been improved), often being selected as the indicator of choice for innovation in academic research (e.g., Steel et al., 2012).

National Culture: Hofstede’s Cultural Dimensions

Culture can be used to explain what some countries are more developed than others, although, a cultural model that ensures the success of a country does not exist (Mihaela, Claudia, & Lucian, 2011). The same goes for the relationship between culture and corruption, as existent research suggests that national culture has a role in guiding people’s behavior (Hofstede, 1997), thus, cultural values justify and guide how social institutions function, i.e., their corruption or anti-corruption behavior (Barr & Serra, 2010). Over recent decades, culture has been one of the main research constructs in several fields such as marketing, business or psychology (Taras, Steel, & Kirkman, 2012). Arguably, one of the primary drivers behind this trend has been Hofstede’s work, detailed in his book “Culture’s Consequences”, which had a

profound impact on cross-cultural research (Taras & Steel, 2009). Despite the large amount of definitions of culture, the one presented by Hofstede is certainly among the most used and accepted by scholars. Hofstede (1980, p. 25) defined culture as *“the collective programming of the mind which distinguishes the members of one human group from another”*, thus, the central mechanism of culture is *“a system of societal norms consisting of the value systems (or the mental software) shared by a major group in the population”* (Hofstede, 2001, p. 11). As such, culture is recognized as a set of shared attitudes, values or norms that characterizes a nation or organization and distinguishes it from another.

In his study, Hofstede (1980) analyzed survey data on work-related values obtained over the period 1967-1969 and again over the period 1971-1973 from more than 117 000 IBM employees. His findings revealed four statistically independent dimensions which explained the inter-country variation in the responses to his survey. He labeled those four dimensions as power-distance (PDI), individualism (IDV), masculinity (MAS), and uncertainty-avoidance (UAI). Recently, Hofstede, Hofstede, & Minkov (2010) added two new dimensions to their cultural model: pragmatic versus normative (PRA), and indulgence versus restraint (IVR).

Power-distance is the degree to which less powerful members of society accept that power is distributed unequally, and that some people have more power than others (Hofstede et al., 2010). In societies with a high power to distance index, people accept there is a hierarchical order and that individuals have their place without the need of further justification; however in societies with low power to distance index, people seek to avoid inequalities in the distribution of power and demand justifications for those inequalities (Hofstede et al., 2010). The individualist/collectivist dimension looks at whether people from society focus more on the “I” than on the “we” (Hofstede et al., 2010). In an individualist culture, individuals are expected to care for themselves and their immediate families while under a collectivist culture, individuals expect their relatives or members of a group to look after them (Hofstede et al., 2010). Masculinity/femininity is related to people’s orientation towards achievement or relationships, respectively (Hofstede et al., 2010). In a masculine culture, the society rewards achieving success, advancement, power, and money while in a feminine culture, individuals care about cooperation, relationships, modesty, have sympathy for the weak and value the quality of life (Hofstede et al., 2010). Uncertainty-avoidance reflects the degree to which individuals feel threatened or uncomfortable with uncertainty (Hofstede et al., 2010). Strong uncertainty avoidance cultures are usually more pessimistic, more dependent on those in power, more based on rigid codes or beliefs, less willing to introduce change and more intolerant to unorthodox ideas while in weak uncertainty avoidance societies people are more relaxed, more open to new ideas, more tolerant and less stressed regarding the future (Hofstede et al., 2010). The pragmatic versus normative dimension concerns to whether people generically focus on the long term rather than on short term; pragmatic societies focus on the long term and recognize that truth depends on time and context, while normative cultures value the short term, traditions, conventions, and seek for stability (Hofstede et al., 2010). Pragmatic societies deal positively with drawbacks and have a high likelihood to save, invest and persevere to achieve results while normative oriented societies have a strong desire to explain everything and establishing the absolute truth, as well as a need for stability. Normative cultures emphasize traditions and have a small likelihood to save for the future as they are more centered on quick results (Hofstede et al., 2010). Indulgence versus restraint gauges whether emphasis is placed either on indulging in the pleasures of life, or instead, on the suppression of gratification (Hofstede et al., 2010). Indulgent societies allow free gratification of human drives related with life and pleasure, emphasize life control and freedom of expression while restraint cultures suppress the gratification of needs through social norms and control the freedom of expression (Hofstede et al., 2010).

Despite the popularity of Hofstede's cultural dimensions, his work faces some criticism, namely the use of quantitative measures, the fact that data were collected from workers of a particular organization (IBM), and the time separating the two rounds of data collection (Efrat, 2014). In a comparative assessment of multiple cultural frameworks, Magnusson, Wilson, Zdravkovic, Zhou, & Westjohn (2008) found that national culture is more stable than Hofstede himself predicted, furthermore, Hofstede's framework showed stronger convergent validity when compared to other cultural frameworks such as Schwartz' (1994).

Hofstede's cultural dimensions are reliable and one of the most employed in cultural research (e.g., Dantas, et al., 2015; Efrat, 2014; Gaygisiz, 2013; Mihaela et al., 2011; Sims et al., 2012; Taylor & Wilson, 2012), although the six-dimension framework is still relatively underexplored in research (see e.g., Gaygisiz, 2013). Extant research supports that national culture and innovation are related. Steel et al. (2012) approached the culture-innovation relationship evaluating culture through personality. They examined data on the scores of the 'big five' (i.e., neuroticism, extraversion, openness to experience, agreeableness and conscientiousness), finding a strong relationship between openness to experience and innovation.

Analyzing five Hofstede's cultural dimension (power distance, individualism/collectivism, masculinity/femininity, long/short term orientation, and uncertainty avoidance) and entrepreneurship (total entrepreneurial activity, necessity-driven entrepreneurship, and opportunity-driven entrepreneurship) among 44 countries of the GEM database, Dantas et al. (2015) demonstrate that:

- Total entrepreneurial activity (TEA) can be explained by lower levels of power distance and by efficiency-driven economies, and by Latin American and Asian economies. This reflects that the main motivation to start a new business is more stringent in less developed economies as a result of lack of more interesting opportunity-driven options. Clearly, innovation-driven economies are not statistically significant in explaining TEA activity;
- Necessity-driven entrepreneurship can be explained by power distance index and uncertainty avoidance index;
- Opportunity-driven entrepreneurship can be explained by masculinity and uncertainty avoidance index;
- The variations among countries in terms of cultural variables, necessity-driven and opportunity-driven entrepreneurship cannot be explained by innovation-driven economies.

Shane (1992, 1993), using patent statistics and Hofstede's four cultural measures, examined data on 33 countries during four years, finding that societies with high individualism scores are highly inventive. Taylor and Wilson (2012) showed that individualism has a strong and positive effect on both scientific progress and technological innovation (measured using citation-weighted research publications and patents). Efrat (2014) investigated the impact of different cultural aspects on countries' motivation to innovate and to invest in innovation. They found that they demonstrated that investment in innovation is a major facilitator of innovation, and that national culture has a substantial influence on the ability of firms to create and maintain innovation. Gaygisiz (2013) brought together the Hofstede and Schwartz cultural measures, the Worldwide Governance Indicators (WGI) and the Human Development Index (HDI). This author found that the governance, indulgence, harmony, affective and intellectual autonomy, and egalitarianism were positively related to human development, whereas power-distance, embeddedness, and hierarchy were negatively related to human development. While this study uses the six-dimension cultural frameworks and their impact on governance, it does not access innovation directly.

Mihaela et al. (2011) examined the relationship between Hofstede's four cultural dimensions and national competitiveness using the CORREL index, observing that cultural dimensions have an impact on national competitiveness. Specifically, in countries where power-distance is small, individualism predominates, and uncertainty control is low; competitiveness is higher when compared to countries where power-distance is high; collectivism dominates; and uncertainty control is intense. Nevertheless, some countries are competitive through masculinity while others are competitive through femininity, besides individualism, and low power-distance. Azar and Drogendijk (2016) examined the relationships between perceived and objective cultural distance (conceptualized using Hofstede's 1980, 2001 scores for national culture dimensions) with innovation, empirically validating the explanatory power of cultural distance on innovation strategies and firm performance.

Corruption

Corruption is recognized as a serious and worldwide problem affecting societies and the credibility of public institutions and their ambassadors. No country can claim to be completely free of corruption as none achieves a maximum score in the corruption indexes. Corruption is defined as "*the abuse of public power (or public office) for private gain*" (You & Khagram, 2005; p. 137) or the action of private individuals or companies who abuse public resources for private interests (Ulman, 2013). For Anokhin and Schulze (2009), corruption involves behavior that violates the trust in public officials and undermines the foundation on which generalized interpersonal trust relies. Transparency International (TI) measures the perception of corruption in different countries, which it defines as "*the abuse of entrusted power for private gain*". As such, corruption is related to a loss of trust in the systems serving the public and in taking advantage of them for private interests.

Corruptive practices include bribery, kickbacks, coercion (Sims et al., 2012), baksheesh, pay-offs, gratuities, commercial arrangements, favoritism and nepotism, blackmailing, protection or security money, gifts, under-the-table fees, embezzlement, extortion and fraud (Lindgreen, 2004). These practices undermine fair trade, waste resources, defraud public, increase human suffering (Vogl, 1998), affect growth, increase inequality and poverty, provoke distrust and cause anger (Tanzi & Davoodi, 1998).

The damage caused by corruption has become a growing concern, leading international organizations to develop corruption measures such as the Corruption Perception Index (CPI) of TI (Ko & Samajdar, 2010). The corruption perception index measures the perception of corruption in each country based on surveys of business people or international experts, relying on at least three different sources to assess a country's risk. Critics of corruption indexes insist that the measures do not capture local inhabitant's perceptions of corruption, and that the results would be different when different corruption indexes for different years are used (Ko & Samajdar, 2010). Others argue that the aggregation method is not statistically rigorous (Lambsdorff, 2007) and that perceived corruption is not the same as actual corruption (Montinola & Jackman, 2002). Ko & Samajdar (2010) addressed these issues by testing the reliability and validity of multiple corruption indexes, finding that the international experts' perception of corruption is highly correlated with the local peoples' perceptions of corruption, especially bribery. They also demonstrated that corruption indexes are valid and reliable, being an acceptable tool when the research question is related with the general perception of corruption.

An effective control of corruption can bring several advantages: a higher likelihood that entrepreneurs capture larger portions of the revenues they generate; the stimulation of higher levels of entrepreneurial and innovative activities; and lower investments risk (Anokhin & Schulze, 2009). Existent research con-

ducted in the field supports the idea that corruption affects a country's competitiveness and entrepreneurial activity. Ulman (2013) examined the influence of corruption on competitiveness using regression analysis and index data from The Global Competitiveness Report (GCI) 2012-2013 and the corruption perception index of 2012. She found that countries rated as having low national competitiveness are perceived as more corrupt than more competitive countries; also, innovation-driven countries exhibited a stronger connection between the competitiveness and low levels of corruption than factor-driven countries due to the importance that public institutions image have for economic outcomes.

Anokhin and Schulze (2009) used corruption, economic development, entrepreneurship and innovation to propose that improved control of corruption is related to rising levels of innovation and entrepreneurship. They measured innovation by using the number of patent applications and the rate of realized innovation, finding that the efforts to promote entrepreneurship and innovation within an economy are more productive if complemented with actions designed to control corruption.

Using 2009 data from Global Innovation Index, DiRienzo and Das (2015) explored the impact of corruption and its interactive relationship with economic development, in addition to the effect of three different measures of diversity on country-level innovation. They conclude that although corruption affects negatively innovation activities among countries, the effect is mitigated among wealthier countries, as religious diversity, which was considered a proxy for tolerance, was found to positively contribute to innovation. On the other hand, ethnic diversity weakens innovation activities as ethnically fractionalized groups do not participate in collective and collaborative undertakings.

Sharma and Mitra (2015) concluded that policy impediments are an important cause of bribe payment, as the complexity of the political system and the complex bureaucracy tends to raise the likelihood of firms paying bribes, which dampens firms' performance. They argue that bribe payments support both behaviors: 'grease the wheels' and 'sand the wheels'.

National culture has also shown to have an effect on corruption. However, while most studies support this relationship, the findings on which dimensions influence culture are not consensual. Huster (1999) examined the impact of national wealth, income distribution, government size and four Hofstede's dimensions on country's corruption, finding that wealth, power distance, masculinity and uncertainty avoidance strongly influenced corruption. Their results however do not support the impact of individualism on corruption. Davis and Ruhe (2003) analyzed the relationship between Hofstede's cultural dimensions and country corruption perceptions, providing support for power distance, individualism, masculinity and uncertainty avoidance influence. Sanyal (2005) examined the relationships between the corruption perception index score from 47 countries with economic and cultural variables, finding that bribe was more likely in countries with low income per capita and lower disparities in income distribution; furthermore, among cultural factors, only power distance and masculinity were associated with bribe taking. Yeganeh (2014) conducted an extensive study to investigate the effects of cultural values on corruption using Hofstede's, Schwartz's, and Inglehart's frameworks. Concerning Hofstede's results only, they validated the impact of individualism, power distance and uncertainty avoidance on corrupt behaviors. Clearly, only power distance impact appears to be fully consensual among research. Additionally, the aforementioned studies have resorted only to Hofstede's four cultural dimensions.

Adopting a distinct approach, Barr and Serra (2010) discussed the results obtained by two previous studies on corruption using the corruption perception index and the 'bribery game' (a game based on a sample of individuals originating from 34 countries with markedly different levels of corruption which were presented with a corruption decision). The first study, conducted in 2005, showed that corruption could be predicted among undergraduates by referencing the level of corruption prevailing in their home

country. In 2007, using a different sample of individuals, the results showed once again that they could predict which undergraduates would engage in bribery based on the level of corruption prevailing in their home country. They also found that the amount of time spent in the UK was associated with a decline in the predisposition of an individual to engage in bribery within the experiment. The results provided support that country's culture is related with the corruption attitudes of individuals.

Sims et al. (2012) hypothesized that human development restricts corruption and the magnitude of that effect is contingent upon the conditions of national culture. Using regression analysis, data from the corruption perception index, the human development index and Hofstede's four dimensions, Sims et al. (2012) found support for the main effect of human development on corruption, as well as the moderator effect of power distance and individualism on the relationship.

Following a different perspective, Mondlane, Claudio, and Khan (2016), focusing on governance indicators that strongly correlate with corruption, support the idea that corruption in Africa is the result of poor democratic governance enabled by asymmetrical concentration of power in governments, which results in the rise of alliances between elites and corporate interests. They also support that a wider citizen engagement in public governance is necessary to strengthen 'voice and accountability' and to promote 'socially conscious' and transparent leaders.

The results of the aforementioned studies using cultural dimensions, innovation or corruption rely on data which is now outdated (e.g., since the 1990s, countries with low individualism scores such as South Korea, Finland or India have now become highly innovative) and traditionally do not include Hofstede's six cultural measures, or combine them with the most updated innovation or corruption indexes.

Clearly, even though competitiveness and entrepreneurship comprise innovation variables, the relationship between corruption and innovation using specific indexes has received little attention.

Theoretical Assumptions and Hypotheses

The present study is based on three main hypotheses regarding: (1) the effects of national culture on innovation and (2) corruption, and (3) the effect of corruption on innovation. The first and second hypotheses assume that Hofstede's framework represents key aspects of a country's culture, which can determine its orientation towards innovation and corruption, respectively.

In high power-distance cultures, individuals accept there is a hierarchical order, thus, organizations are more rigid and centralized, and decisions are taken by and in order to preserve those in power. Also, in high power-distance countries, inhabitants accept that privileges are held by those in authority and the powerless are less likely to defend their rights and defy power, thus, accepting their inequity and the "legitimacy" of corruption by the powerful. Huster (1999) indicated that in high power distance countries, there is a high level of dependence of subordinates on their superiors on the form of paternalism, which is a system by which superiors provide favors to their subordinates in return for their loyalty. As a result, decisions are not based on merit but on the balance of favors and loyalty. Cohen, Pant, and Sharp (1996) claimed that people in high power distance cultures are more likely to understand questionable business practices as ethical than people in low power distance countries. Davis and Ruhe (2003) indicate that corruption should be higher in high power distance countries due to the lack of trust and cooperation between social groups. Several authors support that high power distance cultures are more corrupt than low power distance cultures (Davis & Ruhe, 2003; Huster, 1999; Sanyal, 2005; Yeganeh, 2014). As such, we expect high power distance cultures to tolerate better corruption practices than low power distance countries.

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H_{1a}: High power to distance index societies exhibit higher levels of corruption.

In low power-distance countries, organizations are more organic, power decentralized, and with a high level of trust and communication between employees, which should stimulate collaboration and innovation. Davis and Ruhe (2003) argue that in low power distance cultures, the gap between superiors and employees is smaller and titles or status are less important, increasing the harmony and cooperation within the society. Contrariwise, high power distance leads to a hierarchical or organizational structure which tends to be more centralized and inflexible, consequently, decision-making will seek to preserve those in authority (Efrat, 2014). Shane (1992) indicated that in low power distance countries, new organizations are smaller and organic, with high levels of information processing capabilities and communication between superiors and employees. Furthermore, those organizations have control systems based on trust and are power decentralized (Shane, 1992). Ahmed (1998) argues that trust, openness, awards, rewards, autonomy and flexibility can enhance an innovative environment in organizations.

H_{2a}: High power to distance index societies exhibit lower levels of innovation.

In collectivist societies, the individuals are subsumed by the group and strive to maintain its harmony. As a result, collectivist societies will not go against the clan or tribe and exhibit weak governance levels. Because the group is deemed as more important to the individuals than the state, these cultures normally display weaker mechanisms for controlling corruption, moreover, individuals may become more risk-prone due the group protection effect, neglecting the consequences of corruption. Yeganeh (2014) argue that in collectivist cultures, the emphasis is set on interpersonal relations, which may lead to favoritism, nepotism and corruption, differently, in individualistic cultures, interpersonal relations are less importance and regulations are often respected. LaPalombara (1994) found that high collectivism is a difficult structural condition to change as persons both in public and private sectors will not hesitate to violate written laws if they are interpreted to run counter to established moral codes. Several authors have found a relationship between Hofstede's collectivism and corruption (Davis & Ruhe, 2003; Yeganeh, 2014).

H_{1b}: High individualist societies exhibit lower levels of corruption.

In an individualist culture, individuals are oriented towards the self, their immediate relatives, or the organizations they belong to. These societies focus on personal goals, on fulfilling their individual duties and express their thoughts directly, which should translate into a spirit of mission, and a stronger entrepreneurial orientation and innovation. Hofstede (2001) indicated that high individualist countries have a strong entrepreneurial orientation which in turn stimulates invention and innovation. Additionally, individualism and power distance share some characteristics which should influence innovation. Ahmed (1998) stated an innovative environment is characterized by freedom, trust, awards and rewards and Hofstede (2001) demonstrated a strong correlation between individualism and power distance, i.e., typically, low power distance countries have high individualism scores and vice-versa. Shane (1992) results support the hypothesis that high individualist countries should exhibit higher innovation rates.

H_{2b}: High individualist societies exhibit higher levels of innovation.

Masculine societies focus on the ego, the power, money and success, thus, they are expected to display a higher level of corruption based on achievement seeking, as individuals will fight for material resources and be more willing to engage in corrupt behavior. Yeganeh (2014) argues that masculine cultures focus on material possession, performance and ambition, in contrast with feminine cultures emphasize human needs, care and interdependence. Huster (1999) suggested that the focus on material success may lead to a willingness to engage in corrupt behaviors in the hunt of material benefits. Several scholars are supported that higher levels of masculinity and the search for material success to be related with unethical and corrupt behaviors (Davis & Ruhe, 2003; Huster, 1999; Sanyal, 2005).

H_{1c}: Masculine societies exhibit higher levels of corruption.

Feminine cultures are characterized by a focus on cooperation, care, and relationships, which should translate into an increased propensity for innovation. Hofstede (2001) indicate that feminine societies exhibit a greater balance between men and women's roles. Efrat (2014) findings revealed that some aspects of innovations are higher in feminine cultures, which may be due to collaboration and networking. Accordingly, feminine societies value relationships as a mean of developing cooperation and well-being through relationships, which in turn help to meet presents goals by creating a favorable environment (Efrat, 2014). Collaborative environments are posed to have a positive impact for creative and inventive processes to occur.

H_{2c}: Masculine societies exhibit lower levels of innovation.

High uncertainty avoidance societies are more dependent of those in power and make more use of strict codes. Paradoxically, while high uncertainty avoidance seeks the creation of rules to decrease ambiguity, those very same rules are typically very rigid and not practically observed (Huster, 2000). Davis and Ruhe (2003) indicated that countries which are by nature uncomfortable with uncertainty prefer bureaucratic structures which in turn tend to encourage unethical behaviors. Yeganeh (2014) stated that the abundance of rules and regulations in high uncertainty avoidance societies creates occasions for economic rents and misconducts. Huster (1999) argued that uncertainty avoidance reflects an intolerance for ambiguity, nevertheless, corruption can be perceived as a mechanism to decrease uncertainty but in situations where outcomes are uncertain, corruptive practices lead to a more certain outcome. In high uncertainty avoidance societies its members are also more committed to protect the gains achieved from the status quo, thereby engendering a higher likelihood of engaging in corrupt behaviors. Existing research supports the relationship between uncertainty avoidance and corruption (Davis & Ruhe, 2003; Huster, 1999; Yeganeh, 2014).

H_{1d}: High uncertainty-avoidance societies exhibit higher levels of corruption.

Low uncertainty avoidance societies are typically more opened to new ideas, on the other hand, high uncertainty-avoidance cultures are more pessimistic and less willing to introduce changes or unorthodox ideas as these members understand novelties as dangerous. As a consequence, new ideas or innovations are less likely to happen because they can be perceived as dangerous and disturbing the existing order and control. Findings from Shane (1995) support the linkage between low uncertainty avoidance and innovation. Efrat (2014) suggested the rationale that low uncertainty avoidance countries based on a

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higher open to change, willingness to take risks and abilities prevailing over seniority turn operational in an innovative environment.

H_{2d}: High uncertainty-avoidance societies exhibit lower levels of innovation.

The pragmatism versus normative dimension has been related to short term and long term orientation. According to Hofstede et al. (2010), societies with a short-term orientation have a strong concern with the absolute truth, are normative in thinking, have great respect for traditions, and focus on achieving quick results. We have posed that highly strict and conservative societies, averse to change are expected to be more prone to engage in corruptive behaviors. This can be due to the focus on the short-term rather than long-term perspective, which may lead individuals to engage in unethical practices seeking instant rewards.

H_{1e}: High pragmatic societies exhibit lower levels of corruption.

In long-term orientated societies, the truth depends on situation, context and time. Thus, long-term orientation is characterized by an ability to adapt traditions to changed conditions, a strong interest in saving and investments, and perseverance in achieving results (Hofstede et al., 2010). Contrariwise, short-term oriented cultures understand societal change with distrust, which in turn can hinder creativity and innovation. Hofstede et al. (2010) argue that long-term oriented cultures are more prone to make efforts in modern education in order to pave the way for the future. We expect pragmatic societies to produce more innovative outputs than normative cultures.

H_{2e}: High pragmatic societies exhibit higher levels of innovation.

Restraint cultures suppress the gratification of needs through rigid social norms, and control over freedom of expression, thus, more bureaucratic, closed and normative societies should be associated with higher levels of corruption. Hofstede et al. (2010) indicates that in restrained cultures there is a greater sense of helplessness on the personal destiny. Controlled societies where individuals are conformed with their current situation and lack freedom to comply, may create an environment which allow higher levels of corruption.

H_{1f}: High indulgent societies exhibit lower levels of corruption.

Indulgent societies allow people to freely focus on the gratification of human desires associated with the pleasures of life, emphasizing life control, and freedom of expression, which can be expected to lead to more creativity and innovation. Hofstede et al. (2010) state that indulgent cultures place a high importance on freedom of speech and personal control, which may have an impact on the workplace on how willing are employees to voice opinions and provide feedback. As a result, these societies are expected to be more open and collaborative, encouraging networking and cooperation and as a result, innovation.

H_{2f}: High indulgent societies exhibit higher levels of innovation.

The third hypothesis is based on the assumption that corruption hampers innovation. Entrepreneurs and investors aim to capture the revenues and profits they generate, thus, in cultures with high levels of corruption, it is more likely that some of the dividends will be lost due to extortion, intellectual protection, fraud or bribery among others, reducing investment attractiveness, entrepreneurship activity and innovation.

H₃: High corruptive societies exhibit lower levels of innovation.

The conceptual model and expected sign of the hypothesized relationships are presented in Figure 1.

METHODS

Values for Hofstede's PDI, IND, MAS, UAI, PRA, and IVR were obtained from Hofstede's Website (2014) for the year 2010 with data ranging from 0-100, with 100 representing the maximum score for each dimension. The Corruption Perception Index scores were gathered from the Transparency International Website (2014) for the year 2012. In the index as published, values range from 0-100 with 0 representing the highest level of corruption and 100 the lowest. Data was reversed by subtracting each CPI score from 100. For this sample, the highest level of corruption was 81 (Venezuela) whilst the minimum was 10 (Denmark, Finland and New Zealand).

The Global Innovation Index is the average of two sub-indexes. The data was retrieved from the Global Innovation Website (2014) for 2012; this index ranges from 0-100 where the higher the score, the higher the innovation. The minimum and maximum values recorded were 23.06 (Pakistan) and 68.24 (Switzerland) respectively.

The sample for this study included data for 61 countries located on five continents (Table 1). The dataset was limited mainly by availability of secondary data on culture. The countries included in this study represent around 76.2% world's population and 90.7% world's Gross Domestic Product in 2012 (The World Databank, 2014).

Figure 1. Conceptual model and expected causal relationships

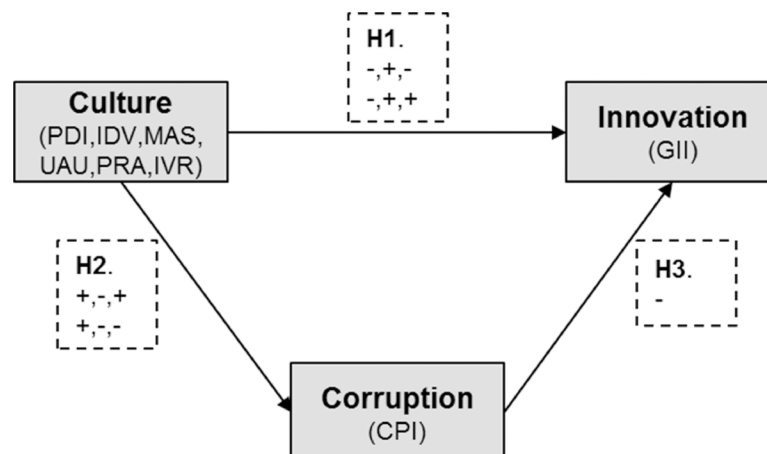


Table 1. Countries included in the sample

Africa: Morocco
Asia: Bangladesh, China, Hong Kong, India, Indonesia, Iran, Japan, South Korea, Malaysia, Pakistan, Philippines, Singapore, Thailand, Vietnam
Europe: Turkey, Greece, Romania, Russia, Serbia, Poland, Bulgaria, Croatia, Slovakia, Lithuania, Italy, Portugal, Hungary, Latvia, Spain, Czech Republic, Slovenia, France, Austria, Belgium, Estonia, Malta, Germany, Norway, Luxembourg, Ireland, Denmark, Netherlands, United Kingdom, Finland, Sweden, Switzerland
Oceania: Australia, New Zealand
North America: Canada, USA
South America: Argentina, Brazil, Chile, Colombia, El Salvador, Mexico, Peru, Trinidad and Tobago, Uruguay, Venezuela

This study uses an approach based on correlations and regressions. Before testing the hypothesis and estimating the model, we examined how innovation and corruption were related with country's wealth. The statistical data analysis of the model was carried out using the partial least squares method structural equation modelling (PLS-SEM) and the SmartPLS 3.0 software. The use of this methodology is justified because this method is robust when testing and validating an exploratory model (Chin, 2010).

RESULTS

As expected, countries with a higher innovation levels display a higher level of wealth, measured by GDP-PC (Gross Domestic Product Per Capita). This reflects the premise that the creation of innovation translates into growth and economic development for the host country (Figure 2). On the other hand, countries with the highest levels of corruption are the ones with the lowest GDP-PC levels; this helps reinforce the notion that corruption prevents a country from retaining its economic profits and prevents a fair distribution of wealth among its population (Figure 3).

We further proceeded to test our hypothesis. Table 2 presents the descriptive statistics and correlation coefficients for the variables examined. Overall, the results support the relationships between national culture on innovation and corruption simultaneously, and that of corruption on innovation. As proposed by the first hypothesis, the cultural dimensions PDI, IDV, UAI and IVR correlate with perceived corruption. As anticipated by the second hypothesis, Hofstede's cultural variables are correlated with the GII. The IDV and PRA cultural dimensions have a strong and positive relationship with the GII, while the link between PDI and UAI towards innovation is negative. The third hypothesis, based on the assumption that corruption and innovation are correlated, is also supported by the data, as the correlation between the CPI and the GII is statistically significant.

The model shown in Figure 4 was evaluated by (a) the sign, magnitude and statistical significance of the parameters of structural relations, and by (b) the explained variance (R^2) of the endogenous variables, following Götz, Liehr-Gobbers, and Krafft (2010) (2010). It is possible to conclude that not all structural relationships have parameters with compatible signal with the hypotheses proposed in the research model. The detailed results can be found in Table 3. The relationship between the power-distance index and innovation is positive and not statistically significant, thus rejecting H_{2a} .

Figure 2. Relationship between GII and GDP PC

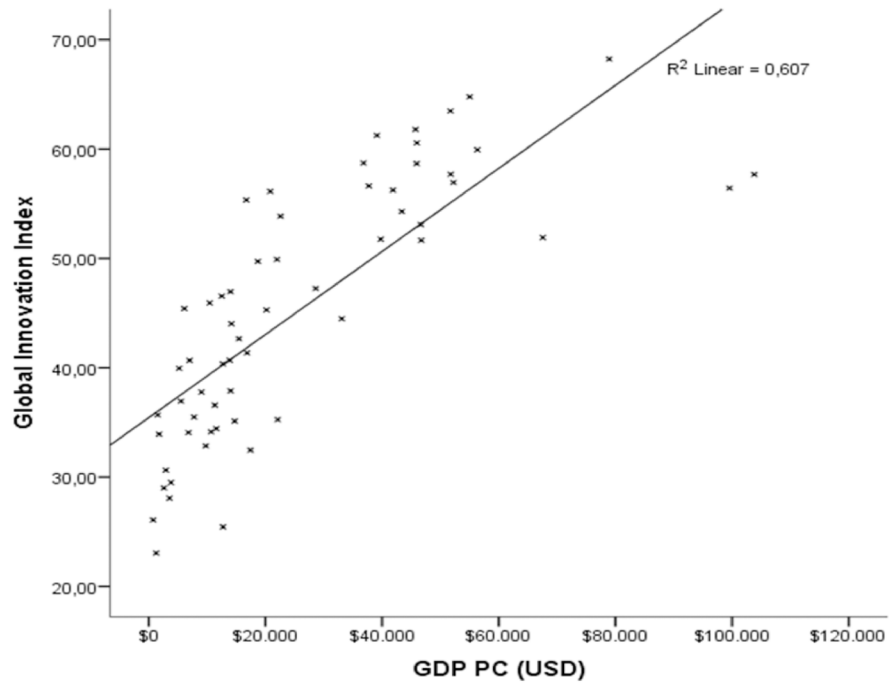


Figure 3. Relationship between CPI and GDP PC

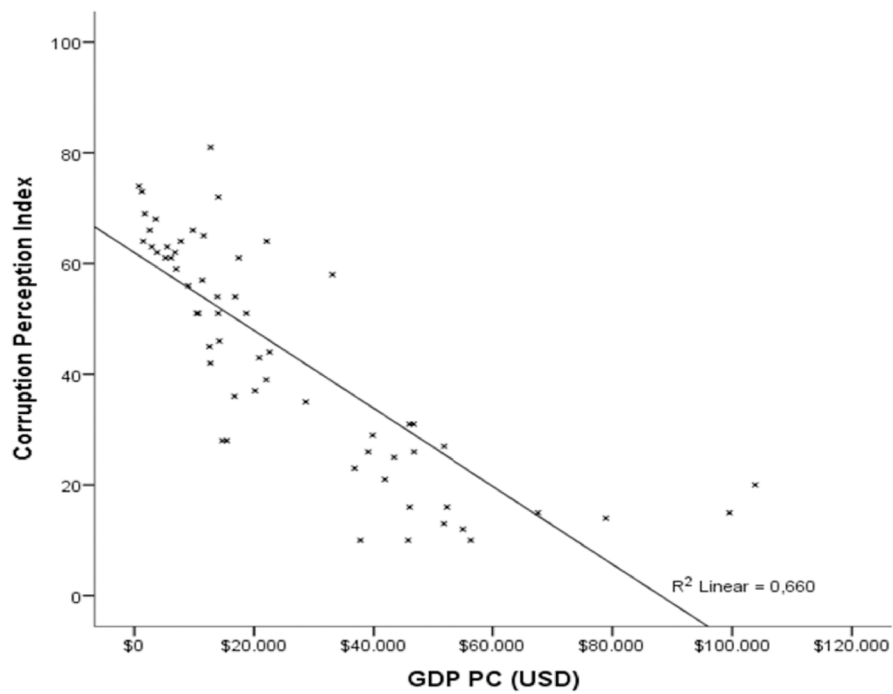


Table 2. Descriptive statistics and correlations

Variable	Mean	Std Dev	GII	CPI	PDI	IDV	MAS	UAI	PRA
GII	45.1	11.7							
CPI	44.0	20.7	-0.894**						
PDI	58.5	20.6	-0.606**	0.656**					
IDV	46.2	23.6	0.663**	-0.650**	-0.662**				
MAS	49.0	20.0	-0.125	0.177	0.152	0.026			
UAI	66.6	22.8	-0.352**	0.289*	0.212	-0.191	0.026		
PRA	49.0	22.4	0.386**	-0.178	0.031	0.131	0.023	-0.031	
IVR	47.5	22.6	0.184	-0.284*	-0.306*	0.160	0.079	-0.067	-0.527**

* $p < .05$

** $p < .01$.

The results also show that all the remaining hypotheses have the sign and magnitude according to the original hypotheses proposed. However, only individualism and uncertainty avoidance indexes have positive statistical significant relationships with innovation, validating H_{2b} and H_{2d} at a 5% significance level.

The analysis between national culture and corruption is somehow different as all the signs and magnitudes are according to what has been proposed in during the hypotheses development process. Moreover, the relationship between power distance, individualism, pragmatism, and indulgence versus restraint indexes show statistical significant relationships with corruption, validating H_{1a} , H_{1b} , H_{1e} , and H_{1f} at a 1% significance level. Although masculinity has a positive statistical significant relationship with corruption at a 5% significance level, uncertainty avoidance index has no statistical relationship with corruption not validating H_{1d} .

Finally, the relationship between corruption and innovation ($\beta = -0.648$), validates H_3 at a 1% significance level.

The direct effect of power distance index on innovation ($\beta = 0.274$) and on corruption ($\beta = 0.286$) are both positive. However, of power distance total effect on innovation is low ($\beta = 0.088$) and not statistically significant. On the other hand, the total effect of all other cultural variables on innovation are statistically significant, being the most important one high individualist cultures with $\beta = 0.510$, followed by programmatic societies with $\beta = 0.409$, and by indulgent societies with $\beta = 0.294$, all of them statistically significant at 1% level.

One can conclude that the more masculine societies are, the more prone to corruption ($\beta = 0.147$) they are, being the total effect of masculine societies less innovative ($\beta = -0.263$). Finally, the relationship between uncertainty-avoidance societies and corruption is not statistically significant; however, one can claim that the total effect of uncertainty avoidance index on innovation is statistically significant at a 5% level and negative ($\beta = 0.215$).

Overall, based on the results found, 62.3% of the variability of corruption can be explained by Hofstede's national cultural influence. As for innovation, 71.8% was explained due to the joint effects of Hofstede's national cultural and corruption.

As shown in Table 4 and Figure 4, H_{1a} , H_{1b} , H_{1c} , H_{1e} , H_{1f} , H_{2b} , H_{2d} , and H_3 are validated.

Table 3. Direct, indirect and total effects

	Direct Effects		Indirect Effects		Total Effects	
	Loadings	t-Values (p-values)	Loadings	Values (p-values)	Loadings	Values (p-values)
CPI → GII	-0.648	6.643 (0.000)			-0.648	6.643 (0.000)
IDV → CPI	-0.352				-0.352	3.078 (0.002)
IDV → GII	0.282	2.013 (0.044)	0.228	3.016 (0.003)	0.510	3.387 (0.001)
IVR → CPI	-0.304	2.783 (0.005)			-0.304	2.783 (0.005)
IVR → GII	0.097	1.351 (0.177)	0.197	2.759 (0.006)	0.294	2.931 (0.003)
MAS → CPI	0.171	2.058 (0.040)			0.171	2.058 (0.040)
MAS → GII	-0.153	1.365 (0.172)	-0.110	2.188 (0.029)	-0.263	2.115 (0.034)
PDI → CPI	0.286	3.077 (0.002)			0.286	3.077 (0.002)
PDI → GII	0.274	1.148 (0.251)	-0.186	2.545 (0.011)	0.088	0.350 (0.726)
PRA → CPI	-0.301	2.917 (0.004)			-0.301	2.917 (0.004)
PRA → GII	0.214	1.878 (0.061)	0.195	2.710 (0.007)	0.409	3.034 (0.002)
UAI → CPI	0.127	1.060 (0.289)			0.127	1.060 (0.289)
UAI → GII	-0.133	2.018 (0.044)	-0.082	1.028 (0.304)	-0.215	2.075 (0.038)

Figure 4. Model relating Hofstede's cultural dimensions on corruption and innovation

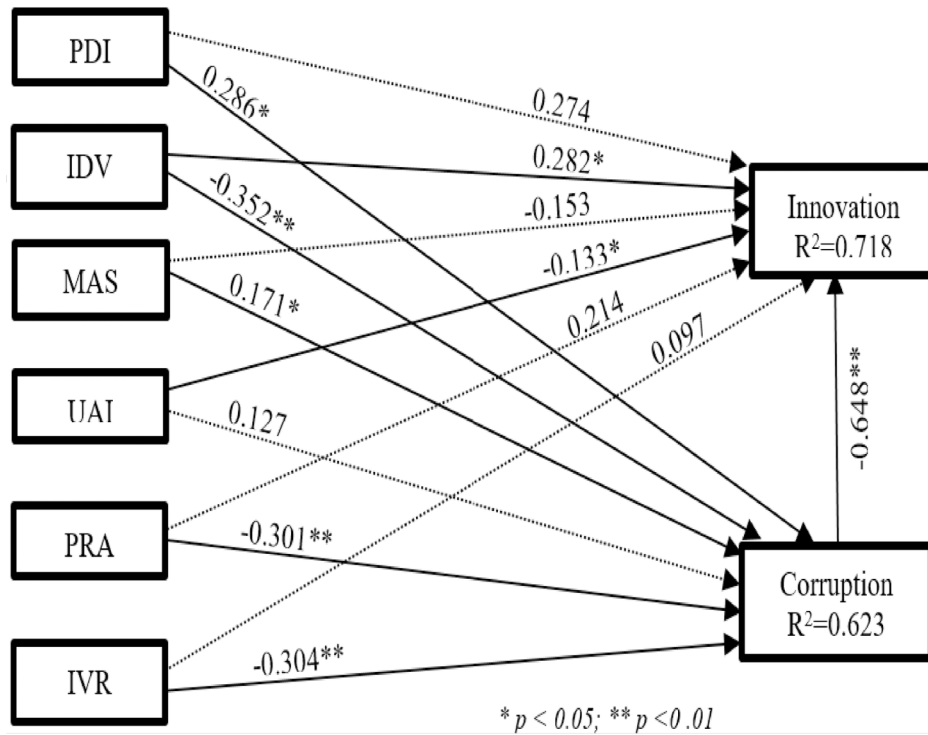


Table 4. Hypotheses validation

Hypothesis and Causal Relations	Results	Hypothesis and Causal Relations	Results
$H_{1a}: PDI \rightarrow CPI$	confirmed **	$H_{2a}: PDI \rightarrow GII$	not confirmed
$H_{1b}: IDV \rightarrow CPI$	confirmed **	$H_{2b}: IDV \rightarrow GII$	confirmed *
$H_{1c}: MAS \rightarrow CPI$	confirmed *	$H_{2c}: MAS \rightarrow GII$	not confirmed
$H_{1d}: UAI \rightarrow CPI$	not confirmed	$H_{2d}: UAI \rightarrow GII$	confirmed *
$H_{1e}: PRA \rightarrow CPI$	confirmed **	$H_{2e}: PRA \rightarrow GII$	not confirmed
$H_{1f}: IVR \rightarrow CPI$	confirmed **	$H_{2f}: IVR \rightarrow GII$	not confirmed

Note: ** $p < 0,01$; * $p < 0,05$

DISCUSSION AND RECOMMENDATIONS

The purpose of this study was to examine the relationship between cultural variables, corruption and innovation. In order to assess those variables, we used Hofstede's six-dimension cultural framework, the corruption perception index and the global innovation index, respectively.

First, Hofstede's cultural dimensions were shown to have an effect on the perception of corruption. Previous studies indicate that a country's culture can partially help explain why some individuals engage in corrupt behavior (Barr & Serra, 2010; Davis & Ruhe, 2003; Huster, 1999; Sanyal, 2005; Yeganeh, 2014). The results obtained complement earlier studies. Power distance is somehow consensual as corruption antecedent and our results corroborate those findings. Clearly, the more hierarchical and power centralized a society is, the higher the corruption perception. Huster (1999) results supported the notion that the cultural profile of a corrupt country is one with a high power distance, masculinity and uncertainty avoidance. Sanyal (2005) showed that power distance and masculinity were significant factors. We obtained a positive impact for both power distance and masculinity. On one hand, corruption seems to be less likely to be challenged on high power distance countries; on the other hand, the pursuit of success that characterizes highly masculine societies seems to trigger corruptive practices.

There is support that collective societies are more corrupt (Davis & Ruhe, 2003; Yeganeh, 2014). We found that more individualistic societies appear to be less corrupt. This might be the result of collectivist societies avoiding disruptive group behaviors, tolerating corruption due to the sense of protection provided by the group, which in turn makes individuals to act more corruptly. According to Yeganeh (2014) collectivist cultures are characterized by the prevalence of interpersonal relationships, hierarchical decision making, unequal distribution of wealth and resources and the importance of tribal ties, as a result, these societies have complex norms rooted in tradition and religion, leading to nepotism, favoritism, bribery and deviance regulations.

Huster (1999), Davis and Ruhe (2003) and Yeganeh (2014) supported uncertainty avoidance impact on corruption. Societies which try to avoid uncertainty are typically more bureaucratic and governed by several rules and procedures. Yeganeh (2014) indicates that cultures with high scores in uncertainty avoidance are more advanced, emphasize rationality and have strong public institutions and education (Yeganeh, 2014). Corruption can be seen as a method to decrease uncertainty, thus, our results demonstrate that societies which deal better with uncertainty are less tempted to obtain predictable outcomes through corruptive practices.

As proposed, our results show that the ‘new’ Hofstede’s cultural dimensions, pragmatism and indulgence, have a strong negative effect on corruption, meaning that, equalitarian societies, which focus on the long term and life pleasure gratification, are perceived as less corrupt than highly normative and suppressive national cultures. The orientation towards the short term seems to be in fact more related with corruptive activities due to rewards seeking. The increase in the number of norms and laws, as well as a resistance to new paradigms, is also linked with higher levels of corruption. This may be the result of individuals in inefficient societies trying to circumvent certain procedures and norms due to unethical behavior of established practices. Furthermore, as in restrained societies individuals are less challenging towards their conditions, they adopt a passive attitude towards corruptive practices.

Second, Hofstede’s cultural dimensions were also found to have an impact on innovation. Existent research has shown national culture to be highly related with innovation (Efrat, 2014). Shane (1992, 1993) and Taylor and Wilson (2012) highlighted the importance of the individualism dimension in the development of innovation and scientific progress. This paper supports the direct and total effect of individualism on innovation. In line with Mihaela et al. (2011) and Steel et al. (2012), uncertainty-avoidance was demonstrated to have a direct and total effect on innovation. Although the direct effect was not statistically significant, the total effect of optimistic and positive cultures, which are highly capable of dealing with novelty and uncertainty, on innovation tends to be higher than in orthodox and conservative societies. Moreover, pragmatism was also found to have a positive impact on innovation (i.e., the more future oriented, malleable and resilient a nation is, the higher their innovative drive).

Third, we tested the relationship between corruption and innovation. Existent research shows that innovation is higher when corruption is controlled (Anokhin & Schulze, 2009) and that generally, corruption is related with competitiveness (Ulman, 2013). The results clearly show that the higher the perception of corruption, the less innovative a nation is, thus, corrupt practices hinder the attractiveness of developing and engaging in entrepreneurial and innovative actions, decreasing new developments and the nation’s future potential.

CONCLUSION

Several conclusions can be drawn from this study. Of all the variables studied, corruption was the one which had a greater impact on innovation. Highly innovative countries have higher gross domestic product and lower levels of corruption; on the opposite, less innovative countries show higher levels of corruption and consequently have lower levels of wealth. Corruption is a topic of current interest affecting all types of countries, with corruption scandals seen breaking throughout the world on a daily basis. The results show that corruption is highly related to innovation, and at the same time has a strong impact on economic growth. Therefore, corruption emerges as a factor which is well-suited for explaining innovation, and its negative impacts can be explained at two levels. Corrupt countries are less attractive for inventors – there are less prospects of retaining the benefits of an investment and at the same time it is more difficult to carry out entrepreneurial activity due to the necessity of eventually engaging in corrupt activities. From a governance perspective, innovation incentives can be diluted by corruption, preventing them from reaching their targets and thus, stimulating the economy. Cultural dimensions have an impact on corruption and innovation, although, from the six cultural variables examined, only individualism had an impact on both, meaning that culture itself is a weaker predictor of innovation than corruption.

Besides corruption, other factors contribute more for innovation than national culture; nevertheless, the indirect impact of national culture on innovation through corruption should not be neglected.

The results suggest that the more hierarchical, closed and bureaucratic societies are, the more corrupt they become. Several explanations can be presented: first, in highly hierarchical societies, individuals strive to preserve their status quo and, as a consequence, it is harder for powerful individuals to be defied and questioned; second, traditional and conservative societies appear to be more corrupt than free societies, this was expected as this type of society aims to preserve norms and conventions. As a consequence, changing the institutionalized conventions and introducing new developments is harder and might be seen as more disrupting than in more pragmatic societies. Finally, although one could expect highly regulated societies to be less corrupt as there are more control mechanisms, the results show the opposite to be true; the more bureaucratic societies are, the more corrupt they become. If on the one hand, bureaucracy appears to be a substitute for trust, on the other hand, more restrictive countries also have lower levels of freedom of speech or democracy, which not only protect fraudulent activities but foremost, prevent corruption from being reported.

Our results however underline the importance of the new Hofstede dimensions, which have somehow been neglected. Most likely, variables which are a consequence of a country's culture such as the entrepreneurial environment, the country's legal system or labor flexibility, are more important in determining innovation than culture traits themselves.

Although, there is a direct effect of masculinity on corruption, no support was found for the impact of the masculine dimension on innovation. Free societies, where power is distributed equally, with a strong level of perseverance, and which emphasize life's pleasures, gratification, and the development of the "self", are generally less corrupt and more innovative. On the contrary, normative national cultures not only show a lower propensity for innovation, but also a higher level of corruption. Furthermore, the level of corruption poses a serious threat to the innovation levels. Although laws and rules may form the basis for civilized life, in order to develop less corrupt and more innovative societies, government's policies should focus on promoting equality, trust and optimism among individuals using mechanisms other than norms.

There are a number of limitations regarding this research. This study relied on secondary data and the scores concerning Hofstede's cultural variables are not available for all countries, conditioning the study sample to 61 countries. The results show that from the six cultural dimensions examined, only individualism had an effect on both corruption and innovation.

This research does not go beyond looking at national culture to describe how corruption influences innovation. Therefore, future research could look at other mechanisms as well as how innovation and entrepreneurial investments are turned into innovation outputs according to the corruption levels. Also, following the approach of Sims et al. (2012), further research can use several cultural frameworks simultaneously (such as Schwartz or GLOBE) to provide additional insights into the impact of national culture.

This study examined innovation based on the GII only, although, this measure is composed by two sub-indexes based on five and two pillars respectively. Future studies can examine which innovation components are more related to which cultural or corruption variables respectively. Finally, as we used a cross-sectional approach, studies examining cultural, innovation and corruption changes throughout time focusing specifically in rising technological-innovative countries can offer other explanations as to why those countries became more innovative, although they might be restricted to examining four cultural dimensions only.

FUTURE RESEARCH DIRECTIONS

As we resorted to a cross-sectional approach, future studies could address the relationships between cultural dimensions, corruption and innovation using longitudinal data to provide other explanations on the development of those relationships throughout time. Also, culture could be evaluated under various frameworks simultaneously, e.g., Gaygısız (2013) used Hofstede's and Schwartz's, and Yeganeh (2014) used Hofstede's, Schwartz's and Inglehart's frameworks. Other models such as the Global Leadership and Organizational Behavior Effectiveness could also be employed.

Álvarez and Urbano (2011) concluded that the effect of role models in Latin America might be more important for entrepreneurship than originally thought when compared to developed countries. This is most likely due to the successful image entrepreneurs have and the high unemployment rate, which makes entrepreneurship a very attractive alternative. Future studies could complement existing knowledge on innovation and corruption by addressing them from an entrepreneurship perspective, focusing on the role models importance for both corruption and innovation.

Like most cross-cultural studies, our analysis is based on national-level data and does not take into account country-level differences or firm-level specificities. Paunov (2016) found that corruption affected particularly smaller firms but had no impact on foreign and publicly owned firms. Future studies could examine how culture and corruption influence outputs at a firm-level to provide additional findings on whether the examined variables play the same role in national as in an organizational setting. Furthermore, as we have assessed corruption through the CPI, future studies can examine the relationships between culture and the different types of corruption, e.g., passive or active and its modes. Do cultural variables have the same influence on bribery, fraud and extortion and are all these modes harmful for innovation the same way?

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KEY TERMS AND DEFINITIONS

Corruption Perceptions Index: A score that has been widely used to rank countries regarding how corrupt their public sectors are. Although the index does not capture the individual frustration of this reality, it captures the views of analysts, businesspeople and experts around the world.

Corruption: A form of dishonest or unethical conduct of a person entrusted with a position of authority that misuses public or entrusted power for private interest and personal gain.

Global Innovation Index: Known as GII, it aims to capture the multi-dimensional facets of innovation. It helps to create an environment in which innovation factors are continually evaluated.

Hofstede's Cultural Dimensions Theory: A framework for cross-cultural communication that describes the effects of a society's culture on the values of its members. Hofstede's model is based on six different dimensions: individualism-collectivism; uncertainty avoidance; power distance, masculinity-femininity, long-term orientation, and indulgence versus self-restraint.

Innovation: Can be defined as a new idea or a process of creativity which is taken to, and accepted by the market or society. It is normally viewed as the application of ingenuity to develop new products, processes and devices that meet new requirements or create new needs.

National Culture and Its Relationship With Innovation and Corruption

National Culture: A set of norms, behaviors and beliefs shared by the population or the major group within it. There are several models of national culture, however, the most commonly used is Hofstede's that is based on six dimensions that represent independent preferences for one state of affairs over another that distinguish countries (rather than individuals) from each other.

PLS-SEM: A method of structural equations modelling that allows estimating cause-effect relationships with latent variables. It is more oriented towards maximizing the amount of variance explained of the predictive variable than statistical accuracy of the estimates.