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NATIONAL CULTURE AND THE DYNAMICS OF CROWDFUNDING MARKET: AN INTERNATIONAL STUDY BASED ON HOFSTEDE DIMENSIONS

DINAMISMO DO MERCADO DE CROWDFUNDING E CULTURA NACIONAL: UM ESTUDO INTERNACIONAL BASEADO NAS DIMENSÕES CULTURAIS DE HOFSTEDE

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ABSTRACT: Internet and other computer-based information system technologies have given rise to new types of alternative funding mechanisms. Crowdfunding (CF) offers an online platform that allows entrepreneurs to interact with funders and generate value through the creation of new ventures. The objective of the research is to understand if national culture variations affect the dynamics of the CF market activity. For that purpose, a dataset based on the survey of the Global Alternative Finance Market Benchmarking Report, the values of Hofstede's cultural dimensions and several control variables were used in the OLS multiple regression analysis. The econometric study covered 105 countries located in different parts of the world. The results reveal that CF variations across countries are influenced by national culture, specifically lower uncertainty avoidance, individualism, and long-term orientation.

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The results attained bring important practical contributions to CF platform managers deal with the cultural characteristics of entrepreneurs and investors located in different countries, as well as for regulatory public financial entities and policy makers.

KEYWORDS: Crowdfunding; Crowdfunding market; National Culture; Hofstede's framework.

RESUMO: A Internet e os sistemas de informação baseados em novas tecnologias deram origem a mecanismos de financiamento alternativos para as empresas e os empreendedores. O *crowdfunding* (CF) consiste numa plataforma *online* que permite aos empreendedores estabelecer a interação com financiadores e, como tal, gerar valor através da criação de novos empreendimentos. A questão central desta investigação é averiguar até que ponto as diferenças culturais entre os países são capazes de influenciar a dinâmica alcançada em termos de atividade no mercado de CF. Para esse efeito, a investigação é realizada com base numa base de dados construída pelos autores que conta com informação sobre CF disponibilizados pelo *Global Alternative Finance Market Benchmarking Report*, enquanto os valores relativos às dimensões culturais são retirados do trabalho de Hofstede e as variáveis de controlo são provenientes de várias fontes estatísticas. O estudo econométrico incluiu 105 países localizados em diferentes partes do mundo e utiliza a análise de regressão múltipla pelo método dos mínimos quadrados (OLS) para destacar as variáveis culturais que afetam a atividade de CF. Os resultados obtidos revelam que as diferenças observadas na dinâmica de atividade do mercado de CF nos diferentes países são influenciadas pelas dimensões culturais, especificamente pelos diferentes níveis observados nas variáveis redução da incerteza, individualismo, e orientação a longo prazo. Os resultados alcançados com a investigação oferecem importantes contribuições práticas para os gestores de plataformas de CF, que lidam com as características culturais de empreendedores e investidores localizados em diferentes países, bem como para entidades reguladoras e decisores políticos.

PALAVRAS-CHAVE: *Crowdfunding*; mercado de *crowdfunding*; cultura nacional; dimensões de Hofstede.

1. Introduction

Crowdfunding (CF) is a new financial tool that could support the development of new ventures by making up the required capital that is difficult to obtain due to the absence of required collaterals and previous credit records (Wahjono *et al.*, 2016; Miglo, 2022). Many authors agreed that CF is a reliable alternative for financing start-ups and other projects (e.g. Stemler, 2013; Paschen, 2017; Jovanovic, 2019; Jelinčić& Šveb, 2021; Chandna, 2022). For instance, Stemler (2013) refers that CF is a financial mechanism appropriate for young entrepreneurs who desire to transform their innovative ideas into businesses and cannot access finance from the traditional financial institutions. Paschen (2017) states that distinct models of CF work within different logics and are best suited for different ventures' needs and features.

CF is based on the simple idea that a large number of people, through small individual contributions, can raise big amounts to finance other individuals and projects without the involvement of conventional financial institutions. The online CF platforms display the projects and each individual in the "crowd" of funders can choose which fundraiser to finance (Jenik *et al.*, 2017).

In recent years, CF has received the interest of the research community not only in Europe and North America (Gajda & Mason, 2013; Jelinčič & Šveb, 2021) but also in different countries of the world, such as Philippines (Vergara, 2015), Indonesia (Achsien & Purnamasari, 2016), Sub-Saharan Africa (Hiller, 2017), Saudi Arabia (Khan & Baarmah, 2017; Gazzaz, 2019), Turkey (Sırma *et al.*, 2019). In all these studies the topic of the national culture has been missing when the researchers try to explain or discuss the phenomena of CF. However, the behavior of entrepreneurs and funders in a country is influenced by culture (Cho & Kim, 2017; Pietro & Butticé, 2020; Shneor *et al.*, 2021; Jelinčić & Šveb, 2021).

Culture "is a system that enables individuals and groups to deal with each other and the outside world" (Mole, 2003, p.8). Lewis (1999, p.2) argues that "people of different cultures share basic concepts but view them from different angles and perspectives, leading them to behave in a manner which we may consider irrational or even in contradiction of what we hold sacred".

The empirical research about the association between CF and national culture is scant. Most of this research compares two different countries frequently positioned in the opposite poles of the Hofstede's cultural dimensions. Cho and Kim (2017) compared United States and South Korea based on content analysis of CF platforms, while the other study uses survey data to compare China with Finland (Shneor *et al.*, 2021). Another study adopted a macro-level

analysis to examine the influence of formal and informal institutions in 27 different European countries on the development of CF (Pietro & Butticé, 2020). Our research differs from existing work in three aspects: First, it enlarges the study to 105 countries located worldwide, involving different continents and countries that disclose completely different cultural characteristics and levels of dynamism in CF. Second, it explores all the six cultural dimensions of Hofstede. Third, the investigation expands the study of the impact of national cultural characteristics on the number of platforms available in each country, in addition to the volume of operations achieved in the CF market.

The transnational nature of CF platforms that made them available for people all over the world highlights the importance of studying national culture and its implications on the behaviour of potential entrepreneurs and funders engaged in CF. The scarce empirical research on the relationship between national culture and CF presents a research gap that is important to fulfil from three perspectives. From a practical point of view, CF platform managers are interested in adapting their platforms to attract customers from outside their country of origin. From a theoretical point of view, it is useful to offer additional knowledge about the influence of national culture on the dynamics of the CF market. Thirdly, from a public policy perspective, further knowledge is needed to design legal frameworks that promote fundraising through CF among entrepreneurs, organizations, investors, donors and institutions. Therefore, this research aims to determine to what extent the degree of variation of national cultural dimensions plays a role in the dynamics of the CF market in different countries.

The next section briefly defines, describes and presents the main features of CF. The following section explains the cultural dimensions of Hofstede and develops the hypotheses about the association between each of Hofstede's cultural dimensions and CF. Then, the methodology is described and the results are presented. The conclusions section synthesizes the main contributions of the study, discusses its limitations and suggests directions for further research.

2. Crowdfunding: definition, models and actors

CF "refers to the efforts by entrepreneurial individuals and groups – cultural, social, and for-profit – to fund their ventures by drawing on relatively small contributions from a relatively large number of individuals using the internet, without standard financial intermediaries" (Mollick, 2014, p. 2.). According to Belleflamme, Omrani and Peitz (2015) CF is an open call to provide financial resources that mostly takes place on an Internet-based platform and links fundraisers to funders with the aim of funding a particular campaign by typically many funders.

These definitions focused on: i) the process that could be initiated by a group or an individual for implementing a new venture of cultural, social or profit nature; and ii) the funds that are obtained from the crowd via online without financial intermediaries.

Other definitions relied on the role of a large dispersed audience for tapping small sums of money to fund a project or a venture (Lehner, 2013; Short *et al.*, 2017; Jovanovic, 2019) or as an initiative undertaken to raise money on a new project proposed by someone, by collecting small to medium-size investments from several other people (Ordanini *et al.*, 2011). Some authors describe CF as an open call, essentially through the Internet, for the provision of financial resources either in the form of donation or in exchange for some form of reward and/or voting rights to support initiatives for specific purposes (e.g. Schwienbacher & Larralde, 2010; Belleflamme *et al.*, 2014). Other scholars (e.g. Ahlers *et al.*, 2015; Bruton *et al.*, 2015) use CF as a label to outline an increasingly widespread form of fundraising typically via the Internet, whereby groups of people pool small individual contributions (money) to support a particular project.

The dissemination of this alternative financial mechanism is based on the development of internet and information technologies that increased the awareness and the participation of people in online platforms to support entrepreneurial projects (Agrawal *et al.*, 2015; Gajda & Mason, 2013; Mollick & Nanda, 2016; Baumgardner *et al.*, 2017; Short *et al.*, 2017; Miglo, 2022).

There are four basic models of CF (Parhankangas *et al.*, 2019; Hommeravá, 2020). The donation model is based on backers that provide funding for philanthropic or civic projects (disaster relief, famine, health and other charity-related programs) without expecting any return (Belleflamme *et al.*, 2013). This model collects private funds for public goods ranging from the renovation of a public square in a neighbourhood to the maintenance of schools (Parhankangas *et al.*, 2019).

The reward model is based on backers that provide funding to individuals, projects, or organizations in exchange for special perks, early editions of new products, appreciation tokens or "community benefits" (Belleflamme *et al.*, 2014; André *et al.*, 2017). The backers are treated as early customers or 'prosumers', as they receive a product reward or a token of appreciation, such as a thank-you note in return for their monetary contribution (Giudici *et al.*, 2017; Short *et al.*, 2017).

The lending model is based on investors that supply funds to individuals, groups or small companies, expecting to be reimbursed after a given period, generally with the addition of an

interest rate, but with no involvement of traditional financial intermediaries (Lenz, 2016; Guo *et al.*, 2016; Short *et al.*, 2017).

The equity model is based on individuals or institutional funders that purchase the equity of new ventures or enter into some sort of profit-sharing agreement with a company or organization (Deffains-Crapsky & Sudolska, 2014; Ahlers *et al.*, 2015; Vismara, 2016; Short *et al.*, 2017; Mochkabadi & Volkmann, 2018).

The CF ecosystem could be considered a two-sided platform. On the one side (demand), we have entrepreneurs seeking funds to invest in a new venture (profit or non profit). On the other side (supply) we have a "crowd" of funders that donate or invest money to support social or business projects. In the middle, there is a technological infrastructure that enables both actors to interact with each other according to the business model displayed by the CF platform (Cho & Kim, 2017; Jenik *et al.*, 2017). The platform managers have at their disposal an information system that provides services to satisfy the customers' needs (payment system, data analytics, the legal groundwork for the operations, management of financial transactions or pre-selection of projects) (Löher, 2017).

CF is an innovative tool that offers some advantages for organizations (Belleflamme *et al.*, 2014; Mollick, 2014). The main advantage is to attract funds at low cost (lending/equity models) or at no cost at all (donation model) and allow to launch marketing campaigns and pre-selling initiatives to test the market (reward model). Other advantages include the creation of relationships at the professional and communitarian level, and the dissemination of new projects through digital social networks. Therefore, CF must be envisaged as an opportunity to activate a relational capital that helps increase not only the quality but also the quantity of the financial resources. As any financial tool, CF involves risks, especially for crowdfunders in the lending and equity models, as in the absence of intermediaries, the default risk will be borne exclusively by the backers. Further, other risks derive from information asymmetry and lack of liquidity of the investment made (Hommerová, 2020).

4. National culture and CF: hypotheses development

Cuture is a collection of values, beliefs, behaviors, habits and attitudes that differentiate societies (Griffin & Pustay, 1999). For Hayton and Cacciotti (2013, p. 713) “culture is measured as the aggregation of individual scores of values and preferences”. Also, national culture could be seen as the “underlying value systems that are specific to a group or society and motivate individual to behave in a certain way, such as starting a business” (Shinnar *et al.*, 2012, 466). These concepts of culture means that people in different societies possess different values,

beliefs, behaviors, habits and attitudes towards the outside world. Consequently, certain values and expectations about management and investment differ between cultures. For instance, conducting an international business negotiation or a joint venture deal is a field where managers frequently need some previous insight about the culture of the other party (Manrai & Manrai, 2010). The studies of Hofstede are particularly useful in understanding these relationships.

Hofstede (1991; 2001) has developed originally four cultural dimensions that provide an understanding of differences across cultures (power distance, individualism, masculinity, uncertainty avoidance). Later, Hofstede and Bond (1998) added a fifth dimensions that they called confucian dynamism or long-term/short-term orientation. Finally, the model was completed with a sixth dimension named indulgence (Hofstede *et al.*, 2010).

Power distance in Hofstede words (2011, p. 9) is defined as "the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally".

Individualism is the "degree to which people in a society are integrated into groups. On the individualist side we find cultures in which the ties between individuals are loose. On the collectivist side we find cultures in which people from birth onwards are integrated into strong, cohesive in-groups, often extended families" (Hofstede, 2011, p. 11).

Masculinity refers to the "distribution of values between the genders" (Hofstede, 2011, p. 11). Typical masculine values are "assertiveness, the acquisition of material things and a lack of concern for others", while feminine are "modest and caring" values.

Uncertainty avoidance deals with a "society's tolerance for ambiguity. It indicates to what extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations" (Hofstede, 2011, p. 10).

Long-term orientation (or confucian dynamism) included the values of "perseverance, thrift, ordering relationships by status, and having a sense of shame; values at the short-term pole were reciprocating social obligations, respect for tradition, protecting one's 'face', and personal steadiness and stability" (Hofstede, 2011, p. 13).

The last dimension indulgence "stands for a society that allows relatively free gratification of basic and natural human desires related to enjoying life and having fun. Restraint stands for a society that controls gratification of needs and regulates it by means of strict social norms". (Hofstede, 2011, p. 15).

Prior empirical evidence is scarce on the linkage between CF and culture (Cho & Kim, 2017; Pietro & Butticé, 2020; Shneor *et al.*, 2021; Jelinčić & Šveb, 2021). To our best

knowledge one of the few exceptions is the study of Cho and Kim (2017) that made a comparative analysis of CF projects displayed in American (United States) and South Korean CF sites to conclude that culture influences the success of CF and the message strategies developed by the promoters of the projects. They applied the Hostede's cultural dimensions to examine the cultural differences in uncertainty avoidance, individualism vs collectivism, and power distance. The results indicated that South Koreans have high uncertainty avoidance, which makes them create many shared beliefs in their systems, while Americans have low uncertainty avoidance which allows them to have fewer shared beliefs and more logical information. In the individualism/collectivism dimension, the study found that group well-being features (collectivism) were more frequently presented in South Korean crowdfunding sites than in United States. Finally, the same study suggests that high power distance features were less often displayed in South Korean than in the United States CF sites (Cho & Kim, 2017).

Another exception, but at the macro-level of analysis is the study of Pietro and Butticé (2020) that examines the influence of formal and informal institutions in 27 different countries during the 2014–2017 period on the development of crowdfunding. The results showed that: i) individualistic societies register higher CF activity across the different typologies of CF; ii) lending CF is more widespread in countries characterized by higher uncertainty-avoidance; iii) lending and equity CF are more widespread in long-term oriented societies.

The final exception is the study of Shneor *et al.* (2021) that analyzed the role of the individualism-collectivism cultural dimension in reward crowdfunding contribution intentionality and behaviour. The authors use survey data collected from users of national platforms from China (collectivist country) and Finland (individualistic country) to found that cultural differences in behaviour control are more strongly observed in Finland than in China. Another cultural difference is observed in information sharing intentions that are more strongly associated with contribution behaviour in China than in Finland (Shneor *et al.*, 2021).

In the absence of prior extensive research on the relationship between national culture and CF we will support our hypotheses development on the indications provided by the research on entrepreneurship and culture. Also, recent research has found a positive relationship between entrepreneurship intention and intentions to use crowdfunding as a fundraising tool (Baber, 2022). Consequently, as CF is a critical instrument to finance new ventures it is expected that the relationships found between entrepreneurship and national culture also applies to CF.

One of the main propositions that encompass all the hypotheses is, as entrepreneurship research proposes, that the use of CF is not culture free. Therefore, the following hypotheses

are presented mostly based on entrepreneurship research and when it applies to the conclusions of the few studies about CF reviewed above.

4.1. CF and Hofstede's power distance

Power distance refers to "the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally" (Hofstede, 1991). People who possess large power distance values are accepting of gaps in power and believe that there is an order of inequality in the world and that everybody has a predetermined place. Small power distance people believe that inequality among individuals with regard to income, status and wealth should be minimized. Conversely, societies characterized by a high-power distance have strong hierarchies, possess more strict control mechanisms, and emphasize those who hold positions of power (Shinnar *et al.*, 2012).

Based on past research (Hofstede *et al.*, 2002) it can be argued that in countries which have a high level of power distance, less powerful individuals may regard entrepreneurship as an area restricted only to a higher class, so they are not alert for the opportunities or may not have the necessary skills and access to resources (Celikkol *et al.*, 2019). Since entrepreneurs are individuals more achievement-oriented, greater power distance will be negatively associated with the desire for autonomy (Hofstede, 2001), and an entrepreneurial attitude. Indeed, previous research has identified a negative relationship between power distance and the level of innovation in different countries (Shane, 1993; Rinne *et al.*, 2012). Cho and Kim (2017) comparative study between United States (US) and South Korea adds that high power distance features in CF sites were more frequently found in a lower power distance country (US) than in a higher power distance country (South Korea). Therefore, we would expect that:

H1: The greater the power distance of the country, the lower the CF market activity in the country.

4.2. CF and Hofstede’s individualism

According to Hofstede (1991) individualism describes the relationship between the individual and the collectivity which prevails in a given society. It is reflected in the way people live together – for example, in nuclear families, or tribes; and it has all kinds of value implications. In highly individualistic societies, individuals look after themselves and their

immediate families. In highly collectivistic societies, people are strongly integrated into cohesive in-groups.

Individualistic societies seem to facilitate entrepreneurship as they create a more favourable environment for entrepreneurship since dominant cultural values are more consistent with entrepreneurial intentions. In theory, individualistic cultures encourage entrepreneurship by emphasizing the identity of an individual rather than his/her society and therefore supporting typical characteristics of entrepreneurs such as high level of self-confidence, initiative, and courage (Celikkol *et al.*, 2019). The study developed by Celikkol *et al.* (2019) provides empirical evidence for the positive impact of individualism on entrepreneurship attitudes, abilities, aspirations and success. Also, Mueller and Thomas (2001) found support for the proposition that an entrepreneurial orientation, defined as internal locus of control combined with innovativeness, is more likely in individualistic than in collectivistic countries. In the same direction, Garcia-Cabrera and Garcia-Sotto (2008) detected that individualism positively impact individuals' locus of control, that, in turn, influences entrepreneurial behaviour. The study of Cho and Kim (2017) found that group well-being features (collectivism) were more frequently presented in a collectivistic (Korea) than an individualistic (United States) country. Also, Pietro and Butticé (2020) reveal that individualistic societies register higher crowdfunding activity across the different typologies of CF than collectivistic societies. Further, Shneor *et al.* (2021) showed that cultural differences in behaviour control are more strongly observed in an individualistic than in a collectivistic country, while the inverse (collectivism vs. individualism) is valid for cultural differences observed in information sharing intentions and in contribution behaviour. Hence, we would expect that:

H2: The greater the individualistic nature of the country, the higher the CF market activity in the country.

4.3. CF and Hofstede's masculinity

Masculinity, with its inverse femininity, looks at how distinctly roles in society are defined. It is focused on material success as opposed to concern with the quality of life (Hofstede, 1991). In line with Hofstede's consequences the entrepreneur will tend to have a "masculine" orientation, will live to work, and treasure things and money. Thus, high-masculine cultures will support entrepreneurial behaviour from members of such societies that are educated to be independent, strong, ambitious and see failure as an indication of moderateness. In this type of cultures, achievement is associated with wealth and position with self-assertiveness whereas a

successful career and independence are the dominant values. In feminine societies, on the other hand, it is highly possible that economic development will not be the ultimate goal of society that values a cordial, safe environment and cooperation (Celikkol *et al.*, 2019).

There are contradictory results about the association between the national cultural dimension of masculinity and entrepreneurship in cross-country studies. Some studies contend the idea that the successful entrepreneur scores high on masculinity (e.g. Hayton *et al.*, 2002), while others provide empirical support for the negative impact of masculinity on entrepreneurship attitudes, abilities and success (Celikkol *et al.*, 2019).

Although empirical evidence did not allow us to infer from this cultural dimension to CF, we might predict that societies with a masculine orientation will be more focused on values such as assertiveness, domination, independence, high performance, making money, and the pursuit of visible achievements. Inversely, societies with a feminine orientation will focus more on values such as people rather than money, interdependence, relationships and quality of life. Therefore, we would expect that:

H3: The greater the masculinity of the country, the higher the CF market activity in the country.

4.4. CF and Hofstede's uncertainty avoidance

Uncertainty avoidance is defined as the extent to which members of a society feel threatened by uncertainty or unknown situations (Hofstede, 1991). People who score high along this dimension try to avoid ambiguous situations by establishing more rules and policies. In strong uncertainty avoidance societies where deviance from prescriptive norms is less tolerated, we may infer the greater intention of individuals to comply with copyright rules. Weak uncertainty avoidance societies tend to be less affected by ambiguity and more tolerant of inequality and copyright rules infringement (Freitas Santos & Cadima Ribeiro, 2006).

According to Cho and Kim (2017) high uncertainty avoidance countries makes them create many shared beliefs in their systems, while low uncertainty avoidance countries have fewer shared beliefs and more logical information. Some research suggests that countries characterized by a culture of low uncertainty avoidance have a higher entrepreneurial orientation (e.g. McGrath *et al.*, 1992; Mueller & Thomas, 2000; Wennekers *et al.*, 2007). Pietro and Butticé (2020) study indicate that lending crowdfunding (the less risky typology of CF) is more widespread in countries characterized by higher than low uncertainty-avoidance societies.

As mentioned above, Mueller and Thomas (2001) also found support for the proposition that an entrepreneurial orientation, defined as internal locus of control combined with innovativeness, is more likely in low uncertainty avoidance cultures than in high uncertainty avoidance cultures. Hence, we would expect that:

H4: The greater the level of uncertainty avoidance of the country, the lower the CF market activity in the country.

4.5. CF and Hofstede's long-term orientation

Long-term orientation stands for fostering virtues oriented towards future rewards, in particular, perseverance and thrift. Its opposite pole, short-term orientation, stands for the fostering of virtues related to the past and the present, in particular, respect for tradition, preservation of face and fulfilling social obligations (Hofstede, 2001, p. 359). The creation of this dimension is frequently associated with the economic development of South Asian countries (Hofstede, 2011; Hofstede & Bond, 1988). The study developed by Celikkol *et al.* (2019) provides empirical support for the positive impact of long-term orientation on entrepreneurship abilities, aspirations and success (Celikkol *et al.*, 2019). Recently, Pietro and Butticé (2020) study indicate that lending and equity crowdfunding are more widespread in the long term than short-term oriented societies as it is a challenging, risky process oriented towards future goals and the entrepreneurs tend to have aspirations, vision, optimism, foresight, and imagination. Thus, we would expect that:

H5: The countries more oriented toward long-term, will have more CF market activity in the country.

4.6. CF and Hofstede's indulgence

Indulgence stands for a society that allows relatively free gratification of basic and natural human desires related to enjoying life and having fun. On the opposite pole, restraint stands for a society that controls gratification of needs and regulates it by means of strict social norms (Hofstede *et al.*, 2010).

As indulgence is the most recent dimension of Hofstede's national culture, empirical research on the topic is especially scant. Nevertheless, since entrepreneurs have a high internal locus of control, personal value systems, desire to be economically independent, capacity for enjoyment and a pleasant personality there is a positive association between indulgence and entrepreneurial attitudes, abilities and success (Celikkol *et al.*, 2019).

Therefore, we would expect that:

H6: The more indulgent countries will have more CF market activity in the country.

5. Data and research methodology

Through this investigation, we intend to explain the cross-country variation in the degree of CF market activity based on variations in the national culture dimensions of different countries as measured by Hofstede's framework.

To answer the research objective and test the research hypotheses, we construct a database of three sets of data: i) measures of CF market activity; ii) measures of cultural differences among countries according to Hofstede; iii) control variables.

The inclusion of control variables is important as researchers have claimed the benefits of including institutional factors when studying the influence of culture on entrepreneurial activity across countries (Busenitz *et al.*, 2000).

The database compiles information about the activity of the CF market in 105 countries (dependent variable) and was used to perform a country-level analysis. We have complete data for 87 countries (independent variables) and 77 countries (control variables).

5.1 Dependent variable: CF market activity

The data related to the activity of the CF market were collected from the second Global Alternative Finance Market Benchmarking Report (Ziegler *et al.*, 2021), which is based on a survey annually distributed by the Cambridge Centre for Alternative Finance (CCAF) to a global and regional network of research partners in the industry. The data were gathered and added to the authors' database with the reference year 2019 and 2020.

To measure the dynamics of the CF market activity, two dependent variables were considered:

Volume of activity (VOL) - includes the annual average of the total volume of transactions in the different CF models for 2019 and 2020. The volume of activity, expressed in US dollars, comprises the different models of CF (reward, donation, lending, equity).

Number of platforms (NPLT) - refers to the average number of platforms that operate in a country, for the years 2019 and 2020. The variable includes domestic/locally platforms and foreign-based platforms working in a given country.

5.2 Independent variables

The variables that measure the national culture of countries were based on the Hofstede cultural dimensions and were retrieved from https://www.hofstede-insights.com/country-comparison/. This option is based on a large number of comparative studies that provide strong evidence for the validity and usefulness of Hofstede's framework (Kirkman *et al.*, 2006; Kirkman *et al.*, 2017; Pietro & Buticè, 2021). For instance, Kirkman *et al.* (2006; 2017), in a comprehensive review of empirical research, conclude that Hofstede's cultural values have been used in 180 empirical journal articles and edited volumes chapters published between 1980 and June 2002. This review was enhanced a decade later with the inclusion of more empirical studies that, despite the criticism and limitations of the framework, is still used by many researchers.

The data were collected by the authors and added into the database. For the study, we have considered the following explanatory variables:

Power distance (PDI) - stretches from equal relations being seen as normal (maximum 104) to wide inequalities being viewed as normal (Minimum 11).

Individualism (**IND**) - ranges from individuals acting as individuals (maximum 91) to individuals as part of a cohesive group (minimum 6).

Masculinity (MAS) - runs from competition (maximum 95) to caring about others (minimum 5).

Uncertainty avoidance (UAV) - ranges from a preference for structured situations (maximum 112) versus unstructured situations (minimum 8).

Long term orientation (LTO) - stands for future rewards (maximum 100) while its opposite (short term) refers to the past and present rewards (minimum 13).

Indulgence (IDG) - stretches from social structures that acknowledge human desires and encourage people to pursue their fulfillment (maximum100) to social structures that suppress emotions and desires and equates duty to destiny (minimum 0).

5.3 Control variables

Considering the actors involved in CF operations (entrepreneurs/crowdfunders, investors/crowdfundees, platform operators), three distinct groups of control variables were included. The first group comprises horizontal variables that are common to both actors and are willing to affect the CF activity. Herein, we have considered the following control variables:

- **Gross domestic product per capita (GDP)**- refers to the gross domestic product of a given country divided by midyear population, that is reported in current U.S. dollars;

- **Individual use of Internet (INT)**- refers to the percentage of the population that has used the Internet in the last 3 months, from any kind of equipment, such as a computer, mobile phone, personal digital assistant, games machine, digital TV, among others.

These variables were used for controlling the impact of the available average income at country level (GDP) and the access to information and communication technologies that allow the use of CF platforms.

A second group of control variables are specific to crowdfunders and are included in the analysis to control for the factors that affect the amount of human and financial resources available at a country level. Herein, three different variables were considered:

- **Unemployment rate (UNP)** - refers to the percentage of the labor force that is without work but available for and seeking employment;

- Self-employment (SEMP) - refers to the percentage of workers on total employment who hold a job where the remuneration is directly dependent upon the profits derived from the production of goods and services.

- Getting Credit Score (GCS) - refers to the total score attained by each country for getting credit, and results from the punctation attained in aspects related to access to finance, such as the strength of credit reporting systems and the effectiveness of collateral and bankruptcy laws in facilitating lending.

Thereafter, a third set of variables related with crowdfundees were included, for controlling for the availability of funds and regulations that support the CF activity:

- Gross savings (GSAV) - are calculated as gross national income less total consumption, plus net transfers and are expressed as a percentage of the GDP.

- Rule of law (RLW)- refers to the perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. The indicator ranges from approximately -2.5 to 2.5.

All the data for these variables were collected through the open data catalogue of the World Bank (https://databank.worldbank.org/), and added to the authors' database, with the reference year of 2019. Statistical analysis was performed on software IBM SPSS, version 26.

5.4 Sample

The countries covered in the analysis belong to different regions, as presented in Table 1.

Table 1- Regional composition of the sample

Region	N	%
Europe	41	39,1%
Latin America and the Caribbean	20	19,0%
Asia and Pacific countries	19	18,1%
Sub-Saharan Africa	12	11,4%
Middle East and North Africa	11	10,5%
North America	2	1,9%
Total	105	100,0%

Source: Author's own elaboration

Europe includes 41 countries, being the United Kingdom the one with the highest volume of activity in the market, followed by Netherlands, Italy, France and Germany. On the opposite pole, with a lower volume of activity in the CF market is Serbia, Malta and Bosnia and Herzegovina. Latin America and the Caribbean includes 20 very different countries in terms of CF activity, that range from the most active in the market (Brazil and Chile), to Venezuela and Trinidad and Tobago that exhibit a considerably lower CF activity. Within the Asian countries, it is worth noting the CF activity achieved by China which markedly leads in the volume of activity, followed by India and South Korea. The Sub-Saharan Africa Region observes the lowest volume of activity in the sample; even so, the CF market of this region is positively influenced by Ghana. The Middle East and North Africa involve 11 countries, where the most relevant for the CF activity are Israel and United Arab Emirates. Finally, the North America region comprises the United States, the world's most active country in the CF market and Canada.

6. Results

6.1 Descriptive analysis

6.1.1 National Culture

The sample is composed of countries that exhibit very different cultural characteristics. The cultural diversity of the sample could be seen in table 2, which presents descriptive statistics for the six dimensions of Hofstede's in 105 countries, although the information for the most

recent dimensions defined by Hofstede (long-term orientation and indulgence) was only available for 87 countries.

Table 2- Descriptive analysis of the six dimensions of National Culture of Hofstede

Dimension	Average	Standard deviation	Minimum	Maximum	25 Percentile	50 Percentile	75 Percentile
PDI	66,1	21,1	11	104	50	70	80
IND	38,0	22,0	6	91	20	30	55
MAS	47,5	17,9	5	100	40	47	60
UAV	66,6	22,0	8	112	50	68	86
LTO	45,12	23,6	4	100	25,5	41	62
ING	46,2	23,3	0	100	27	46	66

Source: Author's own elaboration

By analyzing the dimension related to Power Distance, the values observed in the sample range from the minimum (11) to the maximum (104). Therefore, wide inequalities are culturally seen as normal in some countries (e.g. Austria, 11; Israel, 13). At the other pole, we can find countries where equal relations are seen as normal (Malaysia, 104; and Slovakia, 100). The sample average power distance is 66.1, suggesting a medium-high score on this cultural dimension.

Regarding the individualism dimension, we observe a significant heterogeneity. Some countries in the sample are characterized by a high level of individualism (e.g. United States, 91; Australia, 90 and United Kingdom, 89). Conversely, other countries are low on individualism (minimum 6, found in Guatemala). The analysis of the average score (38,0) indicates that the sample is mainly composed of countries characterized by a low level of individualism.

The masculinity dimension runs from a maximum of 95 to a minimum 5. The minimum score is observed in Sweden (5), Norway (8) and Latvia (9), indicating a very high level of femininity. Differently, Slovakia (100) and Japan (95) exhibit masculinity values. The average score of this cultural dimension is 47.5 close to a medium value.

The sample comprises countries that significantly differ on uncertainty avoidance. The countries highly scored in this dimension are Greece (112) and Portugal (104) while the lowest score is found in Singapore (8) and Jamaica (13). The average value is 66.6 indicating a medium-high score on this cultural dimension.

Concerning long-term orientation, the maximum score is 100 while the opposite (short-term) is 4. The highest score on long term-orientation is attained in South Korea (100) and Japan (88), while Egypt (4) and Mozambique (7) are the more short-term oriented countries in the sample. On average, the sample is scored low to medium on this cultural dimension (45,12).

Indulgence also differs considerably across countries. A high score is observed in countries such as Venezuela (100) or Mexico (97). On the opposite, a low score is observed at a national level in Pakistan (0) and Egypt (4). The average value of this cultural dimension is similar to the previous dimension (46.2).

6.1.2 CF activity

The annual volume of CF operations included in the sample over the period in analysis was about $1.388.457.354,81. Nevertheless, a wide heterogeneity is found across countries, as previously described. The data reveals that the maximum activity is attained in the United States ($62.569.002.990,13), while in other country, inversely, the CF market just involved $3.935,11.

The high diversity of the CF market is also observed in the number of CF platforms that operate in each country (Table 3). The analysis of the data reveals that one country has only one platform, while in the opposite side, there is one country that has about 80 active platforms. The percentile analysis further highlights that half of the countries in the sample have fewer than 90 platforms working.

Table 3- Descriptive analysis of the CF market activity

	Volume of activity	**Number of CF Platforms**
Average	$1.388.457.354,81	14,7
Minimum	$3,935.11	1,0
Maximum	$62.569.002.990,13	80,5
25 Percentile	$1.946.813,13	4,5
50 Percentile	$37.987.696,79	9,5
75 Percentile	$314.013.784,04	18,0

Source: Author's own elaboration

6.1.3 Control variables

The analysis of descriptive statistics indicates a large heterogeneity of the countries in the sample. We observe countries having very different income levels, as shown by the GDP that ranges from $506,6 to a maximum of $113.218,7 per capita. The percentage of the population that has access to the Internet is also very heterogeneous across countries, as in some countries, only a tiny percentage of the population has access to the internet (12,5%), while in others almost all citizens have access (99,5%). The unemployment rate and percentage of self-employment differ considerably between countries, as shown by table 4. Some countries face particularly unfavorable conditions for access to credit, which are score at a minimum of 0; in contrast, the access to finance in other countries is seen as considerably better (maximum score of 20). The sample comprises very different individuals' perceptions about the confidence in the rules of society, since the observed values roughly cover the minimum and maximum range defined for the indicator by the World Bank (that ranges from approximately -2,5 to 2,5). The countries gross savings are likewise very diversified, ranging from -3,5% to 43,8% of its GDP, suggesting very different economic conditions across the countries in the analysis. Table IV summarizes the descriptive statistics for the control variables.

Table 4- Descriptive analysis of the control variables

Control variable	N	Average	Standard Deviation	Minimum	Maximum	25 Percentile	50 Percentile	Perc
GDP	104	20.417,59	22.728,5	506,6	113.218,7	4.227,2	9.914,9	32
INT	90	70,02	23,9	12,9	99,5	59,3	76,0	
UNP	105	6,6	4,6	0,7	28,5	3,6	5,0	
SEMP	105	31,4	21,9	1,8	90,4	13,8	25,2	
GCS	105	12,3	4,1	0,0	20,0	9,0	13,0	
GSAV	99	23,0	8,9	-3,5	43,8	16,6	23,0	
RLW	105	0,3	1,0	-2,3	2,1	-0,4	0,0	

Source: Author's own elaboration

6.2 Correlations analysis

The correlation matrix between the variables in the study is summarized in Table 5. The analysis of the Pearson's correlation coefficient shows a moderate association between most of the variables, although the values attained in some control variables deserve our attention, since some of them are higher than 0,50. Consequently, we have applied the procedures

recommended by Hair *et al.* (1995) and O'Brien (2007) to assess collinearity. The variance inflation factors (VIF) found indicates no problems related to multicollinearity. Indeed, all the different variables are far below the threshold value of 10, and most of them are close to 1. Accordingly, as multicollinearity was not a problem, we proceeded with the regression analysis.

Table 5- Correlation Matrix

(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1,000											
-,224*	1,000										
0,408**	-0,692**	1,000									
0,164	0,087	0,066	1,000								
-0,238*	0,260**	-,203*	-0,038	1,000							
0,231*	0,034	0,159	0,029	-0,145	1,000						
0,098	-0,352**	0,204	-0,057	-0,228*	-0,496**	1,000					
0,265**	-0,613**	0,625**	-0,009	0,197*	0,189	0,342**	1,000				
0,159	-0,329**	0,460**	-0,020	0,150	0,373**	0,114	0,667**	1,000			
-0,147	0,054	0,012	0,045	-0,192	-0,122	-0,026	-0,235*	-0,024	1,000		
-0,128	0,295**	-,482**	0,054	-0,200*	0,398**	0,021	0,614**	0,867**	-0,051	1,000	
,245*	-0,163	0,197*	-0,078	-0,114	0,137	0,158	0,048	0,123	-0,059	-0,109	1,000
0,180	-0,078	0,175	-0,062	-0,233*	0,294**	-0,070	0,227*	0,216*	-,279**	-0,139	0,023
0,317**	0,669**	0,673**	0,137	0,200*	0,292**	0,177	0,847**	0,718**	0,173	-0,621**	0,206*

Note: N = 105. Significance: (**)p<0.01;(*) p<0.05

Source: Authors' own elaboration

6.3 Regression analysis

To assess the impact of culture variations on the CF market activity, a linear ordinary least square regression model was used. Two different dependent variables were considered: (i) the annual volume of CF activity; and (iii) the number of active CF platforms working in the country.

For each of the above situations, four different models were considered. The first model focuses exclusively on Hofstede's dimensions of national culture, without considering any type of control variables. Model 2 controls the CF activity and national culture for the country income and information and communication technologies conditions, which are common to the supply and demand side of the CF market. Model 3 controls the CF market activity and the national culture characteristics for the availability of human and financial resources for entrepreneurs (crowdfundees). Finally, Model 4 included the control variables related to investors (crowdfunders) availability of funds to invest and existing regulation systems.

Thus, the following linear regression models were developed:

(1) $Volume\ of\ Operations\ CF(VOL)$

$$= \alpha + \beta 1PDI + \beta 2IND + \beta 3MAS + \beta 4UAV + \beta 5LTO + \beta 6ING + \sum_{i=1}^{n} Zi + \epsilon$$

(2) $Number\ of\ Platforms\ (NPLT)$

$$= \alpha + \beta 1PDI + \beta 2IND + \beta 3MAS + \beta 4UAV + \beta 5LTO + \beta 6ING + \sum_{i=1}^{n} Zi + \epsilon$$

Where, PDI, Power distance; IND, Individualism; MAS, Masculinity; UAV, Uncertainty avoidance; LTO, Long term orientation; IDG, Indulgence (IDG);

Z_i refers to the value observed for each control variable in the different models and ϵ for the error term.

The results attained in the multivariate regression are summarized in table 6.

Table 6. Multiple regression analysis

	Volume of Activity				Number of Platforms			
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**
	7230529894,56	7735482281,18	7230529894,56	7583154235,32	15,066	20,2001	15,066	20,853
Constant	**	**	**	**	**	***	**	***
PDI	-0,020	-0,032	-0,020	-0,019	0,077	0,156	0,098	0,13
IND	0,140	0,153	0,140	0,132	0,283	0,314	0,283	0,304
					***	***	***	***
MAS	0,130	0,145	0,130	0,134	0,144	0,149	0,125	0,127
UAV	-0,222 **	-0,229 **	-0,222 **	-0,230 **	-0,273	-0,249	-0,273	-0,257
					***	**	***	***
LTO	0,086	0,069	0,086	0,072	0,218	0,199	0,218	0,193
					**		**	
ING	-0,003	0,005	-0,003	0,013	0,121	-0,028	0,129	0,013
GDP		0,089				-0,094		
INT		0,084				0,008		
UNP			-0,047				-0,061	
SEMP			-0,089				0,172	
GCS			0,128				0,122	
GSAV				0,024				0,069
RLW				0,03				0,035
R2	4,9%	5,2%	4,9%	5,3%	24,2%	19,5%	24,2%	20,0%
Adj R2	3,8%	4,0%	3,8%	4,2%	21,4%	17,3%	21,4%	18,1%
F		4,197**			4,891**	5,491	4,891	6,304
	4,419 **		4,419 **	4,643 **		**	**	**
N	87	77	87	85	87	77	87	85

* Significant at the 0.10 level;** Significant at the 0.05 level;***Significant at the 0.01 level.

Source: Author's own elaboration

The analysis of Table 6 reveals that countries exhibiting a lower score on uncertainty avoidance are those that have achieved the highest volume of transactions in the CF market (Model 1). The result is statistically significant at the 5% level. The standardised beta's negative coefficient indicates that countries with a higher preference for structured situations have a less

dynamic CF market. Conversely, countries characterized by lower uncertainty avoidance have achieved a higher volume of operations concerning the CF activity. The other dimensions of national culture were not found to be capable of influencing the volume of CF operations at a national level. The model fit statistics (model 1) indicate that uncertainty avoidance explains about 3,8% of cross-country variations in CF activity, and the model is statistically significant (α=0,05).

In the following models, we have controlled the results for the countries' income and access to information and communication technologies (model 2), the factors that affect the amount of human and financial resources available (model 3) and the availability of funds and regulations to support the CF activity (Model 4). The control variables included in the analysis in the different models were not statistically significant and were not able to constraint the volume of operations performed in the CF market, but reinforce that the results attained are robust. Thus, the analysis reveals that the countries' low uncertainty avoidance positively impacts the dynamics of CF, regardless of the favourability of the existing economic context at a national level.

By analysing the number of active platforms across countries (Model 1), we found that three national culture dimensions were statistically significant: masculinity (α=0,01), uncertainty avoidance (α=0,01) and long-term orientation (α=0,05).

A positive coefficient is found between the number of existing platforms and the level of individualism of the countries as well as long term orientation. Conversely, a negative coefficient is observed concerning uncertainty avoidance. Accordingly, the investigation indicates that the highest dynamism in the number of existing platforms is attained in countries exhibiting a more individualistic-oriented culture (IND), embedded in a forward-looking vision (LTO) and more willing to accept unstructured situations (UAV).

Conjointly, these three national culture dimensions are able to explain about 21,9% of the variations across countries on the number of existing CF platforms. (R^2= 24,1%, adjusted R^2= 21,4%). This result is found even after controlling for the amount of human and financial resources available (Model 3). When controlling for the impact of income and access of information and communication technologies (Model 2) or the availability of funds and regulations that support the CF activity (Model 4), we observe that only two Hofstede national cultural dimensions are statistically significant: individualism and uncertainty avoidance. The sign and intensity of the coefficient are similar to those identified in the model 1 and 3, which reinforce the robustness of the results attained. Once again, the control variables were not found to be able to explain the differences in the number of CF platforms that are active in the different

countries in the analysis. Table 7 summarizes the results of the test of hypothesis.

Table 7. Systematization of research hypotheses

Hypothesis	Preposition	Results
H1	PDI → CF market activity (-)	Rejected
H2	IND → CF market activity (+)	Supported
H3	MAS → CF market activity (+)	Rejected
H4	UAV → CF market activity (-)	Supported
H5	LTO → CF market activity (+)	Partially Supported
H6	ING → CF market activity (+)	Rejected

Source: Author's own elaboration

The investigation carried out in 105 different countries found that the national culture, measured through the six dimensions of Hofstede, impacted the CF market activity in different countries. Indeed, the investigation reveals that the dynamics of the market is influenced by some characteristics of the national culture, namely uncertainty avoidance, individualism and long-term orientation.

The Hofstede dimension of uncertainty avoidance is identified as able to negatively impact both dependent variables in the study (the volume of operations and the number of active platforms).

CF is a relatively new funding instrument that relies on the use of the Internet to attract a large number of individuals to provide the financial resources needed to support a given project. The financing process does not imply physical presence nor a highly regulated context, like the traditional financial system involves. In this context, it is not surprising that CF markets achieved higher dynamics in countries characterized by a higher tolerance for the ambiguity that could arise from unstructured situations. The findings are also consistent with Pietro and

Butticé (2020) investigation that found the relevance of this dimension of national culture on one of the CF modalities (lending CF).

CF is a more widely established phenomenon in more individualistic countries and entrepreneurs and investors of more individualist societies are more likely to be engaged in the CF market. This finding is consistent with the authors' previous expectations and the limited evidence available, which find that more individualistic societies are more open to using crowdfunding in the different types of models and also register a higher volume of activity (Pietro & Buticè, 2021).

Societies characterized by a higher individualism level could rely on the digital world provided by information and communication technologies to establish the connection between individuals in economies where the ties between people are more fragile. Here, CF could be a powerful tool to help compensate for the fragility of the existing relations, and (re)connect the demand and offer for funds. In more collectivist societies, in turn, this link will be possibly ensured through other types of institutional configurations and sources of funds (for example, provided by the enlarged groups to which individuals belong, such as family and friends). Such cultural context could lead to the creation of new CF platforms being less necessary.

In addition, individualism positively impacts individuals' locus of control and innovation behavior (Garcia-Cabrera & Garcia-Sotto, 2008), encouraging the search for new forms of financing and relying on their own competencies to assess new fundraising/investing opportunities without resorting to the support provided by traditional financial intermediaries.

Regarding the dimension of long-term orientation, the results attained indicate that, overall, there is an increased dissemination of CF among the countries characterized by a long term orientation. The positive impact of long-term orientation was already previously been identified on the individual entrepreneurial behaviour (Celikkol *et al.*, 2020), and could be justified for the need to be more optimistic and be engaged in a vision for the future, rather than a more immediate one. These characteristics could be relevant for economic agents to exhibit greater adherence to this financing instrument and reduce the risk from different CF models (Pietro & Butticé, 2020), as well as support social projects (donation-based model). However, the positive impact of long-term orientation is not observed if we control for the general and entrepreneurs (crowdfundees) context favorability.

This finding could suggest that entrepreneurs from countries showing a stronger orientation towards the long-term would be more favorable to access alternative funding mechanisms that strategically could be beneficial for the development of the project/start-up. If we include the investors (crowdfunders) perspective (as in models 2 and 4), we find that the long-term

orientation is not significant in explaining cross-country differences in the CF market. This result could possibly be explained by the inclusion in the analysis of the total CF market activity, including both investment and non-investment models. For models that do not involve monetary rewards (donation and reward-based CF), the commitment of crowdfunders might be more prominently influenced by other dimensions of the national culture than long-term orientation.

Finally, the research carried out in several countries located in different parts of the world indicates that the degree of power distance, masculinity and indulgence is not able to explain the differences observed in the CF market across countries.

7. Conclusions and implications

Crowdfunding is recognized as an important fundraising tool, offering a huge potential to individuals seeking funds to start an entrepreneurial activity. Also, CF is an alternative financing source that allows entrepreneurs to reduce/overcome the limitations of traditional funding sources. However, the potential of CF market among nations exhibits different patterns in the CF market activity.

Based on a multinational study, this investigation aims to bring new insights to the knowledge about CF, by studying the variations in the market dynamics among countries in accordance with the national culture, measured through the dimensions defined by Hofstede.

The findings achieved reveal that the use of CF is not culture free, but rather embedded in the country's cultural context. Indeed, the values, beliefs and behaviours that are predominant in a given country are able to constraint the willingness of different economic agents to adhere to this fundraising tool. Thus, national characteristics are able to constrain the implementation and use of CF platforms across countries. More specifically, the findings highlight the negative relevance of uncertainty avoidance on the volume of operations achieved in the CF market at a national level. Furthermore, the number of platforms that have been established and are active in the various countries is also (negatively) influenced by uncertainty avoidance and positively shaped by the countries' individualism and long-term orientation.

The results attained could have important practical implications. First of all, for the CF platforms administration, that could use these new insights for the design of the CF operations that could better reflect the cultural characteristics of the population. Further, the research unveils the cultural characteristics that most stimulate and also inhibit the use of CF at a national level. Thus, platform managers in each specific country should consider the way national culture influences the behavior of the different players involved in CF and how the CF models

and regulation could fit the needs of the community. Such a strategy could allow expanding the universe of individuals' capacity to adhere to this instrument.

For public entities, the new knowledge could be used for conceiving more effective regulation for the CF industry, which should consider its inhabitants' cultural characteristics. Finally, for universities, the recognition of the elements of national culture that most influence or inhibit the use of the CF should be integrated into the curricula' design in order to help overcome the concerns shown by potential entrepreneurs on the use of this financing instrument.

Nevertheless, the investigation entails some limitations. Firstly, the analysis of the CF market is based on the different types of CF, that are analyzed conjointly. This methodological option, despite providing a comprehensive overview of the industry as a whole, is unable to reflect the specificities of the different models properly. In addition, the analysis is performed at a national level, based on macro indicators which could entail some biases when we consider the implications of CF at individual/actors level. Further, although widely used and recognized by the research community, the Hofstede's cultural dimensions, similar to other frameworks, is not completely free of limitations.

In the future, it would be worth collecting information on the agents involved in CF operations, and understand the main drivers of the activity developed in different countries, as well as their main motivations and barriers.

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