PLATFORMS AND VIRTUALIZATION THEORY: AN ALTERNATIVE COMPREHENSION OF THE GEOGRAPHIC DISTANCE PARADOX

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CROWDFUNDING PLATFORMS AND VIRTUALIZATION THEORY: AN ALTERNATIVE COMPREHENSION OF THE GEOGRAPHIC DISTANCE PARADOX

1   Introduction

Digital crowdfunding platforms have been used around the world for various purposes, such as collective lends or to enable the development of new products. According to the Crowdfunding Industry Report (Massolution, 2015), those platforms handled a total of $ 34.4 billion in 2015.

Unlike in other countries, in Brazil crowdfunding platforms have been used mainly for microfinancing of cultural projects, which are precisely those of lower budgets, besides offering a smaller compensation to private companies, the main funders of cultural projects, via tax benefits. There are about 20 operating crowdfunding platforms in Brazil, such as Catarse, Partio and Kickstarter. The first has already financed R$ 12 million and more than 800 projects (Mendes-Da-Silva et al., 2016).

Studies on crowdfunding phenomena are concentrated mainly in two scopes: one that demonstrates the motivational and behavioural aspects of creators and supporters engaged in such platforms (Agrawal, Catalini & Goldfarb, 2011; Gerber & Hui, 2013; Belleflamme, Omrani & Peitz, 2015; Burtch, Ghose & Wattal, 2013) and another that focuses on success factors of crowdfunding campaigns (Belleflamme, Lambert & Schwienbacher, 2014; Du & Wang, 2016; Colombo, Franzoni & Rossi-Lamastra, 2015).

In the literature on the behaviours of supporters, we found divergent results on the matter of geographical distance between creators and supporters (Agrawal et al.,2011; Mendes-Da-Silva et al., 2016), which motivated our research question: Does the geographical distance between creator and supporter play a different role in crowdfunding in Brazil?

We propose, then, an alternative theory to explain the geographical aspect of crowdfunding using a native IS theory: the virtualization theory (Overby, 2008). We, thus, pinched the concepts of virtualization process requirements and IT capabilities to explain, among others, the geographical aspect.

We argue that, although some authors highlight the advantages of IT in crowdfunding platforms when compared to traditional financial mechanisms (Gleasure & Feller, 2016b; Gerber & Hui, 2013; Schwienbacher & Larralde, 2010), there are no other kinds of emphasis on the role of IT in this phenomenon, even in IS literature.

To answer this question, we analysed Partio's – a Brazilian crowdfunding platform for cultural projects – database, which contains 58 projects and 7,104 transactions. We, then, used regression and descriptive statistical techniques to explore the virtualization requirements.

This study may be relevant for those who study the phenomenon of crowdfunding from a theoretical perspective by addressing virtualization concepts. From a practical point of view, it relies on aspects that creators and platform owners should take into consideration in order to achieve more success in their crowdfunding campaigns.

In addition to a literature review of crowdfunding and virtualization theory, we also present a methodology section, in which we explain the process of cleaning and analysing data, as well as a results section, in which we explore the relationship between virtualization requirements and the values of transactions (in Brazilian Reais, R$) in crowdfunding platforms.

2   The Fintech Movement and Crowdfunding: Some Concepts

Since this is a new subject area, the Fintech literature is still incipient. The term *Fintech,* which was established to describe the digitization movement of the financial sector, is an expression

that encompasses several initiatives that make use of advanced technologies, mainly the ones based on the Internet and on digital platforms such as e-commerce, mobile payments, crowdfunding, and crowdinvesting. This phenomenon has been driven by the fast pace of developments in areas such as mobile technology, big data analysis, data transition to the "cloud", the personalization of web services, and the increasing convergence of information and communication technologies (ICT) (Dapp, 2014).

According to the 3rd edition of FintechLab's Radar Report (2016) – the largest monitoring initiative of this segment in Brazil –, Fintechs have the potential to revolutionize the whole financial sector by changing the relationship between the several different economic agents in the most diverse business models, hence the growing number of initiatives with that purpose in this area. This occurs as follows: i) through the creation of services and solutions based on an *user-centric design* whose main competitive advantage is the relationship with their users; ii) through the promotion of innovative services, filling a gap in the market; iii) by providing greater efficiency, promoted by Fintechs' recent structures, with minimal hierarchy and faster decision-making processes; furthermore, because these Fintechs are designed to solve a specific need, they are leaner, focused on their core business and have more modern platforms and tools than banks; and iv) by promoting the restructure of relationships and a redistribution of power, some initiatives eliminate actors and transform or reverse the logic of the financial market, which is the case with blockchains, peer to peer (P2P) services and also crowdfunding.

In this context, it is possible to characterize crowdfunding platforms as Fintechs, based on the understanding that these platforms work to raise funds with no intermediaries, thus representing a disruptive means of finance a project. Potentiated by the use of social networks, crowdfunding allows entrepreneurs to raise funds through a "crowd" – rather than being limited to *mainstream* methods (Belleflamme & Lambert, 2014; Giudici et al., 2012). Thus, these entrepreneurs are able to raise small and medium amounts of funds without the need for intermediaries (such as banks, venture capitalists or angel investors), which allows them to gain a range of scale by using the Internet, especially through social networks such as Facebook and Twitter (Monteiro, 2012; Giudici et al., 2012).

According to Schwienbacher & Larralde (2010), the concept of crowdfunding entails the funding of a project by a group of independent individuals through the Internet, with no need for investment firms or intermediaries.

In a broader definition, Mollik (2013) believes that crowdfunding is the search for investments, by entrepreneur groups or individuals, in the form of small contributions made through the Internet from a large number of individuals, with no other standard financial intermediaries. The author argues that not limiting the objectives of the projects of entrepreneurs (*founders*) or financiers (*funders*), as in the definition of Larralde & Schwienbacher (2010), drives the discussion to what leads individuals to approach crowdfunding platforms, either as founders or funders. In this paper, we adopt the terms *creators* and *supporters*, respectively, to describe these actors.

For Hemer (2011), the concept of crowdfunding implies a financing process made by a large number of individuals who are often anonymous in a crowd (the Internet community), based on its assets, resources, knowledge or expertise. Martins and Silva (2014) state that it is possible to draw four elements that are inherent to crowdfunding from the aforementioned definition: i) the use of online platforms to raise funding and of social networks to disseminate campaigns; ii) the dispersion of contributions in a collective of individuals; iii) the anonymity of contributions; and iv) the informality of this financial relationship.

The projects financed via crowdfunding can be for-profit, cultural or for social purposes and can have different ranges. Therefore, they can vary both in their goals and magnitude (Schwienbacher & Larralde, 2010). Due to this wide range of types of initiatives that are funded

via crowdfunding, it is relevant to discuss the motivations that lead individuals from the virtual community to endorse and invest in crowdfunding campaigns.

According to Kleeman et al. (2008), the motivations of participants in collective financing campaigns may be intrinsic or extrinsic. Intrinsic motivation relates to the satisfaction of doing a certain type of activity. Extrinsic motivation is linked to external rewards, such as goods, money or recognition, or to the dissatisfaction with a product.

Moreover, Gerber and Hui (2013) identified the motivations and impediments of both creators and supporters of crowdfunding projects. The creators' motivations were classified as: raising funds, expanding awareness of one's work, establish new connections, gaining approval, maintaining control and learning new fundraising skills. The impediments are: inability to attract supporters, fear of public failure and exposure, and time and resource commitment.

The motivations of project's supporters were classified as collecting rewards, helping others, being part of a community and supporting a cause. Additionally, Gerber and Hui (2013) identified only one potential deterrent for supporters, which is the distrust of the creators' use of funds. The authors argue that, despite the fact that the motives and impediments for project creators and supporters are different, there is an interconnection between them.

Motivations can also vary according to the type of crowdfunding campaign. According to Martins and Silva (2014), crowdfunding campaigns can be divided into nine types, namely: grants, rewards, pre-sales, social loans, loans and/or parallel loans, debt, division of profits, equity and hybrids. However, many crowdfunding authors categorize the campaigns into four types, depending whether they are based on: donation, equity, loan or rewards (Kabylka, 2016; Belleflamme & Lambert, 2014; Agrawal et al., 2011; Kuppuswamy & Bayus, 2013; Mollick, 2013; Monteiro, 2012).

The first type of crowdfunding campaign is *donation-based*, which does not offer a financial return for the supporters – or donors – of the campaign. Because social interest prevails, donors mobilize around social or philanthropic causes in which they believe.

In the *equity* type (purchase of shares), supporters purchase a stake in the company and/or project, receiving, in return, a corresponding share of the profits thereof (Monteiro, 2012; Martins & Silva, 2014). This type of funding allows creators to have greater freedom in the strategic decisions of the company and/or project by not using traditional sources of financing, such as investment funds.

The *loan-based* crowdfunding type consists of a financing model where people and businesses lend monetary amounts in return to more favourable interests and remuneration rates than the ones offered by entities such as traditional banks and lenders. This type of crowdfunding can be interesting to social network lenders for its financial aspect. Thus, those loans involve attractive interest rates or are otherwise valuable for promoting a social good (Monteiro, 2012).

Finally, *reward-based* crowdfunding can range from early access to a product to the inclusion of the supporters' names in the credits. Thus, supporters' main motives are material (Martins & Silva, 2014). They are seen by creators as special guests, who may have early access or better pricing opportunities or are given a different status, such as the opportunity to meet the project's creators or to provide opinions on the product's development (Monteiro, 2012).

Several online platforms have been created to allow any of the four aforementioned types of crowdfunding, thus enabling financial transactions that support projects and/or companies. According to Greenberg et al. (2013), such platforms should allow: (i) financial support for a new initiative from many individuals; (ii) creators to raise and receive funds regardless of the project's stage (idealization or achievement); and (iii) voluntary financial contributions. Thus, crowdfunding platforms must be reliable and high-quality, in relation to both projects and transactions. Additionally, they can provide other services to help creators,

such as legal support, preparation of contracts, analysis of the campaign's deadline and content, and pre- and post-campaign support materials (Monteiro, 2012; Gerber & Hui, 2014).

3   Virtualization Theory and Hypothesis

> "Crowdfunding isn't new. It's been the backbone of the American political system since politicians started kissing babies. […] The Internet so accelerates and simplifies the process of finding large pools of potential funders that crowdfunding has spread into the most unexpected nooks and crannies of our culture […]". (Howe, 2008, p.7)

In Brazil, small cultural projects suffer from insufficient fundraising due to marketing failures, since most of the financial support comes from private companies via tax benefits (in some cases, companies can deduct 100% of their taxes). As small projects do not offer potential marketing payoffs to companies, they are often overshadowed by large projects (Simões & Pires, 2015).

Cultural projects' traditional fundraising process involves several actors, such as artists, cultural producers specialized in the fundraising mechanism, the government, private companies, and the civil society, in a minor role (Simões & Pires, 2015). By virtualizing this process, artists and their audience get the opportunity to engage in the fundraising stage, what is particularly important to small projects. People who support their preferred cultural projects financially experience a sense of community and have their needs for social contact satisfied (Gerber & Hui, 2013). Considering crowdfunding web platforms in Brazilian context of fundraising, we agree with the ICT4D literature that recognizes digital platforms' potential for development by enabling social and economic interactions beyond communities (Avgerou & Li, 2013).

However, we identified one issue concerning the crowdfunding of cultural projects in Brazil:, while in other countries the objective of virtualization based on web platform – that is, the connection to a large number of people, regardless of distance, in order to get a high amount of donation transactions – seems to be achieved (Agrawal et al.,2011), this doesn't seem to be the case in Brazil, as 50% of support transactions come from people who are close to the creator and the value of donations from distant supporters is usually lower (Mendes-Da-Silva et al., 2016). We named this issue as geographic distance paradox.

Overby (2012) proposes that, whenever we are interested in understanding questions about the virtualization of a process, such as why some processes can be better virtualized than others, we can benefit from the virtualization theory, a native IS theory. We, thus, propose to analyze the phenomenon of the virtualization of traditional fundraising processes, based on a digital or web platform, in the light of this theory for two reasons: it offers a different explanation to the geographic distance problem and to contribute to the IS discussion in conjunction with other native theories.

A process can be virtualized whenever physical interactions can be suppressed in the relation between people or between people and objects. Virtualization does not necessarily have to occur via IT – for example, a purchase that used to be made in person can now be made remotely via a printed catalogue –, however, because of its capabilities, IT can broaden or facilitate this process. (Overby, 2008)

Overby (2008) states nine propositions about the virtualization process, which are depicted in Figure 1. The fewer virtualization requirements a process presents, according to propositions P1 to P4, the more easily it can be virtualized. These requirements relate to the needs for physical interaction and are called: sensory, relationship, synchronism and control. IT, in turn, has representation, reach and monitoring capabilities that moderate those virtualization requirements and facilitate the virtualization process, according to propositions P5 to P9.
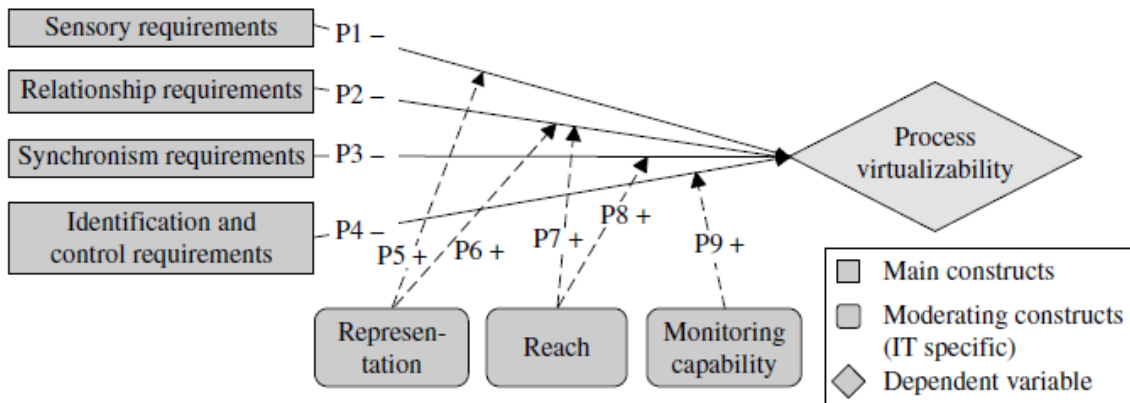
Figure 1.   Virtualization Theory. Source: Overby (2008)

Based on this model, we propose six hypotheses to verify if the fundraising virtual process, based on a web crowdfunding platform, complies with the virtualization requirements. We see now an opportunity to explain the geographic distance paradox addressing the discussion around the virtualization requirements.

Overby (2012) explains that the virtualization theory, although native from IS, was design to be a general theory and explain phenomena in several fields. While very general, it allows each research to make its own adaptations in order to fit the theory to the specific field. The author also explains that, as a theory, it must have at least one dependent variable. For the author, a dependent variable in the virtualization theory is the virtualizability of a process, which can be operationally measured by the adoption of a virtual process or the quality of outcomes of said process.

For this research, we chose the quality of outcomes as our dependent variable and used data from the web crowdfunding platform Partio in order to operationalize measures and statically test the hypotheses.

In order to operationalize the dependent variable, we considered supporters' transactions value (in Brazilian Reais, R$) as an operational quality result of the virtualization process: the higher the support value the better. Then, we tested whether the virtualization requirements were satisfied or not and if they had impact on the value of support transactions.

3.1   Relationship Requirements

Relationship requirements relate to the need for physical interaction between participants or between participants and objects (Overby, 2008).

In a broader sense, physical interaction would not be necessary in order to make crowdfunding financial transactions (Howe, 2008). However, Mendes-da-Silva et al. (2016), analyzing the data of 1,835 transactions from the biggest crowdfunding platform in Brazil, noted that the proximity between creator and supporters has its small role in the process. Then, our first hypothesis verify if this is a common behavior, by replicating the test in another database – Partio Crowdfunding platform's, with 7,104 support transactions.

H1: The lower the distance, the greater the amount of support transaction value.

In crowdfunding literature, some researchers have studied the distance between creator and supporters as a proxy for the relationship between then. The closer they are the more personal links they have. (Agrawal et al., 2011; Mendes-da-Silva et al., 2016).

If H1 is confirmed, it means that, when there is a relationship between creator and supporter (measured by the proximity between them), the transaction value is greater. Consequently, the fundraising process would present high relationship requirements, and the quality of outcomes from virtualization will not be satisfactory if this requirement is not satisfied.

Following the same idea that created H1, we speculated if transactions whose values are the lowest level are made by more distant supporters. If the relationship requirements were satisfied (i.e., supporters are close to creators), we expected fewer low-value transactions; in other words, we expected transactions whose value was determined by the established minimum amount to come from supports with no relationship requirements satisfied (i.e., supporters are distant from creators).

H2: The greater the minimum value established, the greater the support value.

If H2 is confirmed, it means that there are some, or even many, transactions whose value is at the established minimum amount. In this case, we, then, need to analyze the distance between creator and supporters in order see if the relationship requirements are satisfied (i.e., if they are close).

An implication of this hypothesis becomes clear when considering that the transaction value is perceived as a sign by other supporters. In fact, in their study "When Nothing Is Better than Something", Koning and Model (2013) observed that donations of small amounts are a failure factor for crowdfunding campaigns.

3.2 Sensory Requirements

These requirements relate to the need for sensorial experience, and IT could moderate them thought its representation capability (Overby, 2008).

We know that digital crowdfunding platforms offer possibilities of sensory experience through videos and images. We argue that these representation capabilities could benefit some kinds of cultural projects but not all of them; that is, cultural projects have different sensory requirements, and some of them could have their needs satisfied by the platform's representation capabilities (videos and images). Following the model of the virtualization theory, if some cultural projects have their sensory requirements satisfied, we expected an increase in transaction value.

H3: The kind of cultural project affects the transaction value.

This hypothesis is import in order to expand the level of our analysis of the virtualization requirements, from cultural projects in general to different kinds of cultural projects.

Exploring sensory requirements a little further, we propose to extend the scope of these requirements to also encompass feelings as sensory experiences, although Overby (2008) only provided examples of seeing, touching, smelling or listening as sensory experience. In the context of donation-based crowdfunding, feelings seem to play an important role. Therefore, if a virtual process makes possible to satisfy the sensory requirements, including feelings, an increase in transaction value is expected.

To make a hypothesis based on this, we took the sensation of autonomy (Gerber & Hui, 2013) as an example of feeling and, thus, argue that, if a virtual process offers options to supporters, they can experience the sensation of autonomy and so get inclined to increase their transactions value.

H4: The greater the number of rewards (options), the greater the support transaction value.

Another feeling identified by Gerber and Hui (2013) was associated with a good sensation of bargain or of having access to a product or service before everyone else. If the supporter sees one of these two possibilities – bargain or early access –, then a sensory requirement, in terms of feelings, is satisfied and support transaction value is expected to increase. The question, therefore, is if the costs to have access to a cultural project, product or service that is being crowdfunded can define the support transaction value.

H5: The higher the established value to gain access to the cultural product supported, the higher the transaction value.

Based on hypothesis H5, we argue that IT platforms do play a role in the value of transactions; they are not a neutral element on the virtualization process of fundraising and should be considered as a new kind of intermediary which can increase sensory experiences (e.g., feelings of autonomy and bargain) and can consequently increase support transaction values.

3.3 Identification and control requirements

Identification and control requirements relate to the needs of a participant of identify and control the behavior of other participants in the process. It is related to de need for inspect others (Overby, 2008). We understand these requirements as a matter of trustworthiness.

Analyzing these requirements of identification and control in virtual fundraising processes based on IT platforms, we perceived the need to divide them into two levels. In the first level there are the requirements concerning the relation between creator and supporters (people to people, P2P); in the other level, the ones concerning the relation between supporters and the IT platform (people to information technology, P2IT). Again, following the virtualization theory, if these requirements are satisfied in both levels – P2P and P2IT–, then an increase in transaction value is expected.

On the P2P level, we see identification and control as fundamental to establish trust and run financial transactions. The lower the degree of separation between people, the greater their social ties are – due to their proximity and the ability to easily get information (Wang, Greiner & Anderson, 2009) –, and, consequently, the easier it is to satisfy the identification and control requirements. However, as one of the objectives of virtualizing the fundraising process is to increase the number of participants across time and space, the IT capabilities have to offer possibilities to satisfy the identification and control requirements for P2P financial transactions, even if those people are distant from each other and do not have social ties.

The literature on crowdfunding provide some insights into how to get these requirements satisfied at the P2P level: Agrawal et al. (2011) pointed out that supporters get information by analyzing the early investments, as these investments are a sign of the creator's commitment; Gleasure and Feller (2016) state that supporters expect to have access to records, digital resources and valuable information of the project on the platform. Thus, at least on this level of identification and control requirements, the virtual process can benefit from the IT capability.

We are mainly concerned about the second level of requirements, in which IT act as an entity with which supporters need to establish a trusting relationship. Problems related to trust in IT platforms pose as a barrier to the adoption of financial services on the Internet (Chellappa & Pavlou, 2011). Then, in order to propose our sixth hypothesis, we suppose that, if supporters use their credit card as a payment method in the crowdfunding platform, they may establish a trusting relationship with the IT and so get their second level of identification and control requirements satisfied. Other authors also use credit card payment to operationalize perceived trustworthiness and security on the Internet. (Kim, Chung & Lee, 2011; Chellappa & Pavlou, 2011; Flavian & Cuinaliu, 2006).

If identification and control requirements are satisfied on virtual processes, the transaction value is expected to increase, so we propose that:

H6: Transactions paid by credit card have a higher value than the ones paid with other payment methods.

Again, if H6 is true, then IT plays a non-neutral role, since a trusting relationship between supporter and platform (P2IT) can increase the transaction value.

3.4 Synchronism Requirements

The last requirements relate to the need for quick processes with no delays. As Overby (2008) discusses, when a process gets virtualized, transactions become naturally asynchronous, since the participants are in different places and times. The author suggests some processes cannot deal with delay and so are less disposed to virtualization.

We argue that synchronism is not a suitable requirement for the virtualization of crowdfunding process of cultural projects, which naturally have several asynchronous activities, such as preparation of a project, divulgation, development, and delivery of the cultural product or service.

4 Methodological Aspects

This article uses the database of a crowdfunding platform for cultural projects called Partio. This platform, which was created in 2012, allows two types of projects: those that were officially approved to receive indirect public financial support from private companies and people through tax benefits, such as the ones granted by the Rouanet Law or ProAC (Cultural Action Program), as well as non-incentivized projects, which are typically described as being "common".

To be able to receive contributions via the platform, the projects need to be selected by Partio's team of curators based on pre-established requirements, such as design, appeal and/or impact of the cause, clarity of goals, deadlines, rewards, financing goals, communication, contact network, creator's commitment and credibility, and commitment and credibility of those involved in the project. Among these requirements, the contact network stands out: this selection criterion is based on the size and classification of the creator's contact network as well as his or her ability to mobilize this network, whether online or offline.

4.1 Describing data

Projects in this database are "all or nothing": they reach the goal or the donations are returned to supporters. Because of this, we selected data only from those projects which have reached the pre-established financial goal. We argue this segmentation is important to decrease the influence of no controlled characteristic of project in transaction values.

We also excluded from our database transactions with no information about the supporter's zip code, as we use this information to calculate the geographical distance between creator and supporters. Creator's and supporters' zip codes were used to calculate the physical distance between them using Google Maps API.

Transactions with no information about payment method, rewards, and other characteristics necessary for the test of the hypotheses were also excluded.

The initial database had 11,322 support transactions. After the exclusion process, it remained with 7,104, covering 58 projects that were carried out between 2012 and 2016.

4.2 Statistical Method

Before running a regression to test the hypotheses, we used descriptive statistics to analyse our two main variables: transaction value and distance between creator and supporter. We noted that they present discrepant values and high levels of asymmetry and kurtosis, which possibly has impacts on regression analysis.

Then, based on their quartiles, we calculated the upper bound limit using Q3 + 1.5 (Q3 – Q1) and excluded transactions in which either the transaction value or the distance was above this limit. Using this criterion, transactions with a distance higher than 1027.09 kilometres were

excluded. Transactions with a value higher than R$ 255.00 were also excluded. The final N is 5,921 transactions.

Tables 1 and 2 demonstrate the initial and final descriptive statistics of both variables – distance and transaction values – before (N = 7,104) and after (N = 5,921) the exclusion of outlier values.

Analysis of variables with discrepant values (N=7,104)

Variable	Mean	Std Deviation	Q1	Q2	Q3	Upper bound	Kurtosis	Skewness
Distance	344.58	598.56	8.56	56.69	415.97	1027.09	12.52	3.04
Value	141.70	500.85	30.00	55.00	120.00	255.00	335.12	15.65

Table 1.   Variables with discrepant values.

Analysis of the variable variables without discrepant values (N=5921)

Variable	Mean	Std Deviation	Q1	Q2	Q3	Upper bound	Kurtosis	Skewness
Distance	183.78	242.26	7.85	27.44	316.00	778.23	1.77	1.48
Value	72.83	52.46	30.00	50.00	100.00	205.00	0.93	1.18

Table 2.   Variables without discrepant values.

In order to test our hypotheses, we considered the transaction value as a dependent variable. As independent ones, we considered the information included in Table 3.

Description of Hypothesis and Independent Variables

Hypothesis	Independent	Type
H1: The lower the distance, the greater the amount of support transaction value.	Distance	Continuous (R$)
H2: The greater the minimum value established, the greater the support value.	Minimum	Continuous (R$)
H3: The kind of cultural project affects the transaction value.	Book and Music	Dummy
H4: The greater the number of rewards (options), the greater the support transaction value.	Rewards	Discrete (unit)
H5: The higher the established value to gain access to the cultural product supported, the higher the transaction value.	Access	Continuous (R$)
H6: Transactions paid by credit card have a higher value than the ones paid with other payment methods.	Card	Dummy

Table 3.   Hypotheses and Independent Variables

We tested two regression models using the OLS method, one considering transaction value as dependent variable and another considering a log-transformation of transaction value as dependent variable.

5 Results

Both models are statistical significant at the 0.95 level and present adjusted R-squared near 25%, with little improvement on the second model, according to the results presented on Table 4. We checked the absence of multicollinearity with VIF < 5 and tolerance > 0.2, as well as the normality of residuals in histogram and auto-correlation with the Durbin-Watson test.

Model Summary

Model	Adjusted R-squared	Durbin-Watson	F	Sig
1- Value as dependable	0.240	1.771	253.167	0.000
2 - Log(value) as dependable	0.250	1.693	267.923	0.000

Table 4.   Model summary.

As we can see on Table 5, all variables entered into the second model, which fit a little better than the first one, at the significant level of 0.95. Some observations are: the variable Rewards was the only one to not enter into model 1, due to its p-value = 0.725; furthermore, Distance, as expected, had a negative beta.

Model Coefficients

Variables	Model 1 Standardized Coefficients	t	Sig	Model 2 Standardized Coefficients	t	Sig
Constant	35.104	13.089	.000	1.471	86.837	.000
Distance	-.042	-3.339	.001	-.059	-4.739	.000
Rewards	.005	.352	.725	.032	2.422	.015
Minimum	.444	27.109	.000	.403	24.813	.000
Access	.095	7.449	.000	.132	10.472	.000
Music	.057	4.033	.000	.111	7.844	.000
Book	.060	3.352	.001	.142	7.946	.000
Card	.042	3.571	.000	.048	4.111	.000

Table 5.   Variables in the models.

As the established minimum value for transactions has a positive effect on actual transaction value, we then conclude that supporters are making transactions using this value. As discussed before, this behaviour is not a good sign to other supporters and may be considered a factor to the failure of the campaign.

In order to investigate the origin of these low-value transactions, we took the 2,029 transactions whose value was the minimum accepted value and classified them according to quartiles of distance. As shown in Table 6, these transactions are concentrated in the quartiles Q3 and Q4, the highest distances.

Quartiles Analysis

Quartile	# Support Transactions	%	Cumulative %
Q1 - Up to7.85 km	347	17.1	17.1
Q2 - Up to 27.44 km	343	16.9	34.0
Q3 - Up to 316.00 km	710	35.0	69.0
Q4 - Above 316.00 km	629	31.0	100,0
Total	2,029	100,0	

Table 6.   Quartiles

6   Discussion and Conclusion

The crowdfunding phenomena have been debated in the light of economic, administration, and finance theories, however this study explored the issue using a native IS theory: the virtualization theory. This research therefore has a lot of implications for both aspects of crowdfunding: its literature and practice.

By changing the relationship between the several different economic agents in the most different business models, the Fintech movement have the potential to revolutionize the whole financial sector. Specifically on the collective funding via digital platforms – based on the literature cited above –, this study reinforces that in this kind of business model there is a reversal of the financial market's logic, with a redistribution of power between those who need funding to create a project and those who want to support it, eliminating traditional financial actors and restructuring the relationship dynamics between the agents.

Our first implication was about the geographic paradox, which relies on the fact that the virtualization of a fundraising process was expected to enlarge supporters' participation across time and space. However, due to the virtualization requirements, specially the relationship ones, this does not occur in Brazil yet, as we found comparing the average distance of 183 kilometers between creator and supporter and the fact that 50% of transactions come from very close supporters, at 27.44 kilometers (see median or Q2 of the Distance variable) with the average distance found by Agrawal et al. (2011), that was 4,828 kilometers.

Another aspect of this paradox is the fact that distant supporters make more minimum-value transactions, witch denote that they are not completely committed to the project's success and are emitting a non-beneficial sign to other supporters, as we discuss and demonstrate in H2.

A second implication relates to the role of the IT platform (or IT artefact), that we argue is a non-neutral actor on the crowdfunding phenomena. It can play a role by moderating the virtualization requirements, specially sensory requirements related to feelings (e.g., enabling autonomy or bargain feelings) and identification and control requirements (e.g., by establishing a trusting relationship with supporters, which increase the transaction value), as we demonstrate in H4, H5 and H6.

At last, we defend the necessity to deepen in one more level the analysis of the virtualization sensory requirements. As H3 is confirmed, we understand that each kind of cultural project – music, book or others – may have different sensory requirements for the crowdfunding process.

We also give contributions for the literature and for researchers who are interested in the virtualization theory. One contribution is the extension of sensory requirements to also encompass the experience of feelings; and another one is the division of the identification and control requirements into two levels: P2P and P2IT.

Our results corroborate the ones from Agrawal et al. (2011) and Silva et al. (2015) concerning close supporters and transaction value. The three researches – Agrawal et al. (2011), Silva et al. (2015) and ours – were based on the collective funding of cultural projects; however, while the others explained these results by positioning support transaction as a kind of investment transaction – that requires information to reduce transactions' asymmetry and costs (and for which proximity is, therefore, essential) –, we positioned it as a kind of patronage transaction that occurs in the reward-based crowdfunding model, in which supporters do not expect financial return. Thus, we believe that the virtualization theory can explain the geographic paradox by helping identifying the virtualization requirements that were not completely satisfied.

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