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Moritz Schulz
University of St. Gallen, moritz.schulz@unisg.ch

Ivo Blohm
University of St. Gallen, ivo.blohm@unisg.ch

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Short Paper

Moritz Schulz[1]
moritz.schulz@unisg.ch

Ivo Blohm[1]
ivo.blohm@unisg.ch

[1]University of St. Gallen
Institute of Information Management
Müller-Friedberg-Strasse 8, CH-9000 St. Gallen, Switzerland

Abstract

During the last years, crowdfunding gained attention as alternative source of funding for a variety of projects. More and more creative, artistic and entrepreneurial projects search funding through the crowd. However, crowdfunding markets are often considered inefficient and shaped by information asymmetries. Although first project characteristics towards governance mechanisms have been identified, the general use of governance mechanisms in crowdfunding and their impact on funding success have mostly remained uncovered. With that in mind, we present preliminary results on the influence of governance mechanisms on funding success of crowdfunding projects. We assessed 108 projects from 18 platforms in order to measure the use of governance mechanisms and to discover differences between the types of crowdfunding. We find that archetypes of governance mechanisms with influence on the funding success exist and intend to contribute to theory that explains the use of governance mechanisms in crowdfunding.

Keywords: Crowdfunding, Governance Mechanisms, Qualitative Comparative Analysis, QCA

Introduction

During recent years crowdfunding has become a viable source of funding for a variety of different projects. The phenomenon of crowdfunding started among creative and artistic projects and spread out towards start-ups and other profit-oriented businesses (Agrawal et al. 2014; Mollick 2014). Project initiators can kick off their funding process through a public open call on a crowdfunding platform to activate potential capital-givers from a crowd of Internet users. In comparison to traditional sources of funding like friends and family, bank loans or venture capital, crowdfunding offers considerable advantages: the speed of the funding process, risk diversification for capital-givers and capital-giver involvement ('wisdom of the crowd') (Kleemann et al. 2008). There are various examples of successful crowdfunding projects. Famous examples are "Pebble", a first-generation smartwatch for iPhone and Android users that raised 10 million USD from nearly 69,000 capital-givers, or the "Coolest Cooler", a transportable outdoor cooling device with various technical gimmicks (e.g., music speaker, bottle opener, USB port) that raised more than 13 million USD from a crowd of roughly 63,000 capital-givers. Both projects interacted much with their capital-givers on different levels: they told a story around their project, they involved capital-givers through updates and direct communication and offered appealing compensation for participation in the project funding. These two examples show the enormous potential of crowdfunding. However, in practice crowdfunding projects either "receive all of their money or fail to receive much at all" (Wash 2013).

A core element of crowdfunding is having IT-based platforms that act as an intermediary and constitute the vital link between the project initiators and the capital-givers. These platforms allow project initiators to interact with a large number of capital-givers in a (cost-) effective manner. Crowdfunding platforms can be

described as socio-technical systems that support interaction and contributions between the crowdfunding project and the capital-givers, who are willing to provide funding (Burtch et al. 2013a; Mollick 2014) and interact with the project-initiators and each other (Scheaf et al. 2018). Thereby, each crowdfunding platform solely defines the mode of interaction between project initiators and capital-givers (i.e., presentation layout, user interface, communication tools). Capital-givers from the crowd can browse and visit a range of projects on a crowdfunding platform. Recently, crowdfunding platforms have tended to specialize on certain funding purposes (i.e., funding of start-ups, creative projects, real estate projects). In order to present themselves, crowdfunding platforms usually offer toolkits or templates to the project initiators that seek funding for their project. When presenting a new project on a platform, the project initiators need to present their project within these boundaries.

Current crowdfunding research defines crowdfunding markets as inefficient (Belleflamme et al. 2013; Zhang and Liu 2012). The strong influence of information asymmetries between the different market participants (Courtney et al. 2017; Scheaf et al. 2018), herding behavior of capital-givers (Kuppuswamy and Bayus 2018; Vulkan et al. 2016) and changing legal environments (Kappel 2008; Tomczak and Brem 2013) pose complex challenges for project initiators, capital-givers and crowdfunding platforms. To overcome these pitfalls, the literature suggests that successful projects on a crowdfunding platform make use of certain methods, tools or mechanisms, which allow for governing project initiators and capital-givers from the crowd (Belleflamme et al. 2013; Burtch et al. 2013b; Mollick 2014). We understand governance as a system for organizing rules and processes that regulate and coordinate the behavior of project initiators and capital-givers (Blohm et al. 2018; Misangyi and Acharya 2014). In the domain of crowdfunding, the existence of governance mechanisms has only been analyzed for single mechanisms and single cases (i.e., data from only one platform) in recent years (Belleflamme et al. 2015; Kraus et al. 2016; Mollick 2014). As a result, the understanding of governance mechanisms and their efficiency in the domain of crowdfunding is very limited. This raises the question which governance mechanisms exist in the field of crowdfunding and more importantly which effectiveness in regard to supporting the funding success of crowdfunding projects do they have.

Subsequently, we aim to define governance mechanisms for crowdfunding and measure their effectiveness by their impact on the funding success of crowdfunding projects. We present preliminary results of a Qualitative Comparative Analysis (QCA) of governance mechanism configurations in 108 crowdfunding projects from 18 different crowdfunding platforms. We use the prior literature to derive six classes of governance mechanisms in the field of crowdfunding. Further, we define five archetypes for governance mechanisms that epitomize certain configurations that contribute to the funding success of crowdfunding projects in specific scenarios or types of crowdfunding. We discuss further research steps and our planned contributions to the literature streams of governance mechanisms and crowdfunding.

Conceptual and Theoretical Foundations

Crowdfunding: Two-Sided Market & Socio-Technical System

Crowdfunding platforms can be described as socio-technical systems that support interaction and contributions between the crowdfunding project and capital-givers, who are willing to provide funding (Mollick 2014) and interact with the project initiators and each other. Crowdfunding platforms usually offer three main functions: lot size transformation (i.e., matching projects and capital-givers, providing payment mechanisms), risk transformation (i.e., quality assessment of presented projects, acting as a neutral and trustworthy partner) and information transformation (i.e., providing information about investment opportunities, acting as an electronic marketplace). As a result, crowdfunding can be understood as a two-sided market where the platform offers financial intermediation functions (Belleflamme et al. 2015; Haas et al. 2014). In practice, this market comprises several inefficiencies. One obvious variable is the information asymmetry between project initiators and capital-givers (Scheaf et al. 2018). In addition, capital-givers in crowdfunding show similar behavior as into more traditional domains of finance such as herding (e.g., crowd 'blindly' follows first mover capital-givers) or emotionally driven decision making (e.g., funding decision beyond rationality) (Herzenstein et al. 2011; Zhang and Liu 2012).

Crowdfunding is usually an IT-facilitated process where interaction and contributions between the crowdfunding project and capital-givers, who are willing to provide funding, are intermediated by crowdfunding platforms. In practice, crowdfunding platforms face major challenges posed by the different

types of crowdfunding, the two-sided markets and the behavior of capital-givers from the crowd. In the overarching domain of crowdsourcing, researchers and practitioners have raised the need for governance mechanisms in order to support the funding process, help to reduce the risk of negative experiences, opacity and fraud (Blohm et al. 2018; Mahr et al. 2015).

Existing crowdfunding literature defines different types of crowdfunding platforms that are usually systematized based on the offered returns for capital-givers (i.e., financial rewards (interest, shares), non-financial rewards (pre-ordered product, samples) or no compensation on donations). Haas et al. (2014) define three types of crowdfunding: Altruistic, Hedonistic and For-Profit crowdfunding. Altruistic crowdfunding platforms offer no material or financial rewards for capital-givers with altruistic motives. Hedonistic crowdfunding platforms offer a non-financial reward, e.g., product samples. For-Profit crowdfunding platforms offer interest payments (based on loans or equity shares) as rewards for profit-oriented capital-givers.

Governance Mechanisms for Crowdfunding Platforms

Crowdfunding requires a system for organizing rules and processes that regulate and coordinate the behavior of project initiators and capital-givers. This system is referred to as Governance, which is reflected by specific mechanisms that integrate these rules and processes (Blohm et al. 2018). Existing literature suggests that governance involves structuring roles and responsibilities, formal and informal rules, standards and regulations, outcome control measures, communication processes, or matters of task allocation in order to achieve the project initiator's goal on a crowdfunding platform. These rules, regulations and processes are operationalized by mechanisms in order to motivate a certain behavior or to achieve a certain goal (i.e., quality assessment of projects, providing tools for socialization). Through a literature research, we identified 20 distinct governance mechanisms for crowdfunding that can be organized into six classes. These governance mechanisms are summarized in Table 1.

Table 1. Governance Mechanisms in Crowdfunding		
Class	**Governance mechanism**	**Description**
Project offering	Quality assessment (Ahlers et al. 2015; Mollick 2014)	Platform's internal quality assessment before publishing projects
	Presentation templates (Belleflamme et al. 2015)	Offer to initiators for presenting project on platform (e.g., text templates, video upload, social network connector)
	Funding requirements (Mollick 2014; Wash 2013)	Min./Max. funding level, funding mechanisms (e.g., winner takes all/take all)
	Billing options (Belleflamme et al. 2015)	Project initiators are billed based on funding success
	Framing (Herzenstein et al. 2011)	Framing the project so that it increases in importance for contributors (e.g., contributing to greater good)
Funding allocation	Attribute-based funding (Heminway 2014)	Allowed funding amounts: Individuals vs. corporates
	Profile-based funding (Belleflamme et al. 2015; Burtch et al. 2013b)	Exclusive project offerings (e.g., only for experienced capital-givers)
Funding incentives	Funding overview (Burtch et al. 2013b)	Current state/level of funding progress in projects
	Categorization (Belleflamme et al. 2015)	Organization of projects by categories
	Compensation (Belleflamme et al. 2013)	Financial and non-financial rewards for capital givers
	Reputation system (Agrawal et al. 2014)	Capital-givers can achieve levels/ranks based on their individual experience (e.g., amounts of funding)
	Feedback/follow-up (Xu et al. 2014)	Providing capital-givers with feedback/follow-up info after funding

Capital-giver interaction	Updates (Xu et al. 2014)	Providing capital-givers with updates on funded projects and newly arrived project offers
	Socialization (Xu et al. 2014; Zheng et al. 2014)	Providing tools for direct communication between project (initiators) and capital givers
Qualifi-cation	Peer Coaching (Agrawal et al. 2014)	Providing mechanisms with which experienced capital-givers/staff provide advice to new contributors
	Tutorials (Belleflamme et al. 2015)	Offering text- and / or video-based trainings as well as instructions on how to participate in funding
	Events (Belleflamme et al. 2015)	Webinars/live events to introduce business model, attract capital-givers
Regulation	Authentication (Ahlers et al. 2015)	Verifying the identity of newly registered capital-givers
	Risk/Compliance (Ahlers et al. 2015)	Risk and compliance information (legal regulation) to inform capital-givers about rights and obligations
	Netiquette (Kraus et al. 2016)	Establishing formal and informal rules of participation as well as terms of use with respect to desired behaviors of capital-givers

Table 1. Governance Mechanisms in Crowdfunding

Yet, it remains unclear which governance mechanisms are relevant to successfully support the funding process of crowdfunding projects. In addition, it is unknown which governance mechanisms can be best applied in which type of crowdfunding. Since there are considerable differences between the different types of crowdfunding (i.e., defined rewards, motivation of capital-givers, legal requirements), we assume that each type of crowdfunding requires certain sets of governance mechanisms. Furthermore, in practice the crowdfunding platforms offer different frameworks and templates to present each project. This means that it is the project initiator's role to embellish the project within the given frameworks. Concretely, this involves different shaping of allowed formats (i.e. texts, images, videos). For example, if project initiators want to set cues for Framing, they need to accentuate on the specific characteristics of the project's contribution to greater good. It is the role of the platform to provide a system that aims towards governance of project initiators and capital-givers.

Methodology

In order to define configurations for governance mechanisms in crowdfunding projects, we analyzed data from 108 crowdfunding projects, 18 different crowdfunding platforms and all types of crowdfunding through Qualitative Comparative Analysis (QCA).

Data collection and Variables

Initially, over 500 crowdfunding platforms were identified. For our analysis we considered crowdfunding platforms only if they were working, publicly accessible English or German website and had active business operations during the time of research (July 2016). In total, 254 different crowdfunding platforms fulfilled these criteria. We then chose six popular platforms from each type of crowdfunding in order to ensure a sufficient and sound sample size and an equally balanced data set with a total of 108 projects (see Table 2).

Table 2. Investigated Crowdfunding platforms	
Platform	**Project Example**
Hedonistic: Kickstarter, Indiegogo, Startnext, Rockethub, Crowdfunder, Vision bakery	*Pebble: E-Paper Watch*: Smartwatch for iPhone & Android
Altruistic: Dreambank, Fundly, Betterplace, Socialfunders, Globalgiving, Fundrazr	*Hurricane Sandy Disaster Relief*: Disaster relief for hurricane victims
For-Profit: Appbackr, Crowdcube, Econeers, FundedByMe, AppsFunder, seedmatch	*AOTerra*: Energy supply for heating by waste heat of servers

Table 2. Investigated Crowdfunding platforms

We chose three successful and three unsuccessful projects from each platform in order to create a balanced sample. Additionally, we defined coherent and generally applicable selection criteria for our project choices from the platforms, according to the motivation of capital-givers to engage in crowdfunding (Allison et al. 2017; Belleflamme et al. 2013). This approach led to six projects for each platform (see Table 3).

Table 3. Project selection criteria		
Successfully funded	1	Project from category: most successfully funded
	2	Project from category: most recent
	3	Project from random choice
Not successfully funded	4	Project promoted on a website or by other successful campaigns
	5	Project from category: most recent
	6	Project from random choice

Table 3. Project selection criteria

Project success was defined as achieving the defined funding goal within the defined time limit by the project initiator (i.e., 0 = project was not successfully funded; 1= project was successfully funded). The theory-based governance mechanisms were evaluated for each project as our unit of analysis (i.e,. 0 = project did not use mechanism; 1 = project used mechanism). Subsequently, this led to the exclusion of 11 governance mechanisms of which 2 had not been used at all (Profile-based funding, Events) and 9 mechanisms had been used in every analyzed project (Quality assessment, Presentation templates, Funding requirements, Billing options, Funding overview, Tutorials, Authentication, Risk/Compliance, Netiquette). We identify the 9 governance mechanisms as a mandatory baseline to set up a crowdfunding project (see *Preliminary Results*). The remaining 9 governance mechanisms have been considered as conditions for the next coherent steps of our analysis (Greckhamer et al. 2013).

Qualitative Comparative Analysis (QCA)

In social sciences set relations (i.e., sets/configurations of variables) are central for theory-building (Ragin 2008a). As a result, QCA has recently gained significant attention among researchers and practitioners (Fiss 2011; Huarng and Roig-Tierno 2016; Kraus et al. 2016; Marx and Dusa 2016). QCA is a set-theoretic approach that aims to define combinations of casual conditions (i.e., configuration of governance mechanisms) that contribute to a certain outcome (i.e., successful crowdfunding projects) (Marx and Dusa 2016).

We conducted the analysis of our data using the QCA method with two iterations. The first iteration includes an overall analysis of our collected data. The preliminary results of this step are presented below. Next, we conduct a second iteration in order to analyze the data based on the different types of crowdfunding. In Crisp-Set QCA (csQCA), binary-coded data are used to indicate either membership ('1') or non-membership ('0') of a set of variables. If applied correctly, csQCA discovers one or more casual paths to the explained outcome as configurations in an explanatory model (Rihoux 2003). Most researchers have focused on categorizing relevant variables into configurations to achieve certain outcomes, such as satisfaction, profit, performance (Kraus et al. 2016; Marx and Dusa 2016). Accordingly, we followed the csQCA section of Ragin's (2008b) QCA guide step by step.

After defining the conditions (i.e., governance mechanisms), we calculate the truth table that shows all possible configurations of the defined conditions and can be described as a data matrix. In our analysis, we defined 9 conditions, relating to the most relevant governance mechanisms (Framing, Attribute-based Funding, Categorization, Compensation, Reputation System, Feedback/Follow-up, Updates, Socialization, Peer Coaching), which resulted in 512 possible configurations. In order to refine the truth table, we excluded less relevant configurations by assessing the configurations based on the calculated frequency and consistency values. Following Ragin (2008b), we defined a frequency threshold of 3 to include only configurations of governance mechanisms that occurred at least 3 times in our overall data in the first iteration. Consistency values can be compared to correlations and show the degree of overlap between the combinations of conditions in relation to a certain outcome in specific cases. Ragin (2008b) proposes that the acceptable consistency should be equal or above 0.75. In line with this recommendation and further literature (Marx and Dusa 2016; Misangyi and Acharya 2014), we specified the consistency cutoff as 0.75. As a last step, the truth table needs to be analyzed. For this analysis Ragin (2008b) suggests to apply the Quine-McCluskey algorithm. The algorithm calculates combinations of conditions which lead to the specific

outcome (i.e., funding success) by removing inconsistent or absent conditions in relation to the outcome. The analysis provides a set of solutions that is based on a different treatment of remainder combinations (Ragin 2008b) and shows the combinations of governance mechanisms as configurations that lead to or support the likelihood of successful funding.

Preliminary Results

The results of the first iteration with the overall analysis of our data are presented in Table 4. By applying csQCA we were able to identify five different configurations of governance mechanisms in crowdfunding projects. The configurations were identified through the calculated consistency and coverage values that are measured for each configuration individually and for all identified configurations. Coverage values show to which percentage a configuration of governance mechanisms can explain funding success. csQCA provides two coverage values: raw coverage and unique coverage. While raw coverage measures the observed proportion of cases with a certain combination in a data set, unique coverage accounts for the proportion of cases with a membership in one specific configuration that is not covered by any other configuration (Ragin 2008b, 2008a). Consistency describes the likelihood of a configuration or a set of configurations to explain a certain outcome. Raw coverage ranges from .056 to .333. Consistency ranges from .667 to 1.000. Our calculated Overall Solution Consistency indicates that our five configurations can result in a high likelihood of successful funding with 61.1%. The Overall Solution Coverage indicates 89.1% of all our cases as the extent to which these five configurations cover a high likelihood of successful funding. The overall solution consistency and the overall solution coverage are in conformity with Ragin's (2008b) and Greckhammer's (2013) recommendations regarding the application of large-N QCA. Both values support and surpass the argument of sufficiency (Rihoux et al. 2012).

We were able to identify five distinct configurations that are presented in Table 4. Each configuration consists of present and absent conditions.

Table 4. Preliminary Governance Mechanism Configurations					
Conditions	**Configurations**				
	1	**2**	**3**	**4**	**5**
Project Offering					
Framing	●	●		●	●
Funding Allocation					
Attribute-based funding			●		
Funding Incentives					
Categorization	●		●	●	●
Compensation	⊗	●	⊗		
Reputation system		●			
Capital-giver Interaction					
Feedback/Follow-up					●
Updates		●	●	●	●
Socialization	●		●	●	●
Qualification					
Peer Coaching				●	
Consistency	0.857	0.667	1.000	1.000	0.947
Raw Coverage	0.111	0.111	0.056	0.056	0.333
Unique Coverage	0.056	0.111	0.056	0.056	0.278
Overall Solution Consistency					0.611
Overall Solution Coverage					0.891

Table 4. Preliminary Governance Mechanism Configurations

The presence of a condition is indicated by a black circle. A condition that is absent is indicated by a crossed-out circle. For each configuration, large circles indicate a core condition, while small circles indicate

peripheral conditions. Blank cells indicate that a condition has no influence on the outcome and can be either present or absent.

These five configurations consist of distinct sets of conditions that can be transformed to five different configuration archetypes. In four of five archetypes, socialization and framing play important roles which is in accordance with existing research in this field (Butticè et al. 2017; Colombo et al. 2015; Giudici et al. 2013; Herzenstein, Sonenshein et al. 2011). When aiming to set up archetype configurations according to our definition, it is important to also include the basic governance mechanisms that have been excluded in the QCA and that need to be used in order to set up a crowdfunding project on any of the observed platforms.

The *story-oriented archetype* (1) emphasizes framing and socialization as core elements. While categorization plays a peripheral role, governance mechanisms regarding compensation are absent. This indicates a setting in Altruistic crowdfunding scenarios, where capital-givers' funding decisions are strongly driven by their emotions. The *prestige-oriented archetype* (2) focusses on compensation and a reputation system besides updates and framing. Especially the first three mechanisms have a strong external impact and can be seen by other stakeholders on the platform. This archetype is applicable in Hedonistic and For-Profit crowdfunding scenarios, where compensation (e.g., product sample, share/interest payments) and reputation (e.g., showing funding experience to other capital-givers) play important roles. The s*ocially-oriented archetype* (3) accentuates the interaction between the project initiators and capital-givers with updates and socialization as a core mechanism. Additionally, categorization and attribute-based funding play a minor role in these configurations. Again, compensation is absent in this archetype. This can be an indicator for Altruistic crowdfunding. Applying this configuration on a project might attract capital-givers with the willingness to participate in the project without compensation. The *innovation-oriented archetype* (4) is similar to the social-oriented archetype with the addition of mechanisms for peer coaching and framing. This configuration indicates characteristics of projects and capital-givers among Hedonistic crowdfunding scenarios, where capital-givers often act in communities with interaction among each other and with project initiators. The *interaction-oriented archetype* (5) is characterized by all three interaction mechanisms and framing. In addition, categorization plays a subordinate role. This archetype could be applied in any of the three types of crowdfunding and strongly aims towards the interaction between project initiators and platform.

Research Outlook and Intended Contributions

In this short paper, we identified configurational sets of governance mechanisms that enable project initiators to increase the likelihood of conducting a successful crowdfunding project. Our preliminary research identifies distinct governance mechanism configurations that we interpret as governance archetypes for capital-givers in order to manage their crowdfunding projects.

In order to elaborate on this impact, we plan to specify our QCA analysis by applying the method to data from each type of crowdfunding. Existing literature suggests that differences in the configurations between the types of crowdfunding exist (Belleflamme et al. 2013; Schulz et al. 2015). For instance, For-Profit crowdfunding projects might need a different set of governance mechanisms than Altruistic projects. In addition, the relationship and interaction between governance mechanisms and already identified variables with an impact on the funding success (e.g., storytelling) will be further analyzed. Subsequently, more accurate suggestions for specific sets of effective governance mechanisms for each type of crowdfunding will be derived. These governance mechanisms are supposed to aim directly towards the needs of the different capital-givers from the crowd. In terms of measuring the performance of governance mechanisms, we will build on and extend existing concepts (Blohm et al. 2018; Misangyi and Acharya 2014). However, the specific characteristics of crowdfunding with its three stakeholders will provide new insights in both fields of research.

With this research, we intend to make two important contributions for current crowdfunding research (Belleflamme et al. 2015; Kraus et al. 2016; Scheaf et al. 2018)**:**

First, our research defines governance mechanisms in the field of crowdfunding. Additionally, we investigate configurations of these governance mechanisms that have an impact on the funding success of crowdfunding projects. Secondly, we aim to identify more specific archetypes of governance mechanisms for each type of crowdfunding. A first step towards this goal has already been presented in this paper.

The primary intention of project initiators for offering appropriate governance mechanisms is to increase the likelihood of a successful funding process. Similarly, platforms can leverage the results by implementing the applicable governance mechanisms and by offering certain templates and toolkits to project initiators in order to realize and deploy the mechanisms in their project offering. In addition, platforms need to inform and incentivize project initiators to use the provided templates and toolkits accordingly when presenting their project towards the crowd. We expect the configurations of governance mechanisms to have an impact on the funding performance of the different crowdfunding projects.

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