Governance of collaborative projects organized as communities

Completed Research

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Abstract

Collaborative projects organized as communities have a significant participation of volunteers and are formed by individuals geographically distributed, interconnected through a technology platform in a work of mutual interest, creating and freely sharing knowledge-based products. Despite several researches on the subject, community projects still lack a better understanding of how they govern their actions to achieve collective results. This paper aims at understanding these projects and their aspects of governance by comparing them with traditional organizations. Although it is possible to distinguish community arrangements from other types, especially in terms of their structural and control aspects, the key factor not always considered in such differentiation refers to the potential impact of maturity of projects on its governance. As a consequence, it is believed that as community projects develop, even though they may retain characteristics of community models, their mode of operation is close to that of traditional organizations.

Keywords

Collaborative projects, communities, technology, governance.

Introduction

In response to the complexity and constant changes of environment new forms of organizations are emerging (Adler, Heckscher and Prusak, 2011; Fjeldstad et al., 2012). In this context, organizational arrangements characterized by a greater fluidity and adaptability (Faraj, Jarvenpaa and Majchrzak, 2011), also making intensive use of information and communication technologies (ICT) for the interaction among its members, have increased in society, as is the case of collaborative projects organized as communities (O'Mahony and Lakhani, 2011; Seidel and Stewart, 2011).

Such projects strongly incorporate volunteer work and comprise members who share a common purpose (Shah, 2006, Seidel and Stewart, 2011) by collaborating in virtual spaces made available by the Internet, to create and share resources and knowledge (Lee and Cole, 2003; Crowston et al., 2007; Fjeldstad et al., 2012). A widespread example of community collaborative projects is free software initiatives, in which the source code of a software is openly made available to the public to receive contributions, so that the relationship between individuals for software enhancement happens especially in communities existing on the Internet (Shah, 2006; Crowston et al., 2007; Santos et al. 2013).

Collaborative projects structured in communities differ from the traditional perspective of an organization (Panchal, 2010; Lindberg et al., 2016). Still adopting the software sector as a reference, while in traditional organizations such as Microsoft in the production of Windows, the development of software happens in a more bureaucratic and formal work structure with confidential activities for commercial purposes, in the thousands of community projects which started on the Internet this development appears in a virtual space where they emphasize informal labor relations and free creation and sharing of knowledge (Lee and Cole, 2003; Xu, Xu and Lin, 2005; Seidel and Stewart, 2011). Understanding how communities organize their activities to achieve the expected results is important focus of research in the...
literature of organizational theories and information systems. O’Mahony and Ferraro (2007) pointed out that, although a relevant research problem is how organizations govern their actions to achieve objectives, most studies address more bureaucratic forms of organization, while less attention is given to the community format.

Consequently, communities remain less prominent in organizational studies, which leads to the need to improve this field of research (O’Mahony and Ferraro, 2007; O’Mahony and Lakhani, 2011) so that it may reflect the modern development emerged with the ICT advancement (Zheng, Zhao and Stylianou, 2013). It is also necessary to better explain how innovative and complex products are developed in community models (Lindberg et al., 2016) and how such models are organized in the absence of traditional controls and more formalized means of coordination (Panchal, 2010; Arazy et al., 2016). In the scope of such issues, the concept of governance is paramount, since it involves the means that direct control individuals in totally or partially autonomous initiatives, such as community collaborative projects (Markus, 2007; Li-Ying and Salomo, 2013).

The objective of this theoretical paper is to define and describe what collaborative projects in a community format are and what aspects of governance stand out in these projects, differentiating them from traditional organizations. We intended to answer the following research questions: 1) what are collaborative projects in community? 2) What are the main mechanisms of governance found in these projects?

It is important to emphasize that community-based projects are examined in the literature in different contexts, represented by organizational (or inter-organizational) projects, and free arrangements, which emerge independently outside the physical limits of a given organization (O’Mahony and Lakhani, 2011). The focus of this paper is to bring to light the general attributes and governance that characterize these free collectives. In the course of this idea, however, we recognize that these communities have the possibility to evolve and change the way they operate to adapt to changes resulting from this evolution, so that their characteristics are not static or polarized in relation to the traditional arrangements and may change over time. As a way to meet the proposed research objective, the literature on organizational theories and free software is analyzed.

Collaborative Projects Organized as Communities

In organizational research, although interest in communities has been given for at least 30 years, its definitions are still sparse and the levels of analysis are unclear (O’Mahony and Lakhany, 2011). The communities studied may be at different stages of maturity and may be represented by both start-up ventures and initiatives already at an advanced stage of operation, and that may constitute successful projects (West and O’Mahony, 2005; Crowston et al., 2007; Crowston, Jullien and Ortega, 2013). As far as the scope of action is concerned, studies deal with intra-organizational groups aiming knowledge sharing (Wenger, 1998, 2000) by going through inter-organizational projects with the objective of carrying out technical cooperation (Hargrave and Van de Ven, 2006; Aldrich and Ruef, 2006) until reaching free arrangements composed by individuals who transcend organizational boundaries and act on knowledge-based productions (Lee and Cole, 2003; O’Mahony and Ferraro, 2007; Panchal, 2010). This theoretical paper concentrates on addressing general and governance characteristics that stand out in groups of the latter case (free arrangements).

Collaborative projects organized as communities are formed by individuals who have a mutual interest in a certain area of knowledge. They form a joint venture with the intention of dividing and creating new knowledge related to a given interest (Wenger, 1998, 2000). Such projects explicitly incorporate distributed volunteer work (Crowston et al., 2007; Lindberg et al., 2016) and are represented by groups whose members work together around a common work object (O’Mahony and Lakhany, 2011). It may result in problem solving, production of a certain innovation or other new knowledge (Panchal, 2010; Faraj, Jarvenpaa and Majchrzak, 2011). In community projects, exchanges and production of new knowledge by its members within the networks of shared practices (Wenger, 2000) are carried out openly and result in a wide variety of knowledge-based products (Dahlander and O’Mahony, 2011; Seidel and Stewart, 2011). The co-production of knowledge in communities is based on the principle of self-organization (Fjeldstad et al., 2012; Arazy et al., 2016). This is a characteristic noted mainly at early stages of collective groups since the actors themselves are members of projects responsible for the management.
of internal collaborative practices in the absence or a limited presence of hierarchy and more formalized and structured work procedures (Crowston et al., 2007; Panchal, 2010). Thus, because of this configuration, the permeable nature of the boundaries of community projects and self-organization perceived in the groups makes them powerful loci of creativity and innovation (Lee and Cole, 2003; Dahlander, Frederiksen and Rullani, 2008).

As the members of community-based collaborative projects are not necessarily in a same physical space, the use of information and communication technologies (ICT) becomes crucial to the emergence and operation of this architecture (Li et al., 2008; Seidel and Stewart, 2011). The virtual environments provided by the diffusion of ICT make it possible for members of a community to have a common place to collaborate, so that they may share ideas and create new products together (Lee and Cole, 2003; Zhan, Bai and Liu, 2007).

The collaborative projects of free software are one of the most widespread domains in the study of community architecture, both in the literature on information systems and on organizations (Seidel and Stewart, 2011). The Linux operating system is one of the known successful cases (Panchal, 2010; Grabher and Ibert, 2014). These projects work in communities online, in which individuals or organizations open their software to receive contributions from volunteers and developers of software scattered beyond the formal boundaries of an organization, whether to solve problems or create new software products (Lee and Cole, 2003; Crowston et al., 2007; Li, Yoo and Zang, 2016). Although research on free software is often cited as a model of organization based on online community work, this organizational format extends to distinct domains in several areas of knowledge (Seidel and Stewart, 2011; Kolbjørnsrud, 2016).

**Governance in Collaborative Projects Organized as Communities**

While there are several researches investigating community architectures, especially in the context of free software (Shaikh and Vaast, 2016), governance theory is still more concentrated on a conventional model of organization with a hierarchical structure and processes marked by formalization (Child and Rodrigues, 2003). Given this reality, it is necessary that governance be deepened in the studies on communities with a virtual performance (O'Mahony and Ferraro, 2007, Li-Ying and Salomo, 2013).

The governance approach in organizations, especially in the field of community arrangements, is complex and multidimensional because it involves a number of elements, such as organizational and role structure, technical and management processes, and property rights of production (Markus, 2007). Despite the challenge of reaching a common theoretical and practical understanding of governance in communities (Markus, 2007, Li-Ying and Salomo, 2013), some definitions of the term are found in the literature. Demil and Lecocq (2006) understand governance as an institutional framework that governs transactions among community actors. For Markus (2007), governance is represented by the means used to achieve the direction and control of individuals in a community project. Based on previous definitions, Li-Ying and Salomo (2013) conceived governance as a dynamic structure of formal and informal mechanisms that regulate joint practices developed by members of communities, providing control with the purpose of ordering, reducing conflicts and bringing mutual gains to its members.

Based on these definitions, it is understood that the main purpose of governance mechanisms is to ensure the direction and control of individuals who work in community environments (Demil and Lecocq, 2006; Dahlander, Frederiksen and Rullani, 2008). Another issue regarding governance noted in the definitions concerns the perception that this concept is something dynamic (Shah, 2006; O'Mahony and Ferraro, 2007; Li-Ying and Salomo, 2013). This makes possible their understanding not only in terms of the structure that defines the configuration of the organizational arrangement, but also in relation to the processes that manage the actions of the individuals to achieve collective results (Markus, 2007; Li-Ying and Salomo, 2013). Based on such an observation, this theoretical paper seeks to understand it according to two main lines: structural, which involves organizational design and the roles of the project (Demil and Lecocq, 2006; Markus, 2007), and processual, which involves control schemes used in the dynamics of collaborative work to ensure the achievement of goals established by the community (Child and Rodrigues, 2003, Lattemann and Steiglitz, 2005, Xu, Xu and Lin, 2005).
Structural Mechanisms

The organizational structure is the foundation upon which all the components that provide life to an organization are based (Simeray, 1978). The framework provided by the structure allows people and resources to be integrated to achieve the organization’s objectives (Mintzberg, 1993; Aldrich, 2007). Two basic types of structure are found in organizations: formal, based on official work relations, and informal, emerged spontaneously from social interactions (Vasconcellos and Hemsley, 2002; Mintzberg, 1993). The elements that make up the structure are represented by specialization, departmentalization, centralization, formalization, hierarchy and amplitude of control (Aldrich, 2007; Robbins, 2009).

From the combination of types of structure and the variations between the previously mentioned elements, different organizational formats are established (Mintzberg, 1993). Whereas traditional models are characterized by a higher level of formalization, control units, high specialization and vertical communication, the modern dispositions, such as matrix and project-based organizations, have a lower degree of formalization, a lower specialization and an independent communication of hierarchical levels (Vasconcellos and Hemsley, 2002). Community collaborative projects are inserted in this scenario of modern typologies (Li-Ying and Salomo, 2013) and present a flexible architecture adaptable to the environment into which they are inserted (Galbraith, 2010) in relation to traditional organizations regarding their structuring (Demit and Lecocq, 2006; Fjeldstad et al., 2012).

The definition of authority in community arrangements is not defined by the existence of a hierarchy in which the lower levels of organizations have a relationship of subordination with higher levels (Aldrich, 2007; Robbins, 2009). In these arrangements, the work has a horizontal perspective, which is defined by the establishment of lateral relations of authority between the members of the group (Dahlander and O’Mahony, 2011, Seidel and Stewart, 2011). In lateral relationships, the authority of individuals is a function of their abilities and is noticed by the decision rights or responsibilities they assume, becoming larger the closer these individuals are to the center of the community (Dahlander and O’Mahony, 2011). As a result of their horizontal organization, communities have a poorly defined chain of command, which makes their interactions predominant within the informal structure and results in a existence of less formal working relationships (Seidel and Stewart, 2011; Arazy et al., 2016).

Work planning in communities has some specificities, since membership of projects depends heavily on voluntary work, and in such cases no formal employment contract is established and no members receive financial compensation (Lattemann and Stieglitz, 2005; Shah, 2006; Seidel and Stewart, 2011). In addition, community projects are based on open sharing of knowledge, an indication that any individual can participate and have access to what is produced, as well as cease to participate in the community (Lee and Cole, 2003; Seidel and Stewart, 2011). Because it has such a profile, the boundaries that define the outlines of a community arrangement are fluid and poorly defined (Faraj, Jarvenpaa and Majchrzak, 2011). Contributions of members tend to be weaker in the peripheral surroundings of the grouping and become stronger as they approach the central nucleus, where there are individuals more active in the project and with a greater authority (Seidel and Stewart, 2011).

ICT resources are essential for communication and development of the group’s collaborative activities in communities, because their members are distributed geographically (Li et al., 2008; Zheng, Zhao and Stylianou, 2013; Hamersly, 2015). Among the resources that make up the technological infrastructure of the communities, we highlight the use of e-mails listings, chat, videoconferences, virtual groups, discussion forums, among others (Zhan, Bai and Liu, 2007; Seidel and Stewart, 2011). The use of such resources diminishes the asymmetry of information in the communities and supports the transparency of actions performed (Lattemann and Stieglitz, 2005).

Regarding the definition of responsibilities, although some roles are identified in community projects, the fact that the chain of command is more informal and less defined, especially when members move away from the community core (Seidel and Stewart, 2011), makes individuals perform several functions and overlapping tasks (Faraj, Jarvenpaa and Majchrzak, 2011; Arazy et al., 2016). Instead of formal work roles, emerging roles are commonly found in communities, which are at the heart of knowledge production processes and emerge as work activities are established (Zammuto et al., 2007; Arazy et al., 2016). There are roles that develop in the execution of tasks, in which there is no planning or a person who was previously assigned to a specific function (Lee and Cole, 2003). This demonstrates a low specialization of these roles in communities. However, although there is such turbulence and mobility of
roles at an individual level, the stability of the work in the community architecture is achieved by the fact that the collaborative activity is centered on the artifact produced, which gives a direction to project members (Arazy et al., 2016).

One of the prominent roles usually well defined in the community environment is that of leadership (Xu, Xu and Lin, 2005; Xu, Lin and Xu, 2011). Its performance has a significant impact on the success of the projects in the sense of enabling the construction of relationships, providing information about the work, persuading people to offer their support, and observing and evaluating team members (Druskat and Wheeler, 2003). The leadership plays the most important role in the control of virtual community projects, implementing strategies and management practices that impact on the performance and viability of the project (Xu, Xu and Lin, 2005; Hamersly, 2015).

**Processual Mechanisms**

The processual mechanisms of governance identified in the community initiatives are based on processes of control (Lattermann e Stieglitz, 2005; Xu, Xu e Lin, 2005; Markus, 2007) carried out with the purpose of ensuring that heterogeneous individuals move in a cooperative action to the achievement of organizational results (Ouchi, 1979; Das and Teng, 1998). Several typologies of control are found in the literature. The classification adopted by Ouchi (1979) divides control into three mechanisms: 1) market control, which measures and remunerates individual contributions based on the results achieved; 2) bureaucratic control, which is centered in the hierarchy and the legitimation of the authority to control the behaviors; and (3) clan control, which have as its basis the socialization of individuals for objective convergence. Vilariño and Schoenherr (1987) also divided the control into three categories: 1) direct control, practiced through the imposition of order and express vigilance; 2) structural control produced at the most formalized levels of the organization, involving technical and bureaucratic aspects; and 3) diffuse control, which is based on cultural assumptions. Scott (1995) developed the following control approaches: 1) regulative approach, which uses a superficial and direct level by covering laws, sanctions, norms and surveillance; 2) normative approach, backed by certification, through recognition and titling; and 3) cognitive approach, which is based on cultural premises.

From the typologies exemplified, it is possible to observe that control varies along two fundamental aspects: formal mechanisms and informal mechanisms (Ouchi, 1979; Vilariño and Schoenherr, 1987, Scott, 1995, Das and Teng, 1998; Xu, Xu and Lin, 2005). Following this orientation, among the formal species of controls, there is the behavioral control, which rewards individuals based on the degree to which they follow the procedures, as well as the output control, in which the actors are gratified according to the objectives fulfilled. In the informal control modality, which emphasizes relationships among the members of a group, there is social control, which is based on ideologies and cultural principles derived from these relationships (Ouchi, 1979, Das and Teng 1998, Xu, Xu and Lin, 2005).

In the context of virtual community projects means of governance are used to increase the commitment of its participants, not only regarding their motivation to contribute (Shah, 2006), but also in the sense of adapting their behaviors to the objectives of the projects (Lattermann and Stieglitz, 2005; Xu, Xu and Lin, 2005). The way to ensure control in communities is made possible by processual mechanisms with a more democratic profile (O’Mahony and Ferraro, 2007) aiming at the socialization of individuals (Seidel and Stewart, 2011), in contrast to the use of more formal means that focus on behavior and results obtained, used especially in traditional organizations (Lattermann and Stieglitz, 2005; Xu, Xu and Lin, 2005). However, it is important to stress that, even in face of the fluidity of community arrangements (Li, Yoo and Zang, 2016), bureaucratic control, such as the establishment of rules, norms and regulations, may be used and combined in these arrangements with the existing forms of social control (Markus, 2007; O’Mahony and Ferraro, 2007; Chen and O’Mahony, 2009). Xu, Lin and Xu (2011) also perceived the presence of output control in the study of free software communities, however, in a less formalized way than in traditional teams.

Democratic control processes act through a greater opportunity of participation by members in the production and the management of the community (German, 2003; O’Mahony and Ferraro, 2007), as well as by the transparency of actions of governance, providing a greater visibility in terms of content produced, roles, decision-making processes and relations of knowledge exchange and construction (Vincent and Camp, 2004; Markus, 2007). Democratic actions in the communities depend on the existence of a meritocratic context in projects in order to encourage members’ contributions (O’Mahony...
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and Ferraro, 2007) through the recognition of technical and professional merit (Dahlander and O’Mahony, 2005). Markus (2007) argues that this democratic openness of communities also has a motivational character, which makes projects with such a participatory and transparent format more successful in the mission of attracting willing participants to collaborate.

With regard to social processual mechanisms, we noted the use of forms of control in community projects that raise awareness of individuals in the sense of aligning their objectives with the purposes of the collective (Lattermann and Stieglitz, 2005; Xu, Xu and Lin, 2005). Based on the typologies of control exemplified earlier, these mechanisms integrate the clan approach as discussed by Ouchi (1979), the diffuse control of Vilarriño and Schoenherr (1987) and the cognitive approach of Scott (1995), which has as a presupposition the process of intensive socialization of the members of an organization through the establishment of a shared culture (Xu, Xu and Lin, 2005; Seidel and Stewart, 2011). They also involve the promulgation of values, habits, beliefs, rules and norms that must be internalized by actors (Ouchi, 1979), and which serve as a collective agreement in helping community participants understand behaviors accepted and valued and behaviors that are not allowed (Xu, Xu and Lin, 2005; Li-Ying and Salomo, 2013).

Seidel and Stewart (2011) argue that this cultural control, reinforced by the interaction between founders and project contributors, is critical to the maintenance and growth of a community arrangement. The processual mechanisms used in social control help to strengthen trust and cooperation among the actors of a group because they are able to integrate heterogeneous people who are distant from each other and people who communicate mainly using ICT means (Lattermann and Stieglitz, 2005; Zhan, Bai and Liu, 2007) in order to make their actions, in the absence of an explicit contractual protection, happen around a common purpose (Dahlander and Wallin, 2006; O’Mahony and Ferraro, 2007).

The culture established in the communities is consolidated by shared practices built by individuals during the accomplishment of a collaborative work (Wenger, 1998). Such practices, in turn, manifest through routines, symbols, histories, metaphors, prototypes, rites, language etc. that integrate the repertoire of representations of the community (Wenger, 1998; Seidel and O’Mahony, 2014). The existence of this shared repertoire of representations produces a reference on how to interact, align work and have a common understanding of the actions among community members (Okhuysen and Bechky, 2009; Seidel and O’Mahony, 2014). In addition, the shared repertoire of representations strengthens the sense of identification and belonging to the collective (Seidel and O’Mahony, 2014), especially when members are closer to the center of the group, which allows the definition of group boundaries and consolidation of their identity (Wenger, 1998, 2000; Seidel and Stewart, 2011).

Together with the directing provided by social mechanisms, other control methods verified in community projects are represented by the peer control and self-control (Child and Rodrigues, 2003; Arazy et al., 2016; Kolbjørnsrud, 2016). The peer control presupposes a mutual adjustment of actors through interaction during the accomplishment of a certain task (Sutanto, Kankanhalli and Tan, 2011). It is verified mainly in environments characterized by uncertainty about the ends and the means, as it is the case of projects that work in virtual communities (Fjeldstad et al., 2012). Self-control refers to that modality in which the individual regulates himself in relation to the actions he performs (Lattermann and Stieglitz, 2005; Kolbjørnsrud, 2016), having as background the complexity of the task, the ambiguous performance evaluation and the lack of rules and procedures to complete a task (Xu, Xu and Lin, 2005). In Scott’s (1995) classification presented previously, both forms of control integrate the cognitive approach, which is characterized by being discrete and diffuse, as well as by being based on cultural premises that lead individuals to exert a high degree of self-control and peer control in the organizations in which they operate.

**Main Perceptions of Collaborative Projects Organized as Communities**

Table 1, elaborated by the authors based on literature review, shows a summary of general and governance characteristics which are more prevalent in community collaborative projects compared to traditional organizations.
Governance of collaborative projects organized as communities

<table>
<thead>
<tr>
<th>Traditional organizations</th>
<th>Community collaborative projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low adaptive flexibility</td>
<td>High adaptive flexibility</td>
</tr>
<tr>
<td>Confidentiality and commercial purpose</td>
<td>Free creation and sharing of knowledge</td>
</tr>
<tr>
<td>Members depend on their choices to contribute</td>
<td>Members independent from their choices to contribute, but with interdependent production</td>
</tr>
<tr>
<td>Hierarchical and with formal authority</td>
<td>Horizontal and lateral authority</td>
</tr>
<tr>
<td>Well-defined roles and organizational structures</td>
<td>Poorly defined roles and organizational structure, with a strong leadership</td>
</tr>
<tr>
<td>Well-established limits</td>
<td>Fluid, permeable boundaries</td>
</tr>
<tr>
<td>Work formalized by contracts and remuneration</td>
<td>Significant incorporation of voluntary work</td>
</tr>
<tr>
<td>Physical and technological infrastructure</td>
<td>Essentially technological infrastructure</td>
</tr>
<tr>
<td>Control with a more formal and bureaucrat profile</td>
<td>Control with a more informal, democratic profile and with a strong presence of meritocracy</td>
</tr>
<tr>
<td>Behavioral control, output control</td>
<td>Social control, peer control and self-control</td>
</tr>
</tbody>
</table>

Table 1 - Comparison between traditional organizations and community projects

Given the differences between traditional and community-based enterprises, a key issue to consider in the study of community collaborative projects is the stage of maturity at which groups meet (Crowston et al. 2007; Crowston, Jullien, and Ortega, 2013). As the characteristics of communities and governance mechanisms are dynamic, vary in function of growth and increase of complexity of such projects, being able to be established, adjusted or abandoned according to needs (Xu, Xu and Lin, 2005; Forte, Larco and Bruckman, 2009; Li-Ying and Salomo, 2013). It is assumed that as the projects begins to expand and mature, the tendency is for mechanisms to become more sophisticated (Lattermann and Stieglitz, 2005; Xu, Xu and Lin, 2005). In other words, it is expected that the collective will fail to present some attributes of a “bazaar-type” arrangement with open exchange of knowledge, as advocated by Raymond (1999) upon referring to the free software communities, to then approach an architecture conforming to the cathedral or traditional view of organization with a more developed and formalized structure and processes of coordination and control (Lattermann and Stieglitz, 2005; Xu, Xu and Lin, 2005; Panchal, 2010).

The evolution of projects may also cause communities to develop relationships with other projects, or to be managed, supported, and sponsored by organizations (West and O’Mahony, 2005; Lattermann and Stieglitz, 2005; Li-Ying and Salomo, 2013). On the Internet there are projects of the most diverse types represented either by communities that do not have many contributors beyond their original founders, or those that have lost their popularity over time, up to communities at an advanced stage of development (Chengalur-Smith and Sidorova, 2003; Stewart and Gosain, 2006; Seidel and Stewart, 2011). According to Stewart and Gosain (2006), these mature projects have received the most attention.

While writing this paper, when trying to clarify the general and governance attributes of community enterprises, differentiating them from the traditional ones, with a special focus on the literature on free software, we noticed that projects that were successful and at advanced stages of maturity such as Linux, Apache, Gnome, among others, are well cited as examples of initiatives based on the format of communities (Lee and Cole, 2003, Shah, 2006; Seidel and Stewart, 2011; Lindberg et al., 2016). Other studies, however, upon conjecturing about organized arrangements in communities, were careful to recognize that project development makes the structure and control processes more elaborate within these collectives (Lattermann and Stieglitz, 2005, Xu, Xu and Lin, 2005, Panchal, 2010). Because of this, it is of fundamental importance to emphasize that the community characteristics presented here only reflect the essence of community architecture, although developed projects are cited as an illustration of this architecture, in reality, when investigated in detail, they may even stand back from that essence in some aspects and approach a more traditional profile of functioning.

Conclusion

Collaborative projects organized as communities are ventures that still need to be further studied in the organizational literature. They are arrangements with very singular attributes that differentiate them from traditional organizations (Lee and Cole, 2003; O’Mahony and Lakhany, 2011; Seidel and Stewart, 2011),
and which require forms of governance adapted to this reality (Demil and Lecoq, 2006; Markus, 2007; O'Mahony and Ferraro, 2007; Li-Ying and Salomo, 2013). In this paper, in addition to outlining the general characteristics of community projects, we also tried to examine and understand the concept of governance from structural and control processes used in these projects.

From the structure angle, the governance of collaborative projects differs from the conventional standard by observing relations of authority not supported by hierarchical subordination. These relations occur from a horizontal perspective. The path chosen for the organization of work is based on free adherence to the project and on open sharing of knowledge. This path makes the leadership a key role in the success of the enterprise, even if other roles established are poorly structured. When the focus is on communication, the use of ICT by individuals in the community stands out as a solution to achieve established purposes, notoriously in situations where the physical dispersion is a reality. From the processual perspective, the governance of community projects is represented by control mechanisms that aim guarantee the collaborative work within the scope of a fluid project, with virtual operation, marked by the members’ motivational factors distant from traditional paradigms and based on the central idea of knowledge sharing. To guide and avoid discrepancies between individuals’ behaviors aiming to reach collective outcomes, the processual mechanisms are essentially based on democratic means that encourage participation, as well as on socializing processes anchored in shared work practices.

Although this paper attains its proposal by presenting some general attributes and governance that distinguish community projects that emerge independently, it is possible to note in the literature that governance in these communities does not seem to be rigid and definitive. On the contrary, it is a framework flexible with a strong adaptability to the evolution of projects, as they increase in complexity (Lattermann and Stieglitz, 2005, Xu, Xu and Lin, 2005, Crowston et al., 2007; Panchal, 2010, Li-Ying and Salomo, 2013). Nevertheless, although maturity is an aspect with potential impact on the governance, it is not always discussed in depth by existing studies. This makes successful projects seem arrangements that follow a community logic, without there being a concern, in a significant part of the cases, to discuss development circumstances. This is especially true for free software, in which there is a greater concentration of governance publications, and where projects such as Linux, Apache, Gnome and others are sometimes cited as examples of community enterprises without a contextualization about the maturation of these structures. Such projects have the support of other organizations in their management, which allows thinking, despite having emerged based on a context of collaboration in communities, they may be operating in function of a growth obtained by being closer to traditional organizations, although some community traits are kept.

We hope that future studies bring new contributions to knowledge, complementing the literature perspectives discussed here. Going a step further, further studies are expected to focus more on the details related to the development of collaborative projects. The approach to these issues, in the theoretical and empirical fields, would help to fill important gaps in the explanation of changes in attributes and means of governance that may have occurred since the emergence of the collective until its current or more advanced stage of maturity. Such ideas, once put into practice, not only in the area of free software, would make it possible to clarify whether community projects, when evolving or succeeding, approach a constitution typical of traditional organizations, or if they in fact do so by preserving, to varying degrees, their values of origin.

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