

Shaping the collaborative networking of food innovation in Brazil: All4Food case study

Abstract

The aim of this paper is to contribute to the discussion about how a collaborative networking is shaped, and its effects on the food innovation ecosystem. The Governance Forms and Social Networks views are employed to analyze the proposed phenomenon. A qualitative approach was conducted, based on the case study of *All4Food*, an innovative network by re-establishing multistakeholder connection patterns in the Brazilian food ecosystem. Two main guiding empirical questions were analyzed: the origins and purposes of the network, and its main activities and the governance employed. This empirical effort allows us to examine the phenomenon of interest, in terms of the shaping of a network and, at the same time, the impacts that this construction bears on the ecosystem, highlighting theoretical and sectorial contributions.

Keywords: Governance; Social Capital; Innovation; Sustainability; Relationships.

1. Introduction

The global health crisis caused by COVID-19 led institutions and organizations to rethink their strategies and alliances, as well as the way to produce, distribute and consume food and beverages. These implications demand solutions that lead to new articulations to speed up innovation in favor of sustainable development. Contemporary paradigm involves collective actions in a network, which can be understood as a governance alternative form to traditional economic institutions, such as the market and the firm, but also, according to Paulillo, Sacomano Neto and Garcia (2016), as a method of analysis, organizational forms that agents use in collaboration to obtain joint gains.

In the context of hybrid governance, Ménard (2014) discusses the relational form, when firms are interconnected by a dense transaction network, with great commitment to each other. From the point of view of sociology and organizations theory, network analysis allows capturing the interactions among individuals, groups, organizations, institutions, etc. Granovetter (2005) argues that social relationships, more than institutional devices or generalized morality, are the main responsible for the trust production. Individuals are linked to multiple networks, governed by economic and non-economic principles that influence their actions in different ways. From this perspective, networks make it possible to investigate the relational contexts where actors are inserted: individuals, families, groups and organizations.

But how exactly is the shaping of a network? A phenomenon of theoretical interest at the same time that it is so pursued by entrepreneurs, the investigation of the process of

constitution (ideation and organization) of a network itself is little treated - if not completely marginalized - in the literature. This study seeks to explore this field.

The empirical analysis rests on a construction in progress: *All4Food* Network, created in 2020, as a pioneering and genuine initiative in the Brazilian food ecosystem¹, characterized as a polycentric, interdisciplinary and multistakeholder network. By enriching active and collaborative connections among the academy and multistakeholder, *All4Food* Network seeks to accelerate the development of technical-scientific multidimensional solutions aligned with the Sustainable Development Goals (SDGs).

From this construction, this paper is interested in investigating the process of ideation and organization of this collaborative network in the food innovation ecosystem, under Hybrid Governance and Social Networks points of view. For the elaboration of this work, the authors employ their expertise in economics of organizations, while acting as protagonists in the construction of the network, the object of study to be analyzed. Two complementary approaches to networks were employed, one anchored in Transaction Cost Economics and organizational behavior, and another anchored in Sociology, based in social relations inside and outside organizations. The structuring of the analysis involves two central questions: the main activities and the governance employed for the network, and its impacts on the food ecosystem in Brazil. For this, the origins and purposes of the network are also presented. The next section brings, therefore, theoretical contributions from social networks and their relationship with social capital, and from networks as a form of governance (both from the point of view of administration and systemic command, as well as negotiation, transactional between firms). The third section highlights the methods used in the research, presenting, in sequence, the results and discussions, and then, the conclusions.

2. Hybrid Governance and Social Networks

The use of the concept of “network” as an analysis tool applied to economic organizations and industry performance is relatively recent (Lazzarini et al., 2001). The relationships between individuals and groups, as well as the power relationships that derive from them, were for a long time restricted to the fields of Sociology; highlighting the so-called New Economic Sociology (NES) which has Karl Polanyi as the main author.

NES rises from a strong critique of the neoclassical economic view and directs the focus of analysis to social relations. For authors of this rational school, it is the relationships or affinities between individuals that precede and somehow determine economic exchanges. By pointing out how economic relationships are imbricated in social networks built between individuals, Polanyi (1957; 1944) introduces the concept of “embeddedness” that would be developed later by Mark Granovetter (1985) to explain how social relationships affect economic behavior and institutional arrangements supporting economic transactions.

¹ In its broadest context, referring to food and drink.

Part of this discussion assumes networks as a resource, more specifically a form of capital that enables access to other capital (financial, material and human), which would hardly be accessible individually (Cox, 1995; Bourdieu, 1999). In this sense, the concept of social capital can be understood as bonds of trust and reciprocity between individuals, as well as the institutions built between them to establish these bonds (Coleman, 1988; Cox, 1995; Putnam, 2000).

Coleman (1988) uses the concept of a matrix of credits and obligations to better explain the accumulation of social capital by a given agent. For Coleman, the relationships between individuals – or between groups of individuals – could be observed from the perspective of exchanges of obligations and credits that are not always homogeneously distributed. Thus, the stock of social capital of an individual (or that an individual can access) is directly related to the volume of obligations they hold and that they expect to be fulfilled by other individuals, with whom they maintain a relationship of trust (Coleman, 1988).

In addition, authors such as Burt (1992) consider that as important as the accumulation of obligations (network density) it is necessary to observe the non-redundant character of the links built. The existence of a heterogeneous stock of relationships or “structural holes” can avoid problems of 'lock in' of idiosyncratic resources, at the risk of these becoming less valuable due to future technological or institutional disruptions (Burt, 1992; Uzzi, 1997).

Social capital stocks, such as trust, norms and networks, tend to be self-reinforcing and cumulative, according to Putnam (1993). Successful collaboration in a project creates connections and trust, that is, social assets that facilitate future collaboration on other unrelated tasks (Putnam, 1993). For Ostrom (2009), some variables help to increase the possibility of solving collective action problems, such as the size of the group involved (there being a trade-off between group growth and individual cooperation), the heterogeneity of participants (discrepancy in benefits can reduce trust), face-to-face communication (which enhances solidarity among members), information about past actions (especially with accuracy of information), relationship networks, and whether individuals can enter or leave voluntarily.

Also, for the authors Pretty and Ward (2001), connectivity, networks and groups, and the nature of purpose are vital aspects of social capital. There can be many different types of connections between groups (aimed at exchanging goods, exchanging information, mutual assistance, lending and common celebrations). They can be unidirectional or bidirectional and can be long established (and therefore not responsive to current conditions) or subject to regular updates. Connectivity manifests itself as indifferent types of groups at the local level – from associations and mutual aid societies to sport clubs and credit groups, to forestry, crop or pest management groups, to literary societies and mother and baby groups.

Connectivity, therefore, can be of five types: a) local connections: strong connections between individuals and within groups and local communities; b) Local-local connections: horizontal links between groups within communities or between communities, which

sometimes become platforms and new institutional structures at a higher level; c) External local connections: vertical connections between local groups and external agencies or organizations, being unidirectional (usually top-down) or bidirectional; d) External-external connections: horizontal connections between external agencies, leading to integrated approaches to collaborative partnerships; e) External connections: strong connections between individuals within external agencies (Pretty & Ward, 2001).

Gielfi et al. (2017) examined the research collaboration between the oil company Petrobrás and universities, from 1980 to 2014, with bibliometric data, showing that there was a growing collaboration between Petrobrás and Brazilian universities in the period analyzed, resulting in an expansion network collaboration and strengthening its knowledge base. The expansion of the network, with the inclusion of new partners, strengthened the scientific knowledge base in terms of research areas, just as emerging partners complemented the experience provided by established partners, according to the authors. In the psyculture of southeastern Brazil, the study by Martinelli et al. (2019) analyzed the inclusion of tilapia producers (in net tanks) in social networks and their influence on the transfer of information within the network, and showed, through Social Network Analysis, that the transmitters of more information are actors centrals in the network and those who have the most valuable information.

Networks can also be analyzed as a form of governance (among the forms of economic organization), between the hierarchy and the market, and may vary in terms of the degree of formality of institutions and the role of the State and of non-state actors (Pahl-Wostl, 2015 apud Pahl-Wostl, 2019). The hierarchical form leads to a direction based on authority and power; networks are largely governed by informal institutions, with direction based on trust and voluntary agreements; power derives from role in the network; informality and high flexibility in membership make them interesting for learning and change. A form of market governance is based on a combination of formal and informal institutions, power derives from wealth and access to natural resources (Powell, 1990; Pahl-Wostl, 2019).

Under the Transaction Cost Economics (TCE) approach, the forms of governance, under the nomenclature of “governance structures”, are appropriate choices to govern a transaction. The ECT aims to explain the mechanisms and structures (hybrid/contract, spot market or vertical integration structures) that were created to reduce the costs incurred in an economic transaction. For Zylberstajn (2005), formal contractual relationships and long-term informal cooperation agreements are established between the agents of a system as a way to avoid costs associated with the market and enable an increase in the organization's value (insofar as it reduces risks) by contract. Mainly, in the producer-agribusiness interface, contracts would be even more relevant, depending on the type of product, whether a commodity or a differentiated product, in which some sources of specificity would be important to define quality attributes for processing (Zylberstajn, 1996).

Ménard (2018) combines transaction cost models and relational contracts to capture a variety of representative economic forms, with hybrid arrangements playing an important role

in the agrifood industry, especially in the analysis of cooperatives and plural forms. Examples of non-standard arrangements could be networks, alliances, joint ventures, etc. (Ménard, 2014). These arrangements are grouped under the hybrid concept, meaning agreements with various groups of partners sharing strategic decision rights and possibly some ownership rights, while maintaining distinct ownership over the main assets, so that specific provisions are necessary to coordinate their joint activities and arbitrate the allocation of payoffs (Ménard, 2004; Royer, Ménard & Gouin, 2016).

3. Methodology

The research follows a qualitative approach, applied to the *All4Food* Network, and exploratory and descriptive in objectives terms. The methodological procedures involved theoretical research on Governance Forms and Social Networks, documental research on the actions developed in a Network format by the *All4Food*, and the case study of the Network based on the description of some of its constituent coordinators.

The documental research was based on reports resulting from the two Challenges of Startups and Research Groups of the *All4Food* Network and internal documents, such as projects and the Network's actions agenda. Secondary information has also been supplemented from the website: <https://All4Food.com.br/>. The case study then considered the observation, experience and actions analysis of the *All4Food* Network, from some of its coordinators (co-authors of this article), working in the Network since its original conception, which began in March 2020. In this sense, the survey also assumed the Participant character. The case study proved to be adequate because it involves the strategy of organizational and managerial studies, from sociology and others, according to Yin (2002), and also allows for analytical techniques for disposing of information in different series, which will be used in this article. In order to better understand the objectives analyzed in this article, we will present a contribution about the origin and purposes of the network below.

4. *All4Food*: Connections to Change the World

All4Food derives from an initiative of the Center for the Organizations Study (CORS/NAP-USP). Network was created with the purpose of favoring connections between ideas and people, aiming to enhance finding and co-creation of innovative multidimensional solutions (technological and organizational) for the food sector in Brazil and worldwide, with sustainable development as its guiding principle. Network's mission is to contribute – in a collaborative and participative way – for the generation of new businesses. The network also aims to bring new challenges to science and to contribute to the formation of a new generation of entrepreneurs.

The first steps of this ideation were taken precisely at the beginning of the pandemic, when a group of colleagues and partners with solid personal and professional experience established connection to organize an event focused on innovation. Due to the Covid 19 pandemic, this

work was canceled, as so many others around the world. Even so, the dynamics of periodic work meetings were maintained, in which the group discussed different experiences and complementary knowledge to better understand the new scenario of uncertainties that has so suddenly unveiled, and what would be the paths for overcoming and retaking the different spheres of personal and professional life.

In a short period of time, the discussions began to include topics related to the challenges and opportunities of the new normal that emerged from the pandemic, and in which sustainable development is consolidated, with a necessity for more collaborative structuring involving different stakeholders of the ecosystem, among them, the academia. Considering the group's perception, connection is incipient, and lacks effective actions to strengthen the ties, especially in an organized and systematized way. Over the succeeding sections, the different obstacles already experienced and the difficulties of overcoming them came to light, as they were related to cultural aspects, such as the worldview, languages, timings and behaviors of these two worlds (academia and market) which, although ideologically complementary, in practice, represented completely disconnected pieces.

The continuity of the dynamics, with weekly virtual meetings (among the researchers) created opportunities for new connections and inclusion of more professionals in the team, with full adherence to the purpose of this construction, bringing important complementary expertise. And what we saw, with the benefit of the use of information technology, was the formation of an organic and dynamic network with the same ideal: connections to transform the world, focusing on sustainable development. On this route, the network believes it can positively impact society by generating new businesses, enlightening science and contributing to the formation of a new generation of entrepreneurs. This trajectory and desire, in the genesis of the constitution of Network, was initially materialized in the ideation of a genuinely innovative event, the *All4Food* Startups Challenge, whose main objective was to stimulate and enhance connections between academia and multiple stakeholders, between market leaders and startups.

In November 2020, the network offered the ecosystem and startups the possibility of an unprecedented and active connection with academic mentors in joint sessions with private sector stakeholders. Three Challenge Cycles were designed, focused on process, product and food chain, and the rules being collectively established and disclosed through a public notice for transparency and ethics. The integration of the team, which continuously grew and matured, culminated in the structuring of a regular and intense schedule of different events and greatly expanded the range of opportunities to be explored. The actions that were carried out and that are in progress will be described below, as the achieved results.

Network formally celebrates its first anniversary in October 2021. The month of October was chosen due to two important dates in the intended construction: World Food Day (October 16) and National Innovation Day (October 19). With these intense months of trajectory, the Network is currently structured in 20 Institutes and Universities in Brazil,

operating in the four regions of Brazil, which represents something around 40% of scientific production in the country, if considered as a metric the number of publications related to the topic of food on the Web of Science portal. The Network currently spans the Brazilian “continent” in a start that is very suggestive of its internationalization, initiating connection with partners from Universities in Argentina, France, Italy and China.

Alongside the Institutes and Universities, Supporting entities are added to the network (which endorse and actively participate in the Network's agenda with the contribution of human resources and other operational and technical facilities) and Sponsors (which contribute financial resources to the actions of the Network). The Mosaic of the *All4Food* Network is designed in an agenda based on the structuring axes of the Network (Matchmaking, Observatory and Co-creation) which can be developed in a shared way or on demand, according to the opportunities and interests of the entities that are partners of *All4Food*. In practice, the multiple stakeholders and their complementary expertise that constitute Network already add up to more than 120 members, divided into two categories: Associate members (with some active and regular action with Network), among teachers, professors, students (high school, undergraduate and graduate), researchers and industry professionals; and Collaborators Member (acting on time).

In the governance of Network, there is a body of coordinators allocated to six specific fronts (General and the specifics, as for the Observatory, Technology, Training and Development, Institutional Cooperation and Finance), which in turn are assisted by an advisory board, composed of renowned actors from academia and technology, as well as young leaders.

5. Results and Discussion

This section discusses how the actions of Network outline the proposed innovation, also examining the governance used, and its impacts on the food ecosystem in Brazil.

5.1. What are the actions in the Networking

Following its strategic planning, *All4Food* periodically elects a guiding theme for its actions, always in line with the United Nations Sustainable Development Goals. For the 2021/2022 biennium, SDG12 – Sustainable Consumption and Production – was chosen as the initial central theme. One believed that sustainable development is not only achieved through individual engagement and effort. The solution to complex and common problems depends on collective action and collaboration between multiple actors. Perspective with full adherence to Network's proposal, which is articulated in three axes (Matchmaking, Research and Co-creation) that complement each other to motivate active and collaborative connections between multi-stakeholders and thus generate impact for society.

5.1.1. Matchmaking

Great innovations do not arise from isolated flashes of creativity and inspiration, but from the meeting of ideas that complement each other. This is the premise that guides the essence of the axis called Matchmaking *All4Food*, which seeks to promote the connection between multiple stakeholders in the Brazilian food innovation ecosystem, by conducting a regular and intense agenda of events, thematic meetings and challenges. To achieve these goals, Network's first action was the planning of the *All4Food* Startups Challenge, from its original conception conceived in a combination of three interconnected cycles: 1. Process, 2. Product and 3. Productive Chain, with the proposal to genuinely differentiate itself from other events by establishing a totally new opportunity for networking and new business generation based on the active connection between academia, startups and six of the largest market leaders in the food and beverage segment, companies that have since the Cycle 1 sign as signatories to the *All4Food* Challenge.

5.1.1.1. *All4Food* Challenge Cycle 1

Cycle 1 took place between November 30th and December 4th, 2020 and was focused on technologically-based Food Techs dedicated to process management, oriented to the precepts and tools of Industry 4.0 (such as Blockchain, Big Data, Internet of Things) and Food Safety, Food Fraud and Food Defense.

Concomitantly with the challenge itself, related to business solutions that adhere to the theme of Cycle 1, the Challenge in its program provided diverse and current panels for the general public, with the participation of representatives from the public and private sectors, addressing topics such as opportunities, paths and gains in multistakeholder connection, challenges for collaborative connection and market trends. In addition to free lectures and discussion tables for the public, the event had an exclusive program for pre-selected startups. This activity included moments of connection with Brazilian private non-profit entities focused on supporting small businesses and encouraging entrepreneurship and non-profit civil association/incubators/accelerators that promote Innovative Technology-Based Entrepreneurship in the state of São Paulo, tripartite mentoring (always connecting a Startup to the combination of working professionals at the University together, in the same section, with market professionals) to mature their business plans and seek information that help them to overcome the challenges faced by each one, as well as make a business connection.

Researchers and students from *All4Food* Network, in a co-creation action with the signatory companies, coordinated the organization and realization of the event. There were more than 26 speakers (representatives from the public and private sectors) during a 3-day event with panels broadcast live by *All4Food's* Youtube channel. A total of 480 hours of work were dedicated to the preparation and realization of the event, with the direct engagement of 103 people, of which 47.6% were linked to private sector companies, 27.2% were academic professionals and 25.2% were students, including undergraduate and graduate degrees.

The organizing team had a graduate student with exclusive dedication (40 hours a week) to managing the event, working together with a researcher (CAPES Innovation Scholarship linked to one of the signatory companies); both articulating with 24 participating undergraduate students, 4 of which awarded scholarships (Unified Scholarship Program of the University of São Paulo). In total, 52 professionals from academia and companies provided specific times for mentoring with the selected startups, resulting in 40.5 hours of active and genuinely innovative connection. Each selected value proposition was provided with mentoring combined with researchers and private sector actors.

Based on this calendar, the startups scheduled mentoring, in which a shared orientation was established with an academic and a private initiative mentor, simultaneously, in the virtual private mentoring room. Thus, many connections were established. The program included moments of connection with the private entities and associations specialized in innovation mentioned above, to mature their business plans and seek information that would help them to overcome the challenges faced by each one, as well as make connection to new businesses.

According to *All4Food* (2021), a total of 84 startups pre-selected through a curatorial work, were invited via email and whatsapp to participate in Cycle 1 of the A4F Challenge. From this total of entries, 10 value propositions were selected by a jury composed of representatives of Network (among actors from academia and the private sector), as well as invited to join the Challenge, benefiting from mentoring activities. From this select hall of proposals, four were highlighted as winners due to their technical impact.. The winners were awarded by the program.

5.1.1.2. *All4Food* Challenge Cycle 2

Based on the success and experience accumulated in Cycle 1, the second edition of the *All4Food* Challenge expanded the context, including Startups and Value Proposition from academia (Research Groups). The aim was to advance the innovation proposal that the network launches, encouraging Research Groups to participate in the Challenge and present the innovations generated within the scope of Universities and Institutes of Science and Technology (ICTs) throughout Brazil, bringing them closer to the industry, entrepreneurship and connections for technological innovation in the food and beverage sector.

Cycle 2 took place from May 24 to 28, 2021, with the theme "Products, Ingredients, Packaging of the Future and Circular Economy". This proposal proved to be larger and more robust also in terms of signatory and supporting companies. The five market leaders were joined by MDias Branco among the signatories. Cycle 2 was also marked by the support of three other entities, including associations representing the food sector in Brazil, associations with activities focused on circular economy and sustainability and recognized food research centers. There were two events in one: 1st Week on Sustainable Production and Consumption, focused on discussions and cases of the Brazilian agrifood system, and the Startups and Research Groups Challenge, itself, in the mold of the previous challenge.

The general public was offered more programming than the previous Challenge. The event was completely online, through *All4Food's* Youtube channel, with 14 thematic panels (lives), involving 34 speakers from 21 different institutions. In addition to the lives, including lectures, seminars and open workshops, free of charge and without prior registration, two other virtual tables marked the event in its Cycle 2. The opening featuring one of the emblematic moments of Network and the ecosystem itself, with a large joint meeting of CEOs from four of the five Challenge signatories (Cargill, Danone, Nestlé and Mondelez International) discussing Sustainable Production and Consumption in the Food Ecosystem, with the debater being the Prof. Marcos Jank (Insper) and the mediation of Prof. Elizabeth Farina (WRI Brazil).

As in Cycle 1, startups and research groups with proposed solutions adhering to the theme were mapped and 37 entries were made, with 10 research groups and 10 startups selected to participate in the event. These were divided into Categories: 'Ideation, Development and Validation and Category', and 'Operation, Traction, Scale-up'. It was found that of these, 71% already had registered intellectual property assets, and 77% of them had already developed relationships to boost business with accelerators and Hubs.

The winners were directed to another Innovation Challenge, with a recognized food company. In addition, some value propositions were highlighted with honorable mentions (*All4Food*, 2021b).

Cycle 2 surpassed the previous one, with the enrollment of 124 mentors from 76 different institutions, constituting a rich team of specialists. It is also noteworthy that in cycle 2 the time dedicated to mentoring sections was extended, with 1-hour duration (compared to 30 min in cycle 1), totaling 94 hours of mentoring carried out. In order to provide mentors with more detailed information on value propositions so that they can prepare for their contributions in mentoring sessions, *All4Food* previously made available an orientation e-book. The material produced contained the necessary technical information, guidelines and tips for the sessions. Network also provided the mentors with technical support prior to and throughout the week of the event. At the end of each session, mentors were asked to complete an evaluation form so that Startups and Research Groups would receive final feedback as a product of Cycle 2.

At this event, there was an expressive growth in the connections established, and it is important to highlight the impact on the public reached by *All4Food's* social networks. Greater publicity for the event was achieved in newspapers and partners' social networks, who worked to attract the public and reach as many startups as possible.

In addition to the Challenge, it is important to highlight the conduction of other actions of the Matchmaking initiative, such as monthly webinars open to the public, with subjects that cover the food ecosystem, with network members or their guests as speakers. In addition, Network, to streamline internal relations, created an action that focuses on people and operations, with engagement and empowerment workshops and technical webinars. A research group was also created to discuss texts that complement the network's projects

(monthly virtual meetings). This team currently has 34 participating members, being mostly composed of professors from institutions linked to Network, in addition to graduate students and collaborators from partner companies. The research group is very important because theories that support researchers in the development of articles, projects and other initiatives of Network are discussed.

Also noteworthy is the construction of the Future Food Agenda, initially conceived in a cycle of events, to be started in November 2021, co-signed with the Cargill Innovation and Technology Center, and the content disseminated on Podcast platforms, the Connection Startup program, bringing together academia and private sector actors to discuss collaboration in the food and beverage innovation ecosystem.

5.1.2. Research

Connections that illuminate new challenges to science and the research conduction are inserted in the *All4Food* Observatory. It uses the expertise of different researchers in different knowledge areas, combined with explanatory research methodologies, survey techniques, case studies, benchmarking and network analysis, computational technological prospecting, big data analysis, to identify initiatives, solutions, technologies and accumulated knowledge on specific subjects of sectorial or specific interest on demand by organizations. Currently, there are three actions in progress within this initiative: 1) Project contracted on demand for the *All4Food* Observatory of technological radar; 2) FAPESP-sponsored project on sociotechnical dynamics in the food ecosystem; 3) Ranking of the Food Industry and Mapping of Success Cases in Food Losses and Waste in Brazil. The Ranking is dedicated to a long-term agenda on the quality of private policies in combating Food Losses and Waste.

5.1.3. Co-creation

Given the initial expectations of the collaborative construction of Network, the regular and intense schedule of events fostered new connections and strengthened ties that led to the ideation of new projects and initiatives, some of which were coined in the ideal of co-creation of innovative multidimensional solutions (technological and organizational) for the food sector in Brazil and in the world, with sustainable development as a guiding axis. In this direction, the *All4Food* Network integrates a recent call submitted to FAPESP (São Paulo Research Foundation) under the project of Development Centers for Science, in 2021, in collaboration with other partners such as the Food Technology Institute, the Food Research Center/FoRC and others.

5.2. What are the governance used in Network

According to Pahl-Wostl (2019), Coleman (1988) and Putnam (2000), *All4Food* is a network governance, based on solid human bonds, benefiting from previous relationships of trust, characterizing itself as a construction alive, collaborative, multipurpose and polycentric

governance. This constitution is supported by its differentials: **Multi-Functional**: Organic and dynamic structure with great capillarity; **Multi-Stakeholders**: Academy, companies, startups, research and innovation centers; **Multi-Institutions**: Researchers from institutions throughout Brazil and abroad; **Multi-Areas**: Technology and Management, encompassing among others Organizations, Market, Productive Systems, Sustainability, Food Science and Engineering, Emerging Processing Technologies, New Materials and Bioactive Packaging.

Based on Bourdieu (1999), Coleman (1988), Cox (1995) and Putnam (2000), *All4Food* constitutes a structure and social resource based on intense resilience and social capital. This is because intentional relationships and bonds of trust based on past trajectories common to many in Network (research areas and the location of their research institutions, for example) are fed back as the benefits are provided and perceived by everyone, such as the good results carried out by Challenges, the discussions and sharing of research, the growing involvement of undergraduate and graduate students, etc. Reciprocity has also become an internal landmark for researchers who are part of Network, as joint actions, involved in their work tasks, start to be shared, as contributions in classes, bringing different points of view.

Furthermore, in light of what Putnam (1993) states about successful collaboration in an event being self-reinforcing from other actions, it can be signaled by the interest of companies in the food sector that work on a project, such as Startups Challenge, also integrate a project within the scope of research prospecting. This expands connections not only internal to Network, but also internal-external to Network. These connections are aimed at exchanging information on innovation and events about the food sector in Brazil and, also, in line with the treatise by Pretty and Ward (2001), bidirectional information between the constituent members of Network, mainly.

It is clear that from the point of view of growth and strengthening of connections and relationships, some processes need to be improved, such as communication (already illuminated by Ostrom, 2009, in collective actions), as the use of various technologies and multiple events can generate communication failures and transaction costs. But for this, it advances in learning and experiences with a team of professionals (teachers and students) specialized in information technology that constitute Network.

From the perspective of governance brought by Powell (1990) and Pahl-Wostl (2019), one can say that the nature of a network is the predominant one, precisely because there is decentralized power, with coordinated coordination in large pillars already dealt with in this work, the which refers to the fluidity of learning. From a transactional point of view, from the perspective of Transaction Cost Economics, contractual, hybrid relationships (Ménard, 2004; Royer, Ménard & Guoin, 2016) have been used for specific projects in on-demand research, and in these cases, maintain distinct ownership over assets, specific prospecting interests of companies in the sector, or specific events to be held on demand.

6. Innovation Impacts by Innovating in Connection

The *All4Food* did not invent the proposal to connect academia with the ecosystem's multistakeholders, because numerous and notorious initiatives around the world and in Brazil are known for their impact, serving as inspiration and reference for new constructions. It turns out, however, that in terms of impact, it can be said that *All4Food* innovates by modifying connections, by offering the ecosystem a genuinely innovative combination structured in its pillars of action, in which research and extension feed back into each other, fostering the empowerment of more robust paths for co-creation. A proposal that goes beyond the Challenge, although still identified as a major highlight, and which has the complementarity of combined expertise and developed activities, the heart of innovation and of the impact. The construction of bridges involves the recurrence of encounters, interactions, articulations, fostering connections established in social ties.

Due to the current stage of the creation of Network, its actual impacts are still uncertain. It is worth remembering that construction with innovation in the connection to which *All4Food* is launched, structured on a combination of structuring factors in view of the desired purpose. In any case, some indicators suggest the potential impact of Network: Established connections, Demand from stakeholders and new institutions, beginning of the network's internationalization, Co-creation (as an impact indicator by signaling that we are in the direction of greater impact from the Web). On this route, Network believes it can positively impact society by generating new businesses, enlightening science and contributing to the formation of a new generation of entrepreneurs.

7. Final Remarks

We live in a period of great transformations in society, making us certain that our journey requires more and more complex and interdisciplinary solutions. Cooperation and collective actions play a prominent role in the face of this new paradigm that also challenges the production, processing and distribution of food and beverages. Rethinking consumption and production patterns in order to achieve inclusive economic growth and sustainable development requires a collective and collaborative effort. Public and private institutions need to think together about ways to efficiently use resources, reduce food waste along the entire value chain and make everyone aware that small actions can make a difference in the path, no return, to sustainable development. In this panorama, the article focused on the progress of a genuine proposal in the food ecosystem. It is a Network under construction and its visible impacts are: connection, narrowing bridges, bringing actors and contributing to an innovative process with the generation of business; the illumination of new challenges for science and, also, contribution to the formation of a new generation of entrepreneurs.

Empirical effort believed to contribute to the literature on governance and social capital by bringing out elements of the conception and design of Network itself.. At the same time, it is believed to contribute to scholars interested in the phenomenon, representing illustrative material on the design and organization of impact networks. In addition, it also suggests a

contribution to the formulation of public and private policies to encourage innovation and sustainable development by illuminating bases for network governance. The network's agenda opens up challenges that still guide the ongoing debate in the literature, such as sustaining Network in terms of the challenges of continued growth, in terms of conflict management, Network size, etc. As well as on cultural elements that are transcendent to Network itself, such as challenges of institutional paradigms and force to change the mindset to a perspective of collaboration, including that of its members, reserving new chapters to the social dynamics of interest to Network and the ecosystem.

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