

BALANCED CENTRICITY: INNOVATION THROUGH INSTITUTIONALIZATION IN COMPLEX SERVICE SYSTEMS.

ABSTRACT

Purpose – The purpose of this paper is to evaluate whether balanced centrality can be considered an institution that facilitates innovation into ecosystem (at the micro, meso and macro context). It can explain how new collaborative models behave facilitating value co-creation into ecosystems.

Design/Methodology/approach – The authors apply a conceptual approach to develop and propose a framework for deepening understanding “balanced centrality” as the basis for breaking rules, generating innovation at every level of the service ecosystem. Qualitative case study research was conducted with different methods of data generation including interviews and participant observation.

Findings –New business models need new institutions as all the actors exchange resources looking for the benefit of the whole system. In this sense, authors argue for considering “balanced centrality” as a new institution that breaks rules and facilitates innovation. From this perspective, “balanced centrality” can be the basis for fostering innovation when developed at every level of the ecosystem (micro, meso and macro).

Research limitations/implications (if applicable) – The paper is a conceptual paper that combines with an empirical approach. The empirical approach considers one case study on the university education context, which is an unexplored complex system. Other contexts and other countries would be useful to add new perspectives to the theory development.

Practical implications (if applicable) – Although sometimes an ecosystem arises in a natural way into markets, the configuration and development of “balanced centrality” as an institution would be useful in order to both: increase value co-creation among existing actors into the ecosystem and facilitation of innovation through rules breaking. As innovation is considered a desired fact, public universities have found into this strategy a model to foster and develop new businesses. It is the case of *Link by UMA-ATech*, which in the context of the University of Málaga is developing with great success an strategy based on facilitating innovation through “balanced centrality”.

Originality/value – The present paper contributes to the conceptualization of “balanced centrality”, considering it as an institution that can facilitate innovation at every level of the service ecosystem. Previous papers have never put together these concepts that build on the ecosystem theory (specifically FP 11/ A 5) to better understand and make easier that innovation arises into ecosystems. Also practical implications for managing innovation into ecosystems are described.

Key words (max 5): Balanced centrality, institutions, institutional arrangements, Service Dominant Logic, Value co-creation, ecosystems, systems of value co-creation.

Paper type –Research paper

Introduction

The role of institutions and institutional arrangements in the context of innovation and ecosystems is a cornerstone to better understand and foster the positive benefits of systems of value co-creation: ecosystems (Vargo and Lusch, 2016; Kostela-Huotari and Vargo, 2016). Edvardson et al. (2014, p. 291) state that “institutions are the coordinating link that have impact on value co-creation efforts and are the reference base for customer’s value assessment”; on the other side, Vargo and Lusch (2011) emphasizes the importance of institutions for innovation beyond network configurations and interactions and Vargo et al (2013, p. 67) point out that “institutions influence the interactions that contribute to the creation and evaluation of value among multiple actors”.

There is a growing interest on how innovation is generated. As Kostela-Huotari et al. (2016) posit, innovation is no longer the result of the work of an organization, it has a collaborative nature that has been widely recognized and it requires the joint action of a network of actors (Lusch and Nambisan, 2015; Kostela-Huotari et al., 2016).

A service ecosystem is a complex, self-adjusting system of resource-integrating actors connected by shared institutional arrangements and mutual value creation (Vargo and Lusch, 2016). The service ecosystem perspective of SD Logic highlight the role of institutions and institutional arrangements in providing the “rules of the game” (North 1990) for innovation.

The present paper pretends to build on the eleven foundational premise (fifth axiom) introduced by Vargo and Lusch (2016) related to the role of institutions and institutional arrangements in service ecosystems (or systems of value co-creation). With this aim, authors support on the concept of “balanced centrality”, developed by Gummesson (2008) to improve the understanding of the mechanism that allow to better understand the strategy that underlies ecosystems or systems of value co-creation through institutionalization. In this sense, Vargo et al. (2015, p. 71) posit “The link between business models, for example, and their embedded institutional prescriptions, and user subscriptions needs a much deeper conceptual and empirical investigation”.

To date few studies have examined the strategies that implicitly governs the institutional arrangements, and there is a lack of empirical approaches that allow to better understand the practical implications of the theoretical contributions. Also, there is shortage of studies that have examined how complex networks with a wide variety of actors can reach balanced centrality. The purpose of this study is, therefore, to fill this gap in the literature by utilizing the balanced centrality perspective (Gummesson, 2008a) to improve the understanding of the role of institutions and in facilitating the arising of service ecosystems.

The research propositions to be addressed are:

RQ 1. Balanced centrality can be considered an institution into a specific context.

RQ2. When considered an institution, balanced centrality can facilitate innovation through institutionalization by breaking, making and maintaining institutionalized rules of resource integration on each level of the ecosystem.

The study relies on the Link By UMA-Atech case, an organization born as a result of the entrepreneurial and the university contexts to co-build up an ecosystem where multiple actors can meet their needs. Allocated at a building shared by the University of Málaga and the Technological Park of Andalucía, this organization has generated a network of actors at the entrepreneurial

environment (among others) that has grown exponentially since the beginning. Organizations like Google, Ikea and IBM have participated on the research as involved actors.

The paper is structured as follows: first we highlight the role of institutions as coordinating link to bring up ecosystems. Second, Balanced Centricity concept is developed and analyzed in order to see whether it can be considered an institution, what kind of institution and its capabilities to generate innovation. Next we draw from ecosystem theory and conceptualize different approaches to it in order to facilitate the identification of actors and desirable behaviors in complex services. We then outline our methodology through the Link by UMA-Atech case study and report the results, findings and their interpretation. Theoretical and managerial implications are discussed and we conclude with suggestions for future research.

Institutions as coordinating link to bring up ecosystems

As a starting point, some clarification is needed in terms of defining what is meant by “institution”. Several perspectives have studied with different approaches this concept (sociology, institutional, economics, political science, etc.). Representatives of the sociological and economic approaches, lead us to consider institutions as the basis to provide stability and meaning to social life through the specification of norms, rules and cultural-cognitive beliefs (Scott, 2014) and, as stated by North (1990, p. 3 - 5), institutions are considered “the rules of the game”, and organizations would be “the players”. In the same broad perspective, Ostrom (2005, p. 3) conceives institutions as the prescriptions that humans use to organize all forms of repetitive and structure interactions including those within families, markets, firms and governments”.

From the SD logic perspective, institutions have had a changing role, that has increased its importance, being considered fundamental to the value co-creation process, and a new axiom and the eleventh fundamental premise. Vargo and Lusch (2016, p. 18) refer to “institution” as “a relatively isolatable, individual “rule” (e.g. norm, meaning, symbol, law, practice) and “institutional arrangements” to refer to interrelated sets of institutions that together constitute a relatively coherent assemblage that facilitates coordination of activity in value co-creating service ecosystems”.

We adopt SD logic perspective to understand institution as a rule or a norm that can be strategically established on a context (i.e. organization, enterprise, society) aiming at achieving a specific desired state (i.e. improving the strategic benefit for all the actors involved).

Following Scott (2014) and Bo Edvardsson et al. (2014), three institutional pillars can be identified:

- Regulative pillars: comprises all formal rules regulating and, consequently, enabling or constraining the behavior of actors.
- Normative pillars: consists of norms (that specify how certain things should be done) and values (what is desired and standards through which behavior and structures can be evaluated).
- Cognitive pillars: is related to the actors’ perception of reality. The cultural context determines the actor’s way of behaving.

Table 1. Institutions’ concepts.

Definition	Author
“Rules of the game”	North (1990, p. 3)
“Broadly defined, institutions are the prescriptions that humans use to organize all forms of repetitive and structure	Ostrom (2005, p. 3).

interactions including those within families, markets, firms and governments”	
“Rules, norms and cultural-cognitive beliefs are central ingredients to institutions”	Scott (2014, p. 57)
“Relatively isolatable, individual rule”	Vargo and Lusch (2016, p. 18)
“Institutions represent the “rules” of resource integration and coordinate actors’ efforts to make joint value co-creation possible”	Kostela-Huotari and Vargo (2016, p.169)

Lawrence and Suddaby (2006, p. 215) develop an interesting concept related to institutions: “institutional work”, defined as “the purposive action of individuals and organizations aimed at creating, maintaining and disrupting institutions”. Kostela-Huotari et al (2016) have developed a recent research on this concept, combining it with the service ecosystem perspective. Their contribution is of great interest as they highlight the actors’ efforts to break, make and maintain institutionalized rules of resource integration on multiple levels (micro, meso and macro) of the institutional context. They make an empirical approach through four organizations and direct and indirect effects are identified at any level of the ecosystem.

Balanced centricity as institution

Balanced centricity is a new concept developed by Gummesson (2008a, p. 17) as an intention to manage the complex reality recognizing that “all the stakeholders have the right to satisfy their needs and wants”. On latter publications, Gummesson (2008b, p. 328) continues the evolution of the concept adding that “It means that long-term relationships and well-functioning markets should build on the needs and wants of many stakeholders: customers, employees, suppliers, intermediaries, the media, governments and more”.

From the SD logic perspective, balanced centricity can be considered an institution and the basis for developing institutional arrangements. Following Scott (2014) and Edvardsson (2014) it can be considered a cognitive pillar, as it’s related to the actor’s perception of reality and it requires a cultural context that facilitates such actor’s way of behaving. From Lawrence and Suddaby (2006) and Kostela-Huotari et al.(2016) perspectives, we can purpose balanced centricity can also be considered an “institutional work”, as it can break, make and maintain institutionalized rules of resource integration on each level of an ecosystem. Table 2 comprises an abstract of the perspectives of balanced centricity.

Table 2. Balanced centricity’s perspectives as an institution.

Perspectives	Authors’ perspectives
Institution	Vargo and Lusch (2016)
Institutional arrangement	Vargo and Lusch (2016)
Cognitive pillar	Scott (2014) and Edvardsson (et al. (2014)
Institutional work	Lawrence and Suddaby (2006) and Kostela Huokari et al . (2016)

As Lusch et al (2016, p. 2959) posit “an institutional narrative helps to increase understanding of the role of institutional arrangement in service ecosystems”. Adopting this perspective, balanced centricity can be considered an institution that allows for the development of institutional arrangements into organizations, driving to the innovation.

Quero and Ventura (2015) analyze the influence of balanced centrality as facilitator for new formulas of value co-creation into the cultural context. In this research, authors find out how in certain contexts like crowd-funding, actors look for system balance on their decision as strategy to get success. Verleye et al (2017) use the medical context to investigate network imbalance; specifically they analyze the negative effects that the actions and institutions can have for other actors and Hillebrand et al. (2015, p. 422) challenge, in the same direction as Gummeson (2008a), the customer centrality to develop the “stakeholder marketing perspective” that “holds that customers cannot be viewed in separation of the rest of the stakeholders network and that the value perceptions and interests of other stakeholders may sometimes carry an equal or greater weight”.

The role of institutions on the ecosystems

Vargo and Lusch (2011a, b) introduced the service ecosystem perspective, which provides a framework for studying how value cocreation takes place among all actors involved. All actors integrate resources and engage in service exchange, and institutions and institutional arrangements endogenously generate nested and interlocking service ecosystems (Vargo and Lusch, 2016).

The service ecosystems perspective has developed simultaneously with other theories about systems (i.e. smart service systems and viable service systems, developed by Barile and Polese (2010), and service systems (re)formation, by Vargo and Akaka (2012)). These new perspectives develop a common idea: they try to better understand how service systems and eco-systems automatically develop a self-innovating system that continually changes to benefit the system and all the actors involved. Related to institutions, Vargo and Akaka (2012, p. 207) posit “an ecosystems view emphasizes the importance of institutions (...) in value cocreation as well as service innovation”. As syntetized on table 3, there is a growing interest from different streams of knowledge (SD logic, service science, viable system approach, smart service systems and stakeholder marketing perspective) that highlight (direct or indirectly) the importance of identifying the “norms” that enable the self-(re)formation of the systems through the positive relationships among all the actors.

Table 3. Systems and ecosystems concepts.

Concept	Definition	Author
Ecosystem (SD logic)	“A spontaneously sensing and responding spatial and temporal structure of largely loosely coupled, value-proposing social and economic actors interacting through institutions, technology and language to (1) co-produce service offering, (2) engage in service provision and (3) co-create value”.	Vargo and Lusch, 2010, p. 176.
Ecosystem (SD logic)	“Relatively self-contained, self-adjusting systems of resource-integrating actors connected by shares institutional logics and mutual value creation through service exchange”	Lusch and Vargo, 2014, p. 61.
Service system ecology (Service Science)	“Normatively, service systems engage in knowledge-based interactions to co-create value, meaning that advances in service innovation are only possible when a service system has information about the capabilities and the needs of its clients, its competitors and itself”	Maglio and Spoher (2008, p. 19)
Viable systems approach	“A viable system can dynamically adjust its structure and behavior to achieve consonance with its context and thus preserve its stability”	Barile and Polese (2010, p. 29).

Smart service system	“service system that are specifically designed for the prudent management of their assets and goals while being capable of self-reconfiguration to ensure that they continue to have the capacity to satisfy all the relevant participants over time”	Barile and Polese (2010, p.33)
Stakeholder marketing perspective	“A central capability of stakeholder marketing is systems thinking, which is the degree to which the firm is capable of understanding the whole stakeholder value system”	Hillebrand et al. (2015, p.416)

Value co-creation between actors in service ecosystems primarily occurs at three levels (Chandler and Vargo, 2011):

Micro-context: At this level, there is a direct service-for-service exchange. It is the traditional dyad that Gummesson (2008, p. 45) called “the classic dyad”, a two-party relationship in which the direct service – for service exchange takes place (Chandler and Vargo, 2011; Madhvaram and Hunt, 2008; Barney et al., 2001).

Meso-context: At this level, there is an indirect service for service exchange through a triad. Apart from the direct service received, there is an interaction between actors receiving the service from the same provider (Chandler and Vargo, 2011; Gummesson, 2008; Grönroos, 2006).

Macro context: the service becomes complex, as it includes direct and indirect service, creating a network (Gummesson, 2008). In this network, actors, dyads and triads create synergy among multiple simultaneous direct and indirect service – for service exchanges (Achrol and Kotler, 2012; Närvänen et al. 2014). Different kind of actors with different interests co-create value in order to get their project delivered.

These three levels are not fixed, they are relative levels of interaction that evolve and change over time (Chandler and Vargo, 2011; Vargo et al. 2015). Vargo and Lusch (2016) use these three levels to describe how institutions and institutional arrangements in service ecosystems are jointly generated by and enable and constrain value co-creation among actors (Lusch et al. 2016). In this sense, changes in the institutions and subsequent institutional arrangements can generate a macro – meso – micro interaction, generating changes from the micro level (bottom up processes) and top to down (Lusch et al. 2016).

Balanced centricity plays an important role as a new institution that enables breaking the rules into ecosystems at every level: micro – meso – macro, facilitating innovation into the ecosystem that benefits all the actors involved. It can be the basis for an ecosystem to self-regulate. Other perspectives like service systems ecology (Maglio and Spohrer, 2008), viable systems approach (Barile and Polese, 2010) and Smart service systems also have a common perspective on the way they research how institutions ensure that all participants get their needs satisfied over time, what can be (at least) partially explained by balanced centricity in the sense described by Gummesson (2008), eliminating the consumer from the core of all decisions to put the system balance in its place (Quero and Ventura, 2015).

Methodology

The Link by UMA-Atech case

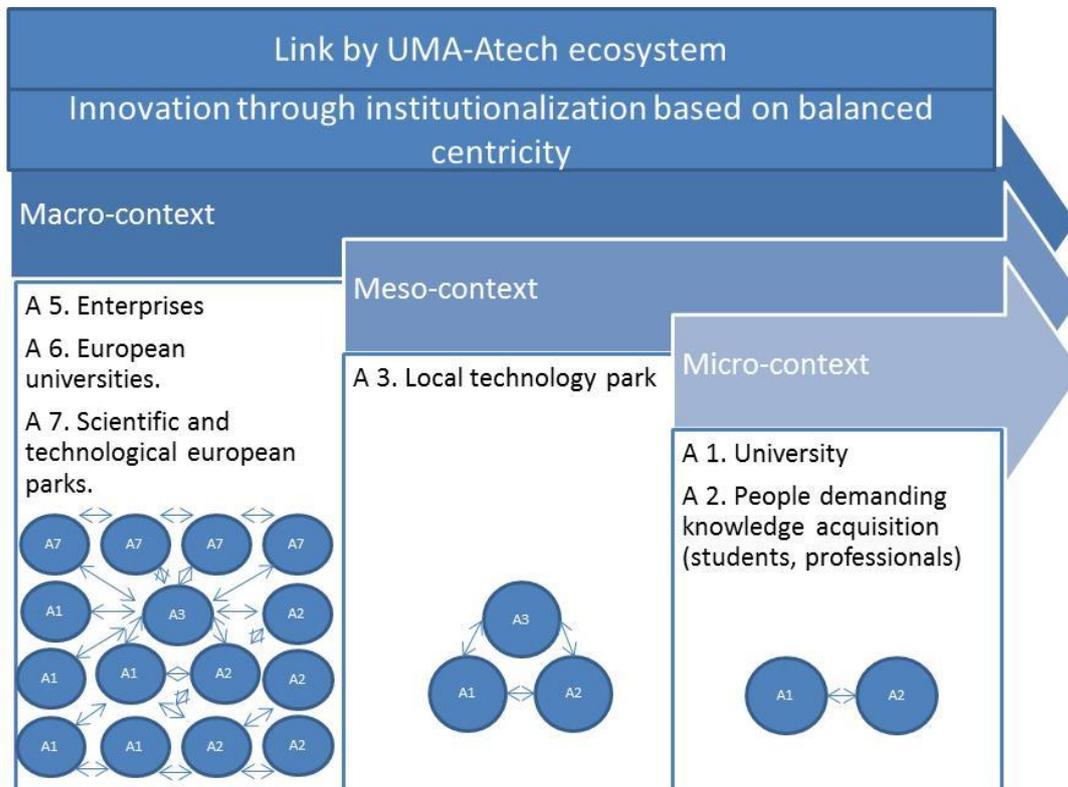
The first question to be addressed would be why Link by UMA-Atech (from now, we will refer to it just as Link) is a good case study to contrast our research. On the last decade (even before) it has been a common stream on European universities to develop different kind of activities to foster the relationship among actors on the benefit of all the parts involved. Link - allocated in Málaga (Spain)- is born in this context, and in just X years of activity has reached a very high level of

collaboration with an wide group of actors – local, national and international - that are progressively increasing their demand for involvement. Enterprises like Google or Ikea are actors on its sphere. It can be considered an ecosystem where service innovation through institutionalization is taking place on a continuous changing dynamic. For the actors who traditionally have collaborated with the university, Link is perceived as something different. On the present research, we pretend to find out how this process is taking place adopting a SD logic ecosystem perspective and the role of balanced centricity as an institution that has enabled the continuous innovation.

Research design and data collection

When a research topic is underexplored as is the case of innovation through institutionalization by balanced centricity, a single case study is a good choice (Yin, 2014; Skalen and Edvardsson, 2014). We made contact with Link which we knew (by interviews on local and national media) had adopted a balanced centricity institution, breaking rules and provoking innovation on a university context (that can offer interesting results for many actors). The steps for research design are described on table 4. First, actors identification was developed with the information provided by Link; The authors identified and classified the actors according to the information provided by the Link heads. This information was the basis to build up the ecosystem (in theory). Figure 1 contains all the information regarding actors, relationships and ecosystem. Second, authors conducted all the data collection and did the analysis. In total 18 in-depth interviews were conducted. In order to secure sincere answers, a contract of anonymity was entered with each interviewee. Each interview lasted between 30 and 40 minutes.

Figure 1. Link by UMA-Atech ecosystem.



Single case studies, such as the present one, do not allow for statistical generalization but for analytical generalization (Yin, 2014). The fact that case study findings are discussed in relation to studies that have been conducted in other contexts makes the results to some extent generalizable to other contexts, but this needs to be checked during further quantitative studies that build on case

studies (Skalén and Edvardsson, 2016). Yin (2014) also suggests theory can be developed from case-study research. This procedure resulted in the identification of different aspect of balanced centrality. Specifically two concepts were important to be able to evaluate the research propositions:

- Do the actors collaborating with Link think that “balanced centrality” is an institution?
- Does Link represent a different way of doing things (breaking rules)? It can facilitate the innovation process?

In most of the cases, we had to put the participants in the context of the research, and explain what “institution” and “balanced centrality” mean in the specific context of our research. Specific questions can be consulted on the appendix.

There are two actors that have been the basis for the ecosystem to arise: University and the technological park of Andalusia (PTA, allocated in Málaga). As expected, the perspective of their managers is “to offer an space with new rules that facilitates ecosystems to arise not to look for new products for new markets (product and client oriented) but to create value for all the actors involved, based on the balanced centrality institution” (Vice-rector of Social Innovation and Entrepreneurship and Link director at the University of Málaga). On the other side, the PTA, conceives Link as a “place for an equilibrium relationship (...) a lineal relationship among all (actors)”. In this sense, the PTA, not only considers balanced centrality as a new rule, but also “(..) this is the way innovation should be reached (...) innovation requires dynamic structures, that allow adapting to changes” (...) “there is no difference between PTA and UMA people, we are all on the same boat” (...) “I think it’s a model to follow by institutions” (...) “you have to be very generous and understand the objective is the common project”.

After the interviews developed with the Link managers and PTA, we wanted to know whether actors related to Link activity had the same perspective on “balanced centrality” as an institution and its capacity to break rules and foster innovation into a public university context (University of Málaga).

About the question related to “considering balanced centrality as an institution”, all the participants, with different approaches, agreed to think of Link as a place where decisions were taken always (or very often) taking into account other actor’s perspective. It’s specially significant comments like actor B, who posits “They (Link) are different because they are open- minded; every actor is important, not only the customer” and actor O, who says “For me Link is a particularly unique space. It seems to me that it is a point of convergence of people and institutions that share the same objectives” . Although all the interviews started with a positive answer to the question “Balanced centrality can be considered an institution in Link by UMA-ATech?”, the way every actor perceives and applies the concept presents some differences, although a common way of thought can be clearly identified. Table 5 (appendix) contains the most relevant comments of every actor in the sample.

When analysing whether balanced centrality is a perspective that breaks rules and facilitates innovation, there was a common idea related to considering Link as a model that breaks rules and facilitates innovation. Obviously, each actor had its own perspective on it. Specially descriptive is the case of actor K: “I think (Link) is rupturist (...) facilitates innovation through enterprises collaboration” or actor L “Our strategy is based on a methodology with different actions for all the agents to be aligned (...) is the most modern way to develop innovation into organizations”. It is not so important the fact of considering that Link is a new way of doing things, but taking into account that Link is being considered new partly because of adopting balanced centrality as an institution as a way to foster innovation. More in detail information can be found on Table 6 (appendix).

Discussion and research implications

The present paper means a theoretical contribution to the essential role of institutions in value creation from a SD logic ecosystems perspective. It builds on eleventh foundational premise and fifth axiom (FP 11 / A5), that posit “value cocreation is coordinated through actor-generated institutions and institutional arrangements”. From the SD logic perspective, institutions represent the humanly devised, integrable resources that are continually assembled and reassembled to provide of structural properties to the social context (Vargo and Lusch, 2016; Chandler and Vargo, 2011). In this context, we argue that Gummesson’s new-developed concept “balanced centrality” (Gummesson, 2008a,b) can be considered as:

- An institution in the sense described by Vargo and Lusch (2016)
- A cognitive pillar (Scott 2014 and Bo Edvardsson et al, 2014)
- An institutional work (Lawrence and Suddaby, 2006 and Kostela Huokari et al. 2016)

Vargo and Lusch (2016, p. 11) highlight the importance of institutions and institutional arrangements as “Institutions enable actors to accomplish an ever-increasing level of service exchange and value co-creation (...). The more actors share an institution the greater the potential coordination benefit to all actors. Thus, institutions can play a central role in value cocreation and service exchange”.

Following Lawrence and Suddaby (2006) and Kostela Huokari et al (2016) we connect balanced centrality as an institution with the possibility to reach innovation through the institutionalization of this concept into an ecosystem.

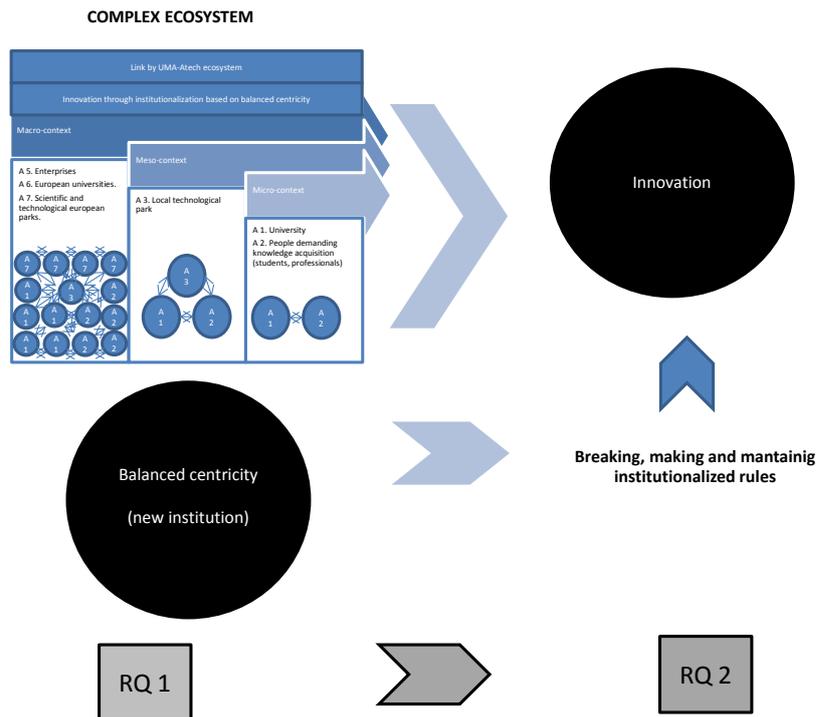
Hillebrand et al. (2015) posit (referring to Gummesson’s (2008a) contribution on balanced centrality that: “there is a need for a new perspective on the marketing discipline that recognizes that stakeholders are interrelated” and on the same article, specifies “the principle of customer centrality has rarely been challenged (see Gummesson (2008) for notable exception”.

The theoretical approach resulted on two research questions that were positively answered with a combination of theoretical and empirical approach (see figure 2):

RQ 1. Balanced centrality can be considered an institution.

RQ2. When considered an institution, balanced centrality can facilitate innovation through institutionalization by breaking, making and maintaining institutionalized rules of resource integration on each level of an ecosystem.

Figure 2. Framework for balanced centrality in complex service networks.



The empirical approach is embedded on the university context, which can be considered a complex system and a service ecosystem. As the theoretical approaches propose: service ecosystems are not made up of static connections, and service system’s assortment of resources is almost never completely closed. Because of this, exchange flows take place both within and among service systems, interweaving a multitude of service systems into larger ecosystems (Vargo and Akaka, 2012). This explains why Chandler and Vargo (2011) propose service ecosystems need to be studied by oscilating the perspective among various levels of interaction: micro (e.g. dyads), meso (e.g. triads), macro (e.g. networks) and layer of meta-context (i.e. complex networks, service ecosystems).

Framed at a public university in Spain (University of Málaga) an organization adopting researchers worked with an organization which pretends to reach innovation through institutionalization adopting the “balanced centrality perspective”. Its manager, with a high knowledge of SD logic theory and practice considered it would be e good strategy to fostecr changes in a quite old ecosystem structure as it’s the university. The organization is Link-by-UMA-ATech, at the University of Málaga. Framing our research on Link, we also pretended to match Lusch et al. (2016, p. 2961) demand “There are many complex systems that are ripe for investigation such as disaster recovery, health care, education and defense”, framing our research on university education context.

Actors identification at Link and interrelations among them drove us to confirm it can be considered an ecosystem, as it matches the conditions marked by Chandler and Vargo (2011, p. 44): (1) Services offered by Link are always co-produced, (2) there is exchange of service offerings. And (3) value is co-created.

A qualitative case study research was conducted and 18 in-depth interviews were conducted at every level of the Link ecosystem. The results drove authors to confirm:

- Into a complex system, balanced centrality can be considered an institution.
- Balanced centrality has the capability to break rules and make the actors relate to each other in a different way, facilitating innovation.

The results, although limited to an specific case study and context, contain a theoretical and empirical contribution. As described, on the theoretical side:

- Builds on the FP 11 / A 5 of SD logic.
- Builds on an underexplored concept: “balanced centricity”.
- Drives a research on a complex system, demanding investigation (the education context).

On the empirical side, results can be useful to develop strategies in other organizations adopting “balanced centricity” as the basis for many possible strategies, facilitating innovation through institutionalization, eliminating “the customer” from the core of every decision to put on its side “the ecosystem benefit”, understanding that in new business models the way of winning is making all the actors win, in the sense described by Virginia Burden’s quote “Cooperation is the throughout conviction that nobody can get there unless everybody is there”.

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Appendix

Interviews with the actors.

We begin with an introduction of the study, making clear its aims. The interview had two major parts. Part 1 sought to understand whether the concept of “balanced centrality” was considered a new norm on their relationship with other actors. It was important to find out if they had the idea of being working on an ecosystem or just developing win-win relationships with each actor. When working on an ecosystem, we wanted to know if decisions were driven by “balanced centrality” or “customer centrality”. Key questions included:

Table 4. Questionnaire.

Concept	Question to be addressed
Balanced centrality	<p>Q 1. Identify organizations / persons (systems) to deal with on your ordinary activity.</p> <p>Q2. Do they relate to each other with or without your intermediation.</p> <p>Q3. When taking decisions, is there an actor whose perspective / decisions are more important (prevalent) to others? (focal actor / ego network).</p> <p>Q 4. On the projects developed with Link, how would you describe the process and actors relationship?</p>
Breaking rules	<p>Q 5. Do you think that making decisions looking for the benefit of the system (ecosystem) is something new, a “new rule” or a “new way of making business” / “a new way of relating to other systems/organizations”? Why? Justify / explain.</p> <p>Q 6. On the projects developed with link, would you say is a new format? Do the break the rules (compared with previous experience with the university)?</p>
Innovation	<p>Q 7. Do you think operating through “balanced centrality perspective” can drive to innovation?</p> <p>Q 8. Which “rules” have changed on the last 2-3 years that, in your opinion, have increased the innovation in your organization?</p> <p>Q 9. In which percentage you would say your competitive advantage is created by the (eco)system you belong to?</p> <p>Q 10. Would you describe Link as an “(eco) system with new rules (compared with your previous experience with the University)? If yes, Would you describe the new rules? Do they facilitate innovation?</p>

Table 5. Balanced Centricity can be considered an institution in Link by UMA-ATech?

Actor	Answer Yes/No	Illustrative quotes
Actor A	Yes	“Link is an environment where you feel there is a common objective, with the participation of a lot of people” “From one to ten, I would say the ecosystem has an influence of 10 on the development of my competitive advantage”
Actor B	Yes	“Yes, they (Link) are different because they are open-minded; every actor is important, not only the customer”
Actor C	Yes	“Yes, what Link offers is a possibility of a different kind of contact among actors (...) making easier finding out the talent”
Actor D	Yes	“It offers a high confidence environment among all actors, facilitating connexions and accelerating relationships” (...) “definitely offers new rules, new ways of doing things”.
Actor E	Yes	“(Link) has been a thing related to helping one to each other with things that can enrich one to each other”
Actor F	Yes	“Link is an open mind”(…) “It’s an open space, is an achievement” “If you are generous, you are able to not going alone, we all will advance in the right way”
Actor G (PTA)	Yes	“It uses to be a balanced relationship” (...) “a lineal relationship among everyone”
Actor H	Yes	“Collaborative culture and decisions democratization in an external and internal perspective is a new stream”
Actor I	Yes	“Link has the vocation to gather university, companies and other actors and I think is perfect”
Actor J	Yes	“At Link, technology transfer takes place very easily (...) the persons working on the projects develop a fluid and easy relationship, there is even a friendly relationship”
Actor K	Yes	“I think so (...) The first thing to do is collaboration (...) is a way to help the business indirectly”
Actor L	Yes	“Link is a new relationship model, specially for the University environment”
Actor M	Yes	“It is impossible success taking isolated decisions (...) taking decisions with the system is a guarantee of being on the map, which, for me, it’s a key factor”
Actor N	Yes	“(Link) it’s an open space for anyone with ideas, always joining collectives: students, entrepreneurs, etc. (...) I think they are doing it very well”.
Actor O	Yes	“For me Link is a particularly unique space. It seems to me that it is a point of convergence of people and institutions that share the same objetives”
Actor P	Yes	“Relationships in Link are different. Very linear and not hierarchical” (...) “here (link) we have learned the idea of common winnig (...) if we cal help anyone, we do (...)”
Actor Q	Yes	“Absolutely yes. I wouldn’t have gone ahead without Link. They made me feel free to involve new agents and be able to feel I am into an ecosystem”
Actor R	Yes	“What makes Link different is that people comes here to sum up, and give their best” (...) “Here you cannot say “I keep this for me”, you come here to give the best of you, all your knowledge for the benefit of all”.

Table 6. Balanced Centricity perspective breaks rules? and facilitate innovation?

Actor	Answer Yes/No	Illustrative quotes across the complex service network (Link)
Actor A	Y / Y	“Of course, here in Andalusia is something new (...) I have lived in other cities abroad and I have seen it, but very very random” (...)“the fact of attracting so many actors from different sectors undoubtedly fosters innovation”
Actor B	Y / Y	“Yes, yes... it might be a breaking model, maybe could be more aggressive (...) but definitely they offer a new way of doing things” (...)“Community leads to innovation”
Actor C	Y / Y	“It is something absolutely different and new” “Yes, I am happy because is opening new doors, additional streams, etc” (...) “Is not the only one in the world, but is the first I know in Andalusia” “it has changed the way of exploring new ideas (...) you can explore much more and on a lower cost (...) let’s say that is the philosophical justification of Link”.
Actor D	Y / Y	“What is happening in Link is something that is being used in other innovation places”(…) “here I would say is quite unique”
Actor E	Y / Y	“I don’t know if it’s something totally new, but I think is something new in Spain” (...) “this is something we had in mind since we started to think of creating our own firm” (...) “we had that feeling and said: hey!, this is nonsense, let’s make connections grow” (...) “I think 90% of our work comes from the network, our contacts”
Actor F	Y / Y	“In my case, it (Link) is peculiar. I have always opted for a joint project, an innovation ecosystem in Málaga, and in this sense, it can allow Málaga to position over many other cities”
Actor G (PTA)	Y / Y	“Although it is something we have always tried to do, now we really have found with Link the way develop actions and things that really work”
Actor H	Y / Y	“I think that innovation starts from thinking different, like Link”.
Actor I	Y / Y	“Developing an ecosystem is not new, but the way to do it is different (...) there is a an ample scope to do things that no one has tried before”
Actor J	Y / Y	“I really think it is “The Business Model” (...) the relationship among actors becomes so easy” (..) “Link has come to sign the marriage contract among institutions”
Actor K	Y / Y	“I think (Link) is rupturist” (...) “facilitates innovation through enterprises collaboration”
Actor L	Y / Y	“Our strategy is based on a methodology with different actions for all the agents to be aligned (...) is the most modern way to develop innovation into organizations”.
Actor M	Y / Y	“Absolutely yes. It’s an innovation factor. I believe so”
Actor N	Y / Y	“For me is a basic (new) rule. Synergy among actors is 95 % of my success. It helps to develop innovation”
Actor O	Y / Y	“I think (balanced centricity) is the basis for innovation (...) It’s a new way of working (...)The new professions will be transversal, working with partners and professional disciplines that have nothing to do with ours” (...) “It is not possible to work without thinking of the benefit of all the involved actors when taking decisions”
Actor P	Y / Y	“Link breaks rules (...) just the new way of working they promote, breaks the old channels (...) this way innovation is something unavoidable”
Actor Q	Y / Y	“I am not sure if it drives to innovation but I think it (Link) facilitates innovation”

Actor R	Y / Y	“As it’s a new model, I think it’s innovation, a different way of doing things”
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