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# Enablers and inhibitors of collaborative network development in organic food industry: A fuzzy set qualitative comparative analysis (fsQCA)

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**ABSTRACT**

The study presents findings from thirty cases of organic product European retailers and identifies the potential enablers of collaborative network development on this food industry niche market and the barriers that currently restrict its adoption at a large scale.

In the present paper, using fsQCA, we examine how competitors' perceive the usefulness of a collaborative network on the organic market niche, how their perceived compatibility of a retailers' business model and how their perceived risks connected to commitment to the collaborative network affect the wider adoption of collective networks, using empirical data from a sample of 30 European retailers of organic food products.

The findings reveal that a combination of high usefulness, low compatibility of the business models and low perceived risk is a sufficient condition for the development of a collaborative network on the food industry organic market niche.

**KEY WORDS:** Network coopetition capability, organic food industry, eco-label, fsQCA

**JEL Classification:** Q13, M11, L14

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## 1. Introduction

The challenges of market turbulence and increasing levels of competition induced by globalization motivate companies to engage in collaborative processes as a way to gain agility and resilience. This trend is accompanied by the emergence of new organizational structures and supporting technology, fostering business collaboration environments. (Graça & Camarinha-Matos, 2017).

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Prior research concerning the organic food retailers' decision-making process with regard to competition is limited. Even though the propensity toward *competition* may vary between EU organic food retailers, most of them are aware of the long-term impact of this collaborative business approach. Therefore, a focus on collaborative network development in the organic food industry would play a significant role in strengthening its position at the European Union level, by creating a high awareness for marketing strategies focused on eco-minded customers. The knowledge gap relates to the core factors that should be considered when developing a collaborative network in the organic food industry. The methodological approach provides the

understanding of the competition enablers from the organic food industry to develop the desirable collaborative network at the European level.

Existing research on relationships between competitors is aimed either on competitive or on cooperative behavior between main market sectors, and the relevant development was that the relantionship is focused on harming or threatening the other.

Studies have been focused on businesses that concentrated their efforts on collectively marketing their products, particularly in relation to how they balanced the relationship between cooperation and competition, to the individual common benefits in order to achieve success for all those included in this kind of activities and their individual businesses (Wang & Krakover, 2008). This was true for buyer–seller relationships, but the question posed concerned the trade-off between cooperation and competition in relationships among competitors (Bengtsson & Kock, 2000).

Researchers questioned companies' positions and their internal and external constituencies as parts of biological systems, connected in order to maximize their interpersonal or inter-organizational gains without jeopardizing the necessary levels of cooperation (Hill, 2010).

We consider that **fsQCA** is appropriate for this study, because this method is focused on the way that causal conditions combine with one another (Fiss, Sharapov, & Cronqvist, 2013). Therefore, we conducted this research in order to explore and highlight relevant enablers and inhibitors that underlie the European organic food industry retailers' decisions to adopt a competitive way of doing business. Our findings have implications for the future mindset of this sector-based competition, which is passed on consumers and, most important, for product development of eco-labeling.

After the introduction, the study presents the literature review and causal propositions followed by the section on the method used. The next section focuses on the results. The study concludes with a discussion on the findings and the limitations and suggestions for future research.

## 2. Theoretical background

The identification and understanding of the motivation in creating a cooperative business network in the organic food industry, is essential for a common marketing strategy's definition and therefore for the sustainability of this niche (Gonçalves, Lourenço, & Silva, 2016).

Organic food industry retailers should consider creating business networks in order to obtain a congregated virtual structure from the same operation sector in order to overcome common limitations, generating competitive advantages (Chennamaneni & Desiraju, 2011).

In Europe, health is considered the consumers' primary reason for the purchase of organic food. Taste and environmental concerns follow as top-ranked reasons. In this context, it has been estimated that sales of organic food will increase at a rate of 20% per year in Europe (Hughner, McDonagh, Prothero, Shultz, & Stanton, 2007).

A research report provided by The European Court of Auditors reveals comprehensive statistics regarding the organic food sales in Europe (Figure 1). The European consumers are willing, at least hypothetically, to pay a premium for organic food products.

Compatibility and congruence among organic food industry retailers is an essential factor that determines the behavior, strategy, and structure of a desired competitive businesses network. Expected competition potential for the involved partners regarding the complementation and addition of value in terms of processes, competencies and resources are aspects that promote benefits on the competition process (Bravo, Squazzoni, & Boero, 2012; Dorn, Schweiger, & Albers, 2016; Meuleman, Lockett, Manigart, & Wright, 2010; Moeller, 2010).

Network heterogeneity plays an important role in the process of collaborative innovation and knowledge transfer. When network heterogeneity is higher, getting complementary resources and accelerating the speed of knowledge transfer are easier for firms (Xie, Fang, & Zeng, 2016).

The competitive paradigm implies that firms hold divergent interests that prompt them to follow a self-interest-oriented behavior, as any action bound to accrue economic rents provides benefits for one firm at the expense of the others (Padula & Dagnino, 2005). The cooperative paradigm emphasizes the beneficial nature of the initiatives, nurturing "mutual learning and efforts to attain mutually desirable goals" (Palpacuer, 2017). Competition has been argued to represent a

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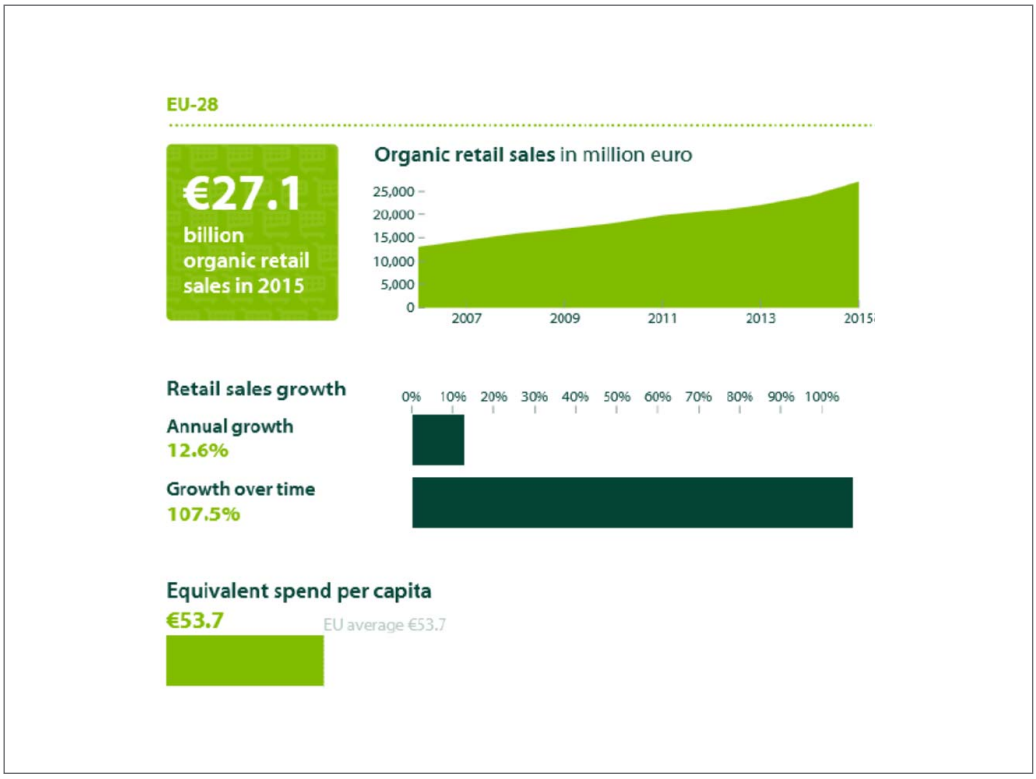


**Figure 1.** Organic retail market in the EU
Source : From "Organic retail market in the EU" by IFOAM EU (2018). Available at http://www.ifoam-eu.org/sites/default/files/ifoamvis-package/index.html

new paradigm that encapsulates the strategic management of tensions among simultaneous, inter-firm forms of collaboration and competition. The related strategies therefore contain "contradictory logics of interaction" (Pattinson, Nicholson, & Lindgreen, 2018).

The current body of research on inter-firm relationships mainly refers to general capabilities such as alliance capability (Wang & Rajagopalan, 2015) and network capability (Walter, Auer & Ritter, 2006) to manage these relationships, and lacks insights on how to deal with the competition paradox and the competitive tensions.

Although competition itself is beneficial, a competitive relationship can be difficult to sustain and balance (Bengtsson & Johansson, 2012)

A company that follows a competitive strategy is in a position where it can benefit from the advantages of both competition and cooperation, competition is the prerequisite enabler for companies in the organic food industry niche to improve their market position and their performance at the expense of their rivals (Gnyawali & Park, 2011).

The current focus has been to manage the tensions resulting from competition (Fernandez & Chiambaretto, 2016; Raza-Ullah, Bengtsson, & Kock, 2014; Tidstrom, 2014) or to create a systematics for the inter-organizational coordination on competitive interactions (Gnyawali, Madhavan, He, & Bengtsson, 2016; Mariani, (2016).

In competition, therefore, there is a dynamic balance between two opposing forces, and the transparency and reciprocal transfer of knowledge must be maintained in order to prevent dissolution (Pathak, Wu & Johnston, 2014). Competition seems especially

important for organic food retailers. A research conducted by Ribeiro-Soriano, Roig-Tierno & Mas-Tur (2016) reveals that fsQCA is a suitable method for the study of competition issues with complex causality that can be formulated and explained in terms of necessary and sufficient conditions.

Studies on how competitive arrangements function rarely explore how they came into being, but at the same time, emphasize the importance of the past for understanding competition, because "competitors mutually store and learn from experiences created while cooperating and competing with each other." (Dahl, 2014). Recent work can help frame such an analysis of competition, highlighting how social, political, and economic actors engage and enforce particular ideas and practices across competition networks (Raynolds, 2004).

Different kinds of competitive business relationships are presented by Bengtsson Eriksson and Wincent (2010), who differentiate between combinations of various continuums regarding degrees of cooperation and competition. The authors maintain that strong competition is characterized by a high degree of symmetry and high competitive intensity with frequent moves and counter moves. Strong competition is coupled with tensions (Chen, Su & Tsai, 2007).

Organizational culture is important for competition strategy adoption. Dominant cultural features and models manifested by competitors, and the differences in cultural aspects between competitors and non-competitors are relevant for understanding competition management (Klimas, 2016).

Two main sources of competitive tension have been identified over time. First, there are some tensions between different business legacies left by some organic food industry leaders (Luo, Slotegraaf, & Pan, 2006). Managers involved in competitive activities compete with colleagues involved in internal activities to obtain financial, technological, human, and other resources by using the same methods used to gain a competitive advantage (Tsai, 2002). Second, there are tensions regarding employees involved in common activities. They must find a position when a partner becomes also a competitor or when a current competitor becomes also a partner (Gnyawali & Park, 2011; Raza-Ullah et al., 2014).

Tensions found at individual levels come from the difficulty to create a common identity in competitive activities. The psychological balance of the individuals involved can be disturbed (Gnyawali & He, 2008; Raza-Ullah et al., 2014).

Recent research revealed a model (Figure 2) that can be easily adopted in order to enhance organic food industry retailers' competition network capability and it consists of four phases, as follows:

- Phase 1a: competitive uncertainty - Past experience can influence future competitive interactions when the participants contrast "their own changed views of competition with the established mindset of the past" (Lundgren-Henriksson & Kock, 2016). Phase 1b: born competitive - a competitive mindset developed having passed through the competitive uncertainty phase of awareness-raising, but in others, it seemed evident from the very birth of the company (Pattinson et al., 2018).
- Phase 2: competitive exploration - companies are inclined to explore competition proactively as a potential strategy and a competitive mindset helped them to proactively make sense of competitive opportunities (Pattinson et al., 2018).
- Phase 3: competitive exploitation - The functioning stage of competitive exploitation occurs when collaborative and competitive benefits are reciprocally (rather than unilaterally) obtained and competition occurs simultaneously (Czakon, 2009).
- Phases 4a and 4b: cooperation versus competition - the propensity of eco-sensitive companies, which consider exploiting their initial competitive interactions in external competitor networks and actively seeking to multiply their competitive relationships on the basis of that initial period of awareness-raising (Pattinson et al., 2018).

The main concern in adopting this model is oriented towards the importance of a competitive mindset emergence in spite of historical factors that may underpin a competitive mindset among organic e-retailers in order to explore the full potential for value-creation and value-capture.

The domain-specific literature suggests that profit-seeking and profit-sharing are not opposite but complementary strategies designed to create a positive long-term impact that can be achieved by enhancing network competition capability.

The primary motivation for the two-way balanced communication within the desired collaborative network are: to achieve co-creation, innovation, knowl-

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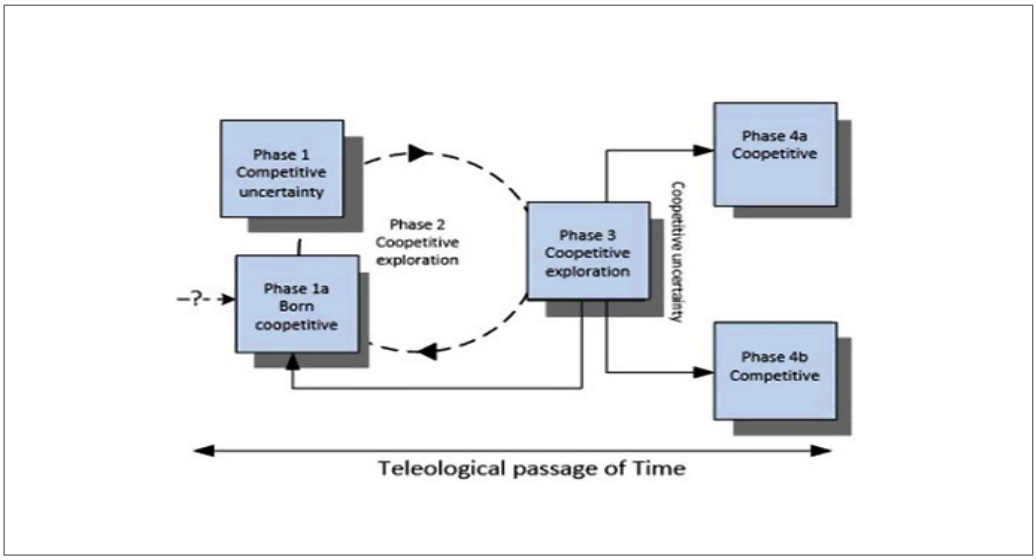


**Figure 2.** Visual process map of emergent competition.
Source: From "*Emergent coopetition from a sensemaking perspective: A multi-level analysis*" by S. Pattinson, J. Nicholson, & A. Lindgreen, (2017). In Industrial Marketing Management, 68, 25-35.

edge and experience sharing, and to gain collaborative power to be able to exert pressure on governments/regulators to make sustainability progress while keeping the organic food industry niche competitive (Scandelius & Cohen, 2016).

The domain-specific literature also suggested that collaboration should ideally take the form of co-creation with the active participation of the relevant stakeholders in the organic food industry niche, in order to strengthen relationships between the actors involved in the collaborative network desired to be created and ensure that a societal impact is made with shared value for all the stakeholders involved (Biggemann, Williams & Kro, 2014; Dentoni, Bitzer & Pascucc, 2015; Ind, Iglesias & Schultz, 2013; Prahalad & Ramaswamy, 2004). Co-creation should be considered collaboration with higher involvement and creativity leading to shared value.

Competition capability is a must-have competence of top managers for two key reasons. One, they experience competitive tension as they are directly involved in both cooperation and competition activities and thus need competition capability to manage tension effectively. Two, top level managers need to be capable enough to prevent tensions coming from the outside to propagate inside the firm. This is critical because lower level employees are not usually involved in competition-related decisions and might not understand the necessity of different strategic moves and counter moves, or lack the competition capability to handle external tension (Bengtsson, Raza-Ullah & Vanyushyn, 2016).

There are studies on the benefits of competition in general. Reported benefits include achieving growth over time and remaining competitive (Padula & Dagnino, 2007), but there are few studies on the impact of developing a competitive business network in organic food industry niche.

The domain-specific literature showed that commitment to sustainability leads to an increase in the intra- and inter-firm collaborative capabilities, and those increased capabilities lead to improved performance collaboration (Graça & Camarinha-Matos, 2017). Achieving sustainable development represents a priority for facing environmental and social issues (Linnenluecke, Verreynne, de Villiers Scheepers & Venter, 2017).

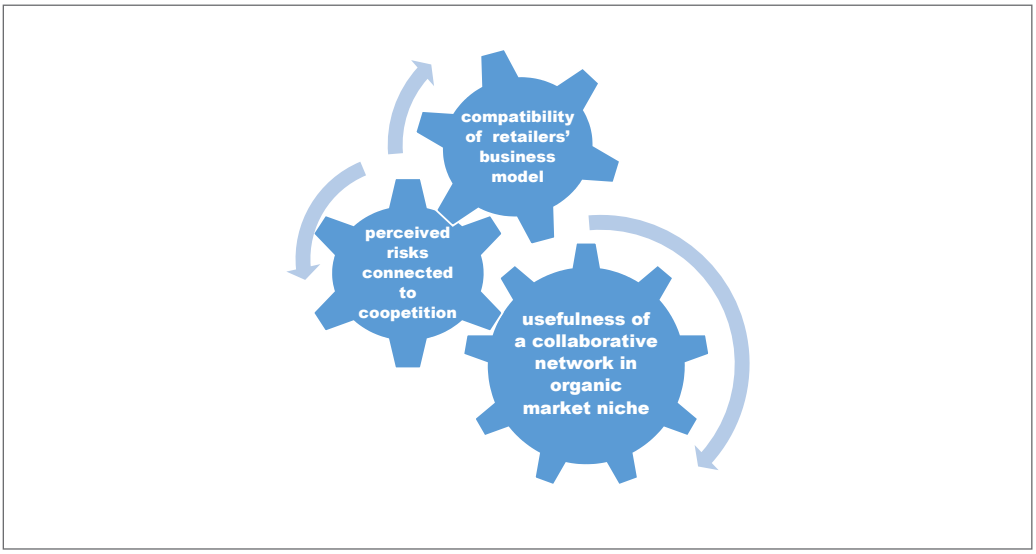


**Figure 3.** The antecedent conditions affecting the creation of a collaborative network in the organic food industry

**Table 1.** Calibration of scales

| Scale point | Fuzzy-set value | Membership |
|---|---|---|
| Strongly agree/Very probably | 1 | Fully in |
| Agree/Probably | 0.75 | More in than out |
| Neither agree or disagree/Possibly | 0.5 | Cross-over (neither in nor out) |
| Disagree/Probably not | 0.25 | More out than in |
| Strongly disagree/Definitely not | 0 | Fully out |

Source: Adapted from "*Fuzzy-set social science*" by C. C. Ragin, (2000). Chicago, IL: University of Chicago Press.

Hence, the collaborative economy, as an innovative model, rises from a confluence of events and circumstances, i.e. the advent of technology, e-commerce and social media, growing customer awareness and the proliferation of web communities (Toni, Renzi & Mattia, 2018). Retailers participating in collaborative innovation activities in the organic food industry niche should contribute more to innovation performance under higher knowledge sharing levels (Wang & Hu, 2017).

## 3. Method

QCA enables a systematic cross-case analysis that explores the relationships among variables in terms of membership and identifies causal configurations that outline the necessary or sufficient conditions for an outcome.

This study explores how causal configurations of antecedent conditions (perceived usefulness of a collaborative network in an organic market niche, perceived

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**Table 2.** Calibration of all variables

| Case | usefulness | compatibility | risks | adoption | use_com_ris |
|---|---|---|---|---|---|
| 1 | 0.75 | 0.25 | 0.75 | 0.75 | 0.25 |
| 2 | 0.5 | 0.25 | 0.25 | 0.25 | 0.25 |
| 3 | 1 | 0.25 | 0.25 | 1 | 0.25 |
| 4 | 0.75 | 0.75 | 0 | 0.75 | 0 |
| 5 | 1 | 1 | 0.5 | 0.5 | 0.5 |
| 6 | 0.75 | 0.5 | 0.5 | 0.25 | 0.5 |
| 7 | 0.75 | 0.75 | 0 | 1 | 0 |
| 8 | 1 | 0.75 | 0.25 | 0.5 | 0.25 |
| 9 | 1 | 0.25 | 0.25 | 1 | 0.25 |
| 10 | 1 | 0 | 0 | 1 | 0 |
| 11 | 0.25 | 0.75 | 0.75 | 0.25 | 0.25 |
| 12 | 1 | 0.75 | 0.25 | 0.75 | 0.25 |
| 13 | 1 | 0.25 | 0 | 1 | 0 |
| 14 | 0.5 | 0.75 | 0.75 | 0.25 | 0.5 |
| 15 | 1 | 0.25 | 0 | 1 | 0 |
| 16 | 0.75 | 0 | 0 | 0.75 | 0 |
| 17 | 1 | 0.75 | 0.25 | 1 | 0.25 |
| 18 | 1 | 1 | 0.5 | 1 | 0.5 |
| 19 | 0.75 | 0.25 | 0.25 | 0.5 | 0.25 |
| 20 | 1 | 0.5 | 0.25 | 1 | 0.25 |
| 21 | 0.75 | 1 | 0.25 | 0.75 | 0.25 |
| 22 | 0.75 | 0.25 | 0 | 1 | 0 |
| 23 | 0.5 | 0.25 | 0.75 | 0.25 | 0.25 |
| 24 | 1 | 0.25 | 0 | 0.75 | 0 |
| 25 | 1 | 0.5 | 0.5 | 0.75 | 0.5 |
| 26 | 1 | 0 | 0.25 | 1 | 0 |
| 27 | 1 | 0 | 0 | 0.75 | 0 |
| 28 | 1 | 0.75 | 0.75 | 0.5 | 0.75 |
| 29 | 1 | 0.5 | 0.25 | 1 | 0.25 |
| 30 | 1 | 0.25 | 0 | 1 | 0 |

compatibility of retailers' business model with their competitors and perceived risks connected to commitment in the collaborative network) affect the desirable outcome: the creation of a collaborative space enabling competition among organic food retailers. The antecedent conditions embedded into the research model (Figure 3) reflect the organic food retailers' motivation to join the collaborative network as a linear function whose arguments are both enablers (perception of the network as being useful from strategic point of view) and inhibitors (compatibility issues related to business models in the competition approach and perceived financial and reputational risks related to their commitment to the collaborative network).

### *3.1 Data collection*

The design framework reflects the causal configurations of organic food retailers' drivers and inhibitors (usefulness, compatibility, and risks) leading to the desirable outcome: retailers' strategic partnerships in the organic food industry.

The research approach employs a convenience sample (30 European retailers from the organic food industry), taking into consideration that fsQCA allows experimentation on small samples of cases.

Personalized invitations to fill in an online questionnaire have been submitted (https://goo.gl/forms/jfgb03AijRPSJmrp1) to more than 100 European retailers of organic food products until 30 responses were validated in the research database.

The items of the questionnaire highlight the antecedent conditions, interpreted through a five-point Likert scale, while the outcome: organic food retailers' motivation to join the collaborative network is evaluated through another type of scale: Very probably … Definitely not.

### *3.2 Calibration process*

Acknowledging the assumption that motivations to join the collaborative network vary from an organic food retailer to another, alternative combinations of causal conditions, interpreted as motivators or barriers to the development of the competitive virtual space, can lead to the outcome.

In this way, we used a fuzzy-set calibration approach to model the degrees to which different cases from the research sample belong to a set, ranging from 0 to 1, with intermediate membership levels (Ragin, 2000). Table 1 reflects the calibration of the causal conditions and of the outcome, considering their values in the specific assessment scales.

Table 2 outlines a new variable ***use_com_ris*** as the result of computing the fuzzy-set values of the antecedent conditions in the conceptual model (usefulness, compatibility, and risks) using the fsQCA software:

***use_com_ris*** = fuzzyand (usefulness, compatibility, and risks)

## 4. Findings

The first step of the analysis seeks to identify which configurations of conditions can act as sufficient conditions for the motivations of organic food retailers to join the collaborative network. For a configuration to be considered sufficient, the consistency measure should exceed a minimum limit of 0.75 (Woodside, 2014), which can be assessed through the analysis of the consistency and coverage scores on fuzzy-set XY plots (Figure 4). The visual representation of cases on XY plot graph reveals that *antecedent conditions are sufficient for the outcome*, due to the positioning of 23 cases from 30 above the diagonal of the graph.

The consistency score is 0.884, while the coverage score is 0.258. These scores imply that the distribution of fuzzy sets is largely consistent with the assertion that use_com_ris is a subset of the outcome (adoption). **use_com_ris** coverage of the outcome (adoption) is 25.8%.

Even if the values of consistency and coverage suggest causality among the cases in this configuration, in-depth analyses to achieve the complex solution should be carried out, by means of a fsQCA truth table component.

The truth table reveals different configurations of cases by listing all logically possible combinations of causal conditions and performing the analysis of sufficient conditions. Five configurations were detected in the research sample (Table 3).

For this research sample, the complex solution provided by the Quine-McCluskey algorithm (usefulness *~compatibility*~risks) implies that ***usefulness*** is the most influential predictor of the outcome (Table 4).

A combination of high usefulness, low compatibility of the business models and low perceived risk (**u**

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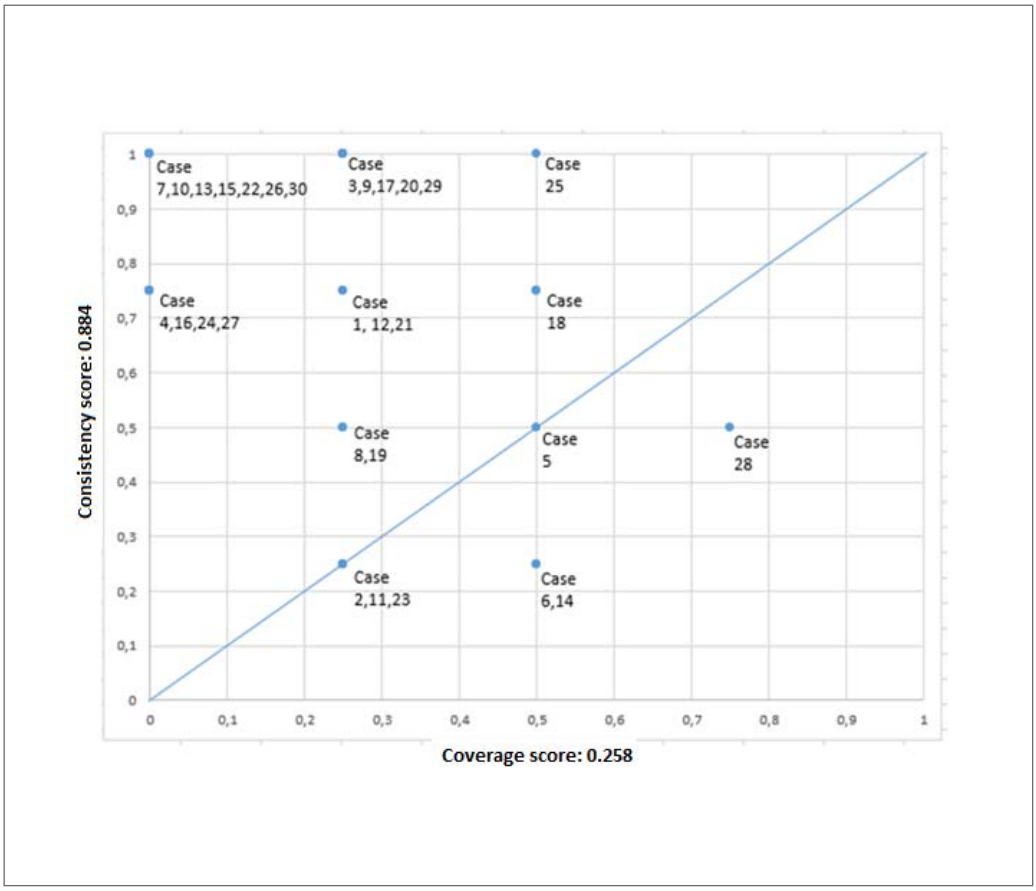


**Figure 4.** Distribution of cases within XY Plot graph

**Table 3.** Truth table analysis for the research sample

| Edit Truth Table | | | | | | | |
|---|---|---|---|---|---|---|---|
| **usefulness** | **compatibility** | **risks** | **number** | **adoption** | **raw consist.** | **PRI consist.** | **SYM consist** |
| 1 | 1 | 0 | 6 | 1 | 0.954545 | 0.925926 | 0.961538 |
| 1 | 0 | 0 | 12 | 1 | 0.931035 | 0.904762 | 0.95 |
| 1 | 0 | 1 | 1 | 1 | 0.909091 | 0.818182 | 0.818182 |
| 1 | 1 | 1 | 1 | 1 | 0.884615 | 0.727273 | 0.8 |
| 0 | 1 | 1 | 1 | 0 | 0.727273 | 0 | 0 |

**Table 4.** Complex solution

| Complex solution | Raw coverage | Unique coverage | Consistency |
|---|---|---|---|
| usefulness*~compatibility*~risks | 0.977528 | 0.977528 | 0.977528 |
| Solution coverage: 0.977528 | | | |
| Solution consistency: 0.84466 | | | |

**Table 5.** Analysis of Necessary Conditions

| Outcome variable: adoption | | |
|---|---|---|
| **Conditions tested** | **Consistency** | **Coverage** |
| usefulness*~compatibility*~risks | 1.000000 | 0.816514 |

**sefulness*~compatibility*~risks**) is also a necessary condition for the collaborative network development in the organic market niche of the food industry, as it is the main condition affecting the outcome (Table 5). This finding suggest that *drivers overcome the inhibitors* related to the creation of the collaborative network within the organic food industry.

## 5. Discussion, conclusions, implications and further research

Organic food retailers' historical legacies often exert effects at different levels of interaction, which can inhibit a collaborative network development.

In order to maximize their marketing and sales efforts, organic food retailer decisions should be targeted towards well-educated consumers by offering products obtained in the competition value chain, maximizing the fulfillment of their needs.

This research contributes to the competition theory and practice as it performs qualitative analysis of willingness to adhere to a collaborative network in the organic network market niche within existing business networks by means of the correlations among usefulness of such a network, the compatibility of business models and risk associated by joining such a complex virtual entity. From the five patterns identified in the comparison of configurations that lead to the complex solution provided by fsQCA, we are able to reveal holistic insights of the drivers of collaborative network development and the role of organic food retailers' motivation to join the collaborative network as the main enabler of the network.

Building a sustainable collaborative network in the organic food industry, fostering communication based on *competing interests*, simplification and flexibility can be achieved and, more importantly, it provides a platform for engaging with relevant potential new eco-label retail partners.

Competition between organic food retailers by fostering the development of a collaborative network development is a promising approach to help the stakeholders involved by broadening their offering capacities, and strengthening their competitiveness. Thus, performance measurement of collaboration initiatives is an important concern to which various authors have addressed their research, and relevant progress has been made.

This research is in line with the findings of Bauer, Heinrich & Schäfer (2013), who identified that the organic market segment itself is becoming less potent in the purchase-decision process if retailers don't manifest a strong interest for competition. Furthermore, findings

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from current research interfere with Viglia, Pera & Bigné (2017) results, which highlight that fsQCA analysis helps to expand the comprehension regarding the conditions needed for reaching each form of stakeholder engagement in a collaborative online network.

Organic food retailers should be interested in including more stakeholders in their future projects, and it would be possible to do so if a collaborative network will be developed, though it was also admitted that the possible impact on the result could not be assessed.

Developing a collaborative network in the organic food industry niche does not necessarily contribute to increasing EU cohesion at the regional level. Integrating in the development of a collaborative network with a more cohesive and developed strategy in less organic-oriented regions needs to be promoted by stimulating linkages across regions (specifically with organic-minded intensive regions) and by sustaining and fostering the improvement of cross-institutional frameworks.

It is worth noting that this research contributes to the theory as it analyzes the competitiveness of a business network through the correlations between the critical success factors for cooperation and competitiveness.

In the future, analyzing a higher number of cases that are more diverse in their characteristics and green-buying behavior would increase the validity of the results. Another line of research that deserves attention is the study of green purchasing motivations through the theory of consumption values by product categories because the literature suggests that differences exist, and this kind of information is relevant to marketing strategies.

Despite covering an existing gap in the literature, this study presents several limitations that may inspire future research. First, the results draw on the sample of organic food industry niche, and hence the findings might be industry-specific. Therefore, we argue that this approach is a fruitful starting point in this largely uncharted research field. Future studies should explore this topic in different industries.

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