Understanding configurations of value creation functions in business relationships using a fuzzy-set QCA

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A B S T R A C T

The diversity in business relationships suggests the presence of different sets of combinations of value functions. This study investigates the degree to which suppliers’ perception of the overall value of a relationship with a specific customer reflects different configurations of direct and indirect functions. In contrast to a conventional linear approach, a fuzzy-set QCA identifies several configurations that provide a more differentiated picture of the supplier’s perception of the overall value of a relationship with a specific customer.

1. Introduction

The idea of value in the marketing literature is intimately associated with the necessity of economic actors to access resources that can provide them with specific benefits through market exchanges (e.g., Bagozzi, 1975; for a review see Lindgreen & Wynstra, 2005). Value is one of the cornerstones of business marketing (Anderson & Narus, 1998). The exchanges between suppliers and customers always involve some kind of assessment of the value’s impact on their respective contexts. The concept of value can go beyond the assessment of the impacts of a particular transaction of a given product or service to include those emerging from the existence of a continuity of exchanges between specific counterparts over time (Corsaro & Snehota, 2010; Easton, 1992; Lindgreen & Wynstra, 2005). Thus, the studies on value in business markets can be categorized on their focus on the value of the offers or the value of the business relationships (Henneberg, Pardo, Mouzas, & Naudé, 2009; Lindgreen & Wynstra, 2005; Ulaga & Eggert, 2006).

Frequently, scholars conceptualize and measure the value of a business relationship by considering the benefits and sacrifices over time (cf. Corsaro, Fiocca, Henneberg, & Tunisini, 2013; Möller & Törrönen, 2003). The drivers of this value are complex phenomena that require further research (Ritter & Walter, 2012; Song, Su, Liu, & Wang, 2012; Young, Wiley, & Wilkinson, 2008). Walter, Ritter, and Gemünden (2001) conceptualize the creation of value as a set of direct and indirect functions in the relationship. Direct functions are those that benefit the relationship and are not dependent on other relationships or other actors (Walter, Müller, Helfert, & Ritter, 2003). Indirect functions are beneficial “only in other relationships or in the future” (Walter et al., 2003, p. 161). This study investigates the degree to which suppliers’ perception of the overall value of a relationship with a specific customer reflects different configurations of direct and indirect functions. In line with the recent interest in exploring customer attractiveness in dyadic contexts (Tóth, Henneberg, & Naudé, 2016), this study uses the fsQCA to identify different configurations of combinations for a relationship’s value.

Thus, this study addresses previous calls in the research to examine the value creation in business relationships through the presence of different configurations of functions. Specifically, this study investigates the following main research question: which configurations of direct and indirect functions contribute to a relationship’s value from a supplier’s perspective? The study provides a better understanding of the drivers behind a relationship’s value by combining a conventional linear approach with the configurational logic of a fsQCA (cf. Kraus, Ribeiro-Soriano, & Schüssler, 2017; Ragin, 2008; Woodside & Baxter, 2013).

The paper has five main sections. A brief literature review on value creation functions follows the introduction. The third section concerns the empirical study. Thereafter, section four presents the results and a discussion, and the fifth section concludes.

2. Value creation functions

A relationship’s value is complex, as relationships are diverse and can be connected with other relationships. At a dyadic level, business relationships can differ in terms of “richness, variety and variability of elements that lead to benefits and costs for the parties involved” (Corsaro & Snehota, 2010, p. 987). Value is actor-specific and thus...
customers and suppliers can have different perceptions regarding the value of their relationships and the role that they play in their portfolios of connected relationships (Corsaro et al., 2013). From this perspective, a relationship’s value is not objective nor homogenous across relationships and over time.

From a network perspective “all firms, whether recognized or actively managed, exist within a relational context” (McLoughlin & Horan, 2000, p. 290) in which “all relationships are valuable…but some are more valuable than others” (Ford & McDowell, 1999, p. 431) for different reasons (Corsaro & Snehota, 2010). Those reasons may be related with the focal relationship and with other connected relationships (Håkansson & Johanson, 1993; Walter et al., 2001). In other words, each firm is embedded in a diversity of relationships, each with its specific features (Håkansson & Ford, 2002). Various authors use the distinction between direct and indirect functions to research the value of relationships both from the provider's perspective as well as, in most cases, from the perspective of the customers (Ritter & Walter, 2012; Walter et al., 2001; Walter & Ritter, 2003).

All business relationships can have direct and indirect functions (Anderson, Håkansson, & Johanson, 1994; Möller & Törrönen, 2003; Ritter & Walter, 2012; Sánchez, Vijande, & Gutiérrez, 2012; Song et al., 2012; Walter et al., 2003, 2001; Young et al., 2008). Direct functions mainly center on the recurrent exchanges between both companies involved in the relationship. Indirect functions, or second order or network functions, are based on the assumption that the focal business relationship is connected to other relationships (Håkansson & Johanson, 1993; Möller & Törrönen, 2003; Young et al., 2008). In this context, a firm can, for example, develop specific capabilities in the context of its relationship with a specific counterpart (direct function) and re-use those capabilities in the context of another business relationship (Anderson et al., 1994). However, as noted by Håkansson and Johanson (1993), p. 21 “these second order effects are sometimes, but not always, unintended and even unknown for those involved in the focal relationship”.

2.1. Direct functions

Direct functions comprise benefits realized from a focal relationship (Walter et al., 2003). Anderson et al. (1994) find that primary or direct functions are efficient because of the interlinking of activities, the creative leveraging of heterogeneous resources, and the mutual orientation based on the actors’ self-interests. Direct functions can comprise four distinct dimensions: profit (cost reduction), volume, quality, and safeguard (Walter et al., 2003).

Profitable customer relationships are essential for the survival of a supplier (Walter et al., 2003, 2001; Young et al., 2008). Thus, the profit function refers to direct revenue (Möller & Törrönen, 2003). Customers might value relationships with suppliers that assure lower prices. Or, a customer (a supplier) could be interesting because of the volume of business the relationship generates (Möller & Törrönen, 2003). Price and volume are related because higher purchases often result in lower prices. Suppliers might retain specific customers to achieve economies of scale and scope (Walter et al., 2001; Young et al., 2008). As firms move from wider to smaller supplier bases, higher volume can allow the customer to increase its influence on suppliers, reduce communication costs, and to secure access to scarce resources by being more attractive (Walter et al., 2003).

While buyers seek better prices, they also try not to compromise quality. Walter et al. (2003) argue that the quality function is related to product benefits, such as, product reliability, ease of use, or lower maintenance. The generation of these benefits can depend on the supplier’s transfer abilities that are related to the timeline of supply and the conformity to specifications. Thus, the interlinking of activities to meet deadlines can be critical for developing and maintaining a business relationship (Ford, Håkansson, Gadde, & Snehota, 2003). Further, in some cases, the supplier might develop the specifications as customers can differ in their skills to describe in detail what the offer should do (Araujo, Dubois, & Gadde, 1999; Ford et al., 2003). Thus, both customers and suppliers probably seek counterparts whose quality requirements match their own resources.

The safeguard function encompasses relationships with rescue suppliers, that is, relationships with ill-favored suppliers to secure the customer’s position if needed (Walter et al., 2003). For the supplier, the safeguard function improves cost efficiency, for example, by selling a broader package of products and services to a specific customer (Anderson, Narus, & Narayandas, 2009). Suppliers often sustain relationships with emergency customers as insurance against difficulties with other customers (Walter et al., 2001). Further, formal and informal agreements can also have a role in increasing predictability regarding future transactions (Möller & Törrönen, 2003).

2.2. Indirect functions

Indirect or network functions capture connected effects in other relationships (Walter et al., 2003, 2001). As noted by Håkansson and Ford (2002, p. 134): “when any resources or activities are shared between relationships there will be either a positive or a negative connection between them”. Thus, a business relationship can have constructive or deleterious network effects (Anderson et al., 1994). These effects can manifest themselves in several dimensions: the use of knowledge from other relationships, the use of created knowledge in other relationships, the specificity of adaptations, the scarceness of resources, the contingent volume and quality effects, and the signaling to other relationships (Anderson et al., 1994). Walter et al. (2003) identify four different indirect functions: market, scout, innovation, and social support.

A focal business relationship comprises a market function when it helps a firm establish and develop other business relationships. Referrals can support new contacts with other customers, suppliers, competitors, industry associations, or governmental institutions (Walter et al., 2003, 2001). The scout function represents the information flow between business relationships within the network. On one hand, customers are scouts in the network gathering information about market developments and passing meaningful information to their suppliers (Walter et al., 2001). On the other hand, suppliers can pass reliable technical or market-related information through long-standing experience (Walter et al., 2003). Walter et al. (2001) consider a business relationship as an access function when one firm’s experience (e.g., with official authorities, banks, or trade associations) facilitates its counterpart’s business. Thus, buyer-supplier relationships can provide access to other relevant organizations (Möller & Törrönen, 2003; Young et al., 2008). Möller and Törrönen (2003) emphasize that business relationships also comprise a market-signaling function. This is related to the effects that a particular relationship have on a firm’s network identity in terms of its attractiveness as an exchange partner to other firms (Anderson et al., 1994).

Suppliers and customers can support each other’s innovation activities and thus the relationship can have an innovation function. Thus, a business relationship can be a resource by allowing the exploration of new combinations of resources to improve products and processes (Möller & Törrönen, 2003). This function can involve a knowledge exchange in joint innovation projects or through other connected relationships; for example, the use of knowledge from other relationships or the use of knowledge in other relationships (Walter et al., 2003, 2001). Thus, a firm needs to consider to what extent resources developed in a specific relationship are transferable to other connected relationships.

The social support function includes social aspects often related with the mutual orientation among individuals of the counterparts (Walter et al., 2001). Individuals can develop bonds and a working atmosphere that improves the perceived value of the business relationship (Young et al., 2008). Individual actors can recognize a
relationship as a source of power, motivation, and creativity that influences the perceived value of that business relationship (Walter et al., 2003).

In short, from a network perspective all firms exist within a relational context and each firm can be seen as embedded in a diversity of business relationships. Most of the abovementioned studies consider value creation functions from the perspective of the customers. Further, the studies are based on correlational analyzes, thus showing the contributions or conditions (Fig. 1). This paper explores to what extent the suppliers’ perception of the overall value of a relationship with a specific customer may reflect different configurations of direct and indirect functions or conditions (Fig. 1).

3. The empirical study

3.1. Empirical setting

This study uses manufacturers of injection molds for plastics as its empirical setting. According to CEFAMOL (Portuguese association of mold manufacturers and special tools) the mold sector had about 450 firms in which 62 are mainly dedicated to plastic injection molds, in 2015. Most of these firms were SMEs. This sector exported 85% of its total production with a value of roughly 600 million Euros. The main markets were Germany (22%), Spain (19%), France (18%), the United Kingdom (5%), and the Czech Republic (5%). The customers’ firms operate in several sectors, namely automotive (74%), containers (10%), household appliances (4%), electronics (2%), aeronautics (1%), and medical devices (1%). The joint production of these companies places the local industry among the world’s leading manufacturers of plastic injection molds (eighth globally and third in Europe).

Injection molds for plastics are made to order for specific customers. Each mold is a unique combination of standard and nonstandard components, and their design, manufacture, and testing involve complex interdependencies among several activities. The sequence of activities usually starts with a customer sending a drawing of a plastic component and a set of specifications with a request for a price quote and a lead time. The supplier replies with an estimate and a technical solution, sometimes involving several alternatives. A definite assessment of the solutions can only be made in the final testing stage.

The physical distance to customers and the uniqueness of each mold place particular demands on these manufacturers. As one CEO notes: We have to make sure that molds are exported with a one-way ticket only, that is, we do not want the molds returned with quality problems. ... The business of selling molds is fundamentally a business of trust where I receive the drawings for a product and the mold (for that product) takes months to make. In a way, the customer is demanding that molds be exported with a one-way ticket.

Although most firms are SMEs, they can be diverse. For example, the degree of specialization of the molds they design and produce varies as does the heterogeneity of their portfolio of relationships (Mota & de Castro, 2005). Some of the manufacturers specialize in the production of molds with small dimensions and great technical complexity (e.g., dimensional tolerances and geometrical shapes), while others are generalists that design and produce a wide range of molds in terms of size and complexity.

The relationship portfolio can also vary substantially in the number of customers, volume and regularity of orders, and the degree of similarity of technical requirements. The process of generating specifications is particularly relevant for the supplier firms. For example, customers can differ in their degree of uncertainty regarding the aesthetic or functionality characteristics of the final products or components. Some customers generate the final product specifications by trial and error that often requires direct contact between technical staff from both firms. Although these meetings are opportunities for mutual learning, the generation of specifications by trial and error can increase the difficulties of the supplier to fulfill the delivery dates. In short, the establishment and maintenance of business relationships between suppliers and its customers can be demanding in terms of coordination, resource adaptations, and mutual trust (Håkansson & Snehota, 1995).

3.2. Data collection

This empirical setting comprises 62 companies mainly dedicated to plastic injection molds. These were all contacted at least twice by phone. The phone call was followed by an email framing the study and asking for the companies’ participation. In addition, the email included a link to the online questionnaire. All value related questions had to be completed to finish the online questionnaire. The questionnaire was available from November through December 2016. The response rate was 34% with each respondent providing evidence from two different customer relationships. Thus, the questionnaire generated 42 observations.

The respondents’ revenue averaged 5.5 million Euros and each employed 48 workers on average. The buyer-seller relationship addressed by the respondents ranged from two to 30 years. The majority of respondents were administrators or owners (52%). In terms of gender, 33% were females and 66% were males. These respondents worked at their companies, on average, for 18 years.

3.3. Variables measurement

All value related questions in the online questionnaire included a seven-point scale from one (not important) to seven (extremely important). The questions were divided into three sections: the relationship’s overall value, direct functions (profit, volume, quality and safeguard), and indirect functions (market, scout, innovation and social support) of a relationship with a specific customer. The study draws on the scales, for all relationship functions, from Walter et al. (2003, 2001) and Young et al. (2008).

Reliability is high for all scales. The Cronbach Alpha’s coefficients are 0.908 for the relationship’s overall value, 0.952 for profit, 0.913 for volume, 0.901 for quality, 0.873 for a safeguard, 0.872 for market, 0.8 for scout, 0.929 for innovation, and 0.866 for social support.

3.4. Method

This study integrates the researchers’ pre-understanding with both a conventional linear approach (multiple linear regressions) and a set theoretical approach (fsQCA). Industry-specific pre-existent knowledge proved to be invaluable in regard to the execution of the questionnaire, the selection of methods and the discussion of results.

According to Ragin (2008), p. 8) the key difference between conventional quantitative methods, such as the multiple regression, and configurational comparative methods “is captured by the idea of a causal ‘recipe’—a specific combination of causally relevant ingredients.
linked to an outcome”. In this study, a multiple regression analysis tests this hypothesis: the relationship’s overall value will vary with the direct and indirect functions. Further, the qualitative comparative analysis explores configurations and examines the interdependence of the causal effects underlying the outcomes (Grechhamer, Misangyi, & Fiss, 2013), such as, the relationship’s value.

The fsQCA allows researchers to deal with conjunctural causality. The fsQCA identifies multiple causal recipes between different initial conditions to the same final state. In addition, large samples are not mandatory in order to use the fsQCA (Crilly, Zollo, & Hansen, 2012; Grechhamer et al., 2013; Ragin, 2008; Woodside & Baxter, 2013). The fsQCA requires the calibration of partial memberships in the sets (Crilly et al., 2012; Ragin, 2006, 2008). This calibration divides membership into meaningful groupings by using values between zero (non-membership) and one (full membership). The outcome, the relationship overall value, as well as, all eight causal conditions, the relationship functions, were directly calibrated (cf. Ragin, 2008).

The direct calibration encompasses transforming variables into sets that require three anchors: full membership, crossover point, and nonmembership (Fiss, 2011; Schneider, Schulze-Bentrop, & Paunescu, 2010). Thus, three breakpoints are selected based on the percentile (90, 50 and 10) of the responses given by the companies. Further, because the membership score of exactly 0.5 is difficult to analyze, a constant of 0.001 is added to the outcome and all causal conditions below the full membership score of one (cf. Fiss, 2011; Ragin, 2008).

4. Results and discussion

This section presents the results from the conventional linear approach and those for the fsQCA results. The regression equation for the overall perceived value of the relationship shows a high association between the dependent variable (overall value) and the independent variables (value functions). Table 1 shows the results of the multiple regression.

A standard multiple regression assesses how much variance the dependent variable (overall value) and the independent functions, were directly calibrated (cf. Ragin, 2008).

| Table 2 |
| Analysis of the necessary conditions. |
| Conditions tested | Consistency | Coverage |
| Profit | 0.895 | 0.834 |
| Volume | 0.879 | 0.832 |
| Quality | 0.804 | 0.835 |
| Safeguard | 0.798 | 0.787 |
| Market | 0.822 | 0.808 |
| Scout | 0.795 | 0.722 |
| Innovation | 0.810 | 0.743 |
| Social support | 0.776 | 0.759 |

A configurational approach allows to further explore this complex phenomenon. The fsQCA software package (version 2.5) identifies the cross-sectional link between the overall perceived value of a relationship and the relationship functions. The fsQCA starts with the conditions necessary for the outcome. All conditions exceed the consistency threshold of 0.75 (see Table 2) and indicate that all relationship functions are sufficient for the outcome. Since no condition exceeds 0.90, the relationship functions are not necessary conditions for the outcome. Conditions could also be neither necessary nor sufficient per se (Grandori & Furnari, 2008; Mas-Verdú, Ribeiro-Soriano, & Roig-Tierno, 2015; Ragin, 2006; Schneider et al., 2010), which occurs with the negation of all conditions.

The data analysis continues with the construction of a truth table to identify the configurations of conditions that are related to the outcome. We delete the configurations not associated with any of the 42 observations (Ragin, 2008). Because of their number, we do not perform a frequency threshold (Grechhamer et al., 2013). The absence of the relationship overall value was also considered for analysis.

The fsQCA generates complex, intermediate, and parsimonious solutions. The intermediate solution is a compromise between the other two solutions that uses assumptions (Crilly et al., 2012; Eng & Woodside, 2012; Fiss, 2011; Mas-Verdú et al., 2015; Schneider et al., 2010). In this study, the assumptions are the presence of all relationship functions for the outcome and their absence for the outcome’s negation. The intermediate solution can comprise core and peripheral conditions, while the parsimonious solution only includes core conditions (Crilly et al., 2012; Fiss, 2011; Mas-Verdú et al., 2015).

Table 3 presents the intermediate solution for the outcome and weaker relation ($β = 0.35$, $p = 0.017$).

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Table 3 presents the intermediate solution for the outcome and weaker relation ($β = 0.35$, $p = 0.017$).
Table 4 shows the intermediate solution for the outcome’s negation. The solution consistency of 0.840 and 0.899 respectively indicate a robust relation between the relationship’s value and the combination of recipes (Fiss, 2011; Schneider et al., 2010; Woodside, 2013). All configurations presented in both tables contain core and peripheral conditions. The results highlight that the volume condition is not core, neither for the outcome nor for its negation.

The overall coverages for both the high and low values are respectively 0.854 (see Table 3) and 0.847 (see Table 4), which indicate that the combined solutions account for about 85% of the membership in both the outcome and its negation. Ragin (2006), p. 292) states that “coverage gauges empirical relevance or importance”. For each configuration, the raw coverage refers to the proportion of the total membership in the outcome covered by a causal configuration, while the unique coverage depicts the percentage of the outcome that is unique due to a path (cf. Ragin, 2006; Schneider et al., 2010). Consequently, among the five causal recipes for the outcome (see Table 3) only three are empirically relevant. The unique coverages of paths 2b and 3b are null, which restricts the related empirical importance of these two causal paths for the overall solution. Path 3d for negation also lacks empirical importance.

Configuration 1 shows two core conditions, profit and social support, with scout. This configuration indicates that companies perceive a relationship as having high value depending on a combination of profit margins generated over time, providing contacts with other organizations, and stimulate knowledge sharing. Configuration 2a depicts two core conditions, quality (high technical demands and ability to provide pro-

Table 4 presents the intermediate solution for the negation of the outcome (low perception of value). The table highlights three core configurations: 1, 2, and 3. Configuration 1 shows the absence of scout and innovation. The absence of safeguard and the presence of innovation are core conditions in configuration 2. Path 3 emphasizes the absence of the indirect function—market. Configurations 2a and 2b show that despite the presence of innovation for the supplier, the overall value of the relationship is low. The absence of other relationship functions are considered more important than the presence of innovation. For the peripheral conditions, which are interchangeable (Fiss, 2011), all configurations present a variety of direct and indirect relationship functions, as shown in Table 4.

5. Conclusions

Value is one of the cornerstones of business marketing, and it can mean more than the assessment of the effects of a discrete transaction of a given product or service for a company. The concept can also include the effects from the existence of a continuity of exchanges between specific counterparts over time (Corsaro & Snehota, 2010; Lindgreen & Wynstra, 2005). This study examines the distinction between direct and indirect value functions as a way to examine the connectedness between business relationships. The aim is to investigate the degree to which suppliers’ perception of the overall value of a relationship with a specific customer reflects different configurations of direct and indirect functions.

This study assumes that a relationship’s value is the combination of direct and indirect functions. Adopting a supplier’s perspective, this study uses two methods, a conventional linear approach and a qualitative comparative analysis, within a specific empirical setting. Previous studies in the mould industry supported the interpretative comparative analysis, within a specific empirical setting. The results from the correlational analysis of the data disclose a positive association between two direct functions (profit and quality) and the relationship’s perceived value. But, the use of a fuzzy-set QCA provides a more differentiated picture of the supplier’s perception of the overall value of a relationship with a specific customer.

The fQCA's results show several configurations of value dimensions that indicate equifinality for the relationship’s value. All of the configurations include both direct and indirect functions for high and low perceptions of the relationship’s value. These results are consistent with the idea that business relationships differ in terms of the variety and variability of the factors that generate benefits and sacrifices for the involved firms. Specifically, this study shows that profit (direct function) and social support (indirect function) as well as quality and safeguard (both direct functions) contribute to the perception of high value for a relationship. Regarding the perception of low value, different configurations are present, such as scout and innovation. Another example regards the presence of innovation and the absence of
safeguard.

The main managerial implication is the following: Instead of only focusing on the product or service, managers should consider the relationships with their customers as involving direct and indirect value dimensions. This view means that managers need to evaluate the value of each business relationship in the context of the firm’s strategy regarding its portfolio of relationships. Thus, this study empirically supports the argument that all relationships are valuable (Ford & McDowell, 1999, p. 431) but for different reasons (Corsaro & Snehotu, 2010).

This study has some limitations. First, the study only considers the suppliers’ perspective. Value is actor-specific and thus customers and suppliers might have different perceptions regarding the value of a specific relationship and its role in the context of its specific portfolio of connected relationships (Corsaro et al., 2013). Future research could include the customers’ perspective to analyze the relevance of this phenomenon in the context of each other’s portfolio of relationships.

Second, the relationship’s value is not objectively given nor homogenous across relationships and over time. Therefore, conducting longitudinal studies to analyze the stability and change in the configurations of direct and indirect functions over time is relevant. Finally, the data come from a specific industry where the establishment and maintenance of business relationships between suppliers and their customers can be very demanding in terms of activity coordination, resource adaptation, and mutual trust. Other contexts might not have these challenges. Their relational interfaces might be relatively simple and thus switching counterparts can be relatively easy and have no substantial cost.

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