

# Examining the use of fsQCA in B2B marketing research: benefits, current state and agenda for future research

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## Abstract

**Purpose** – The purpose of this paper is to build on recent efforts occurring within business-to-business (B2B) marketing research to advance methodological developments. As phenomena within B2B relationships have become increasingly complex, marketing scholars have begun to point out the limitations associated with correlation-based methodological approaches and highlight the need for new developments in this area. One such development is the fuzzy set qualitative comparative analysis (fsQCA).

**Design/methodology/approach** – This study uses a literature review to examine the use of fsQCA in B2B marketing research.

**Findings** – First, the current manuscript presents the benefits that the application of fsQCA can offer to market researchers investigating B2B phenomena. Second, the paper presents the current state of fsQCA use within B2B marketing. Third, it suggests possible marketing B2B research topics that can be explored using fsQCA.

**Originality/value** – The study highlights the benefits of fsQCA, presents the current state of fsQCA use within B2B marketing and offers a rich future research agenda for B2B marketing scholars. This agenda can also help spur additional method developments in the discipline.

**Keywords** Research methods, Industrial marketing, Fuzzy set qualitative comparative analysis, fsQCA, B2B, Business to business, Literature review

**Paper type** Literature review

## 1. Introduction

Marketing scholars have begun to point out the drawbacks associated with correlation-based methodological approaches and highlight the need for new developments in this area (Schneider and Eggert, 2014; Su and Yang, 2017). Woodside (2015a, p. 4) highlights the limitations of correlation-based methods, such as regression analysis and indicates that “crafting and testing theories of main and interaction effects fail to capture the complexity inherent in business-to-business (B2B) relationships. In reality, a given independent variable

(X) usually relates to a given dependent variable (Y) positively, negatively and not at all in the same data set.”

Fuzzy set qualitative comparative analysis (fsQCA) is a method that has been argued to mitigate some of the limitations of correlation-based methods (Gligor *et al.*, 2019; Gligor and Bozkurt, 2020; Russo *et al.*, 2016,2019; Woodside, 2015a, 2015b). This method combines qualitative and quantitative approaches and can be used to investigate the relationship between multiple factors and a specific outcome through configural analysis (i.e. the detection of patterns in the data that occur significantly more) to provide explanations for complex situations (Gligor *et al.*, 2019).

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Unlike multiple regression analysis, fsQCA seeks to provide a more in-depth understanding of the observations in the sample by revealing the multiple combinations of different conditions that can lead to the same outcome (Woodside, 2013). For example, consider the case of a B2B scholar seeking to explore the impact of agility, flexibility, resilience and innovation on firm performance. FsQCA could help reveal that some firms in the sample can experience high performance through a combination of high agility, high flexibility, low resilience and low innovation, while other firms can experience high performance through a combination of high agility, low flexibility, low resilience and high innovation, while a different group of firms can experience the high performance through a combination of low agility, low flexibility, high resilience and low innovation. In other words, fsQCA allows researchers to go beyond the net effect examined in regression analysis. fsQCA can help scholars identify the possible combinations of independent variables that lead to the same outcome variable (i.e. configurations) while also accounting for potential asymmetrical relationships (i.e. low and high values of the same antecedent within a data set can have the same impact on an outcome variable) (Woodside, 2015a). If applied to the above scenario, regression analysis could only conclude (depending on the  $p$ -value) that agility has a positive, negative or no effect at all on performance. For example, if regression analysis would reveal that high agility leads to high performance, it would not be able to detect or offer any explanations for cases in the same data set of firms exhibiting low agility and high performance.

Importantly, while we also present an application of fsQCA for illustrative purposes (Section 3), the goal of the current manuscript is not to offer a detailed description of how to apply fsQCA. For such resources, we refer the readers to the excellent resources providing step-by-step guidance for fsQCA application developed by scholars, such as Woodside (2014), Ordanini *et al.* (2014), Kraus *et al.* (2018) or Russo *et al.* (2019). Rather, we seek to encourage the use of fsQCA within the domain of B2B marketing. To achieve this goal, we seek to:

- Explore the benefits of applying fsQCA to B2B marketing research.
- Examine the current state of fsQCA use within B2B marketing literature.
- Explore some of the potential B2B marketing research areas that could benefit from the application of fsQCA.

Addressing these research objectives allows us to make several contributions. First, by examining the benefits of using fsQCA, we provide arguments to B2B marketing scholars to adopt this method. Second, we offer readers a perspective on the current state of fsQCA use within industrial marketing. Third, by discussing possible research topics that can be explored using fsQCA within industrial marketing, we offer a rich future research agenda for B2B scholars.

In the following section, we present an application of fsQCA to a B2B data set. We continue by discussing the potential benefits for B2B marketing research of using fsQCA. This is followed by an overview of the use of fsQCA within industrial marketing. Next, we present additional possible B2B marketing

areas that could benefit from fsQCA. Finally, we discuss the findings and conclusions and highlight the study's limitations.

## 2. Illustration of fuzzy set qualitative comparative analysis application

Next, we will illustrate how fsQCA can be applied to a data set. Importantly, the example is for illustrative purposes. Our illustration will indicate how combinations of returns management satisfaction, product returns practices, product recovery practices, the commitment of resources to returns management and recovery responsiveness can lead to high customer satisfaction.

### 2.1 Data

Data collection focused on perceived customer satisfaction with business customers working in the health-care service in a B2B context. This application focused on the evaluation of managing product returns as identified by business customers who work within the health-care industry in a supplier-customer context. The health-care industry represents a good example of a changing marketing channel structure that has emerging actors who have adopted a larger role in the manufacturer/end customer exchange. We used the following participant inclusion criteria: professionals enabled to resell hearing aids, professionals running a business at the retail level, professionals with the freedom of choice of their suppliers, voluntary participation. We distributed the survey to 500 business customers; a total of 140 usable responses were completed, resulting in a 32% response rate.

We investigated possible non-response bias by first comparing the responses collected during the first wave of distribution to those gathered in later rounds. Also, we contacted a random sample of 10 non-respondents and asked five non-demographic-related questions. Again, no statistical differences were found between these two groups.

### 2.2 Measures

All constructs were measured using existing scales. Specifically, returns management satisfaction was assessed using a four-item scale from Mollenkopf *et al.* (2011), product returns practices, product recovery practices and commitment of resources to returns management were assessed using a three-item scale from Huang *et al.* (2016); while recovery responsiveness was measured using the four-item scale by Parasuraman *et al.* (2005). Customer satisfaction was measured using a six-item scale adapted from Homburg *et al.* (2014). All of these items were measured using a seven-point Likert scale. We also collected the participants' demographic characteristics, including age, gender, education and years of experience in the sector. We used a sample of 140 complete responses for this illustrative case. Reliability was satisfactory for all scales, with alpha values ranging from 0.70 to 0.85. In aggregate, the results support construct unidimensionality.

### 2.3 Data analysis

This illustrative study adopts the fsQCA approach to capture the various combinations of factors (e.g. returns management

satisfaction, product returns practices, product recovery practices, the commitment of resources to returns management and recovery responsiveness) that can lead to high customer satisfaction. While various sources exist, we provide for readers a link to fsQCA software [1].

FsQCA allows researchers to identify necessary conditions and sufficient combinations of conditions for high customer satisfaction levels, subsequently called configurations. The application of QCA involves four sequential steps (Fiss, 2011):

- defining the property space;
- developing set membership measures;
- evaluating the consistency in set relations; and
- logical reduction.

#### 2.4 Qualitative comparative analysis steps

The first step of the procedure QCA entails defining the *property space*, where all possible configurations of attributes of high customer satisfaction are identified. The property space is composed of all combinations of the binary states (presence or absence) of the influence attributes (e.g. returns management satisfaction, product returns practices, product recovery practices, the commitment of resources to returns management and recovery responsiveness) that lead to a high level of customer satisfaction.

The second fsQCA step requires the calibration of all involved variables into sets to capture fine-grained differences in the degrees of membership. To manage multiple-item measures, the scale items were combined into an average score (Ordanini et al., 2014). Specifically, the endpoints of the seven-point Likert scales serve as the two qualitative anchors for calibration of full membership (value 7) and full non-membership (value 1) and the crossover point (value 4). Accordingly, the QCA findings need to be tested for robustness, which is evident if slightly different calibration decisions lead to similar findings (Schneider and Wagemann, 2012; Thomann and Maggetti, 2020). That is, the identified paths do not lead to different interpretations (Greckhamer et al., 2018).

In the third step, we set the cases that lead to a high level of customer satisfaction with a value of “1” (those are Likert scale values above 4). In line with the well-established guidelines for evaluating fsQCA, we applied three criteria (frequency, consistency and coverage) in evaluating the resulting configurations of attributes (Ragin, 2009). First, we chose a frequency threshold of three observations to exclude fewer configurations. Next, we assessed whether the causal pathway produces the dependent variable, establishing a consistency threshold of 0.75 (Fiss, 2011). The overall consistency for the configurations was 0.88. These results suggest that the model has good predictive validity.

Finally, we computed the coverage (similar to  $R^2$  in regression analysis) measure for each sufficient configuration, ensuring each exceeds 0.10 (Woodside et al., 2018). Raw coverage expresses how much a single configuration achieves and unique coverage indicates how much it covers on its own. This study adopted the intermediate solution following current conventions in other studies (Gligor et al., 2020; Russo et al., 2019). Table 1

presents the configurations, with black circles (●) indicating the presence of a condition and circles with a cross (⊗) indicating its absence. Readers can observe one circle is larger than others (commitment of resources to returns management). These larger circles represent the “core conditions” that are comprised in the parsimonious solutions that should be included in any representation of the findings, as they are key causal ingredients.

#### 2.5 Results

Our investigation uncovers the various combinations of attributes that facilitate the development of customer satisfaction in the B2B context. Results presented in Table 1 can be further interpreted as follows.

Solution 1 indicates that when product returns practices and commitment of resources to returns management are present (i.e. high levels), customer satisfaction is high. Returns satisfaction and recovery responsiveness do not matter under these conditions (i.e. can be high or low).

Solution 2 reveals that customer satisfaction is high when return satisfaction, product returns practices and commitment of resources to returns management are present. Product recovery practices and recovery responsiveness do not matter under these conditions.

Solution 3 indicates that customer satisfaction is high when return satisfaction, the commitment of resources to returns management and recovery responsiveness are high even when the product returns practices are low. This configuration is the only configuration that contains product returns satisfaction as a “do not care” variable.

As such, fsQCA offers insights beyond those presented by regression analysis. For example, while regression analysis might conclude that product returns practices has a positive impact on customer satisfaction ( $p < 0.05$ ), our fsQCA findings reveal a far more complex story. Specifically, some firms in the sample can still experience high customer satisfaction even if they rank low on product returns practices if other conditions are present as illustrated in Solution 3; these conditions are high return satisfaction, the high commitment of resources to returns management and

**Table 1** Configurations for achieving high customer satisfaction (140 respondents)

Configurations	1	2	3
Return satisfaction		●	●
Product returns practices	●	●	
Product recovery practices	⊗		⊗
Commitment of resources	●	●	●
Recovery responsiveness			●
Consistency	0.86	0.90	0.94
Raw coverage	0.37	0.87	0.36
Unique coverage	0.11	0.51	0.01
<b>Solution coverage 0.90</b>			
<b>Solution consistency 0.88</b>			

Notes: Legend: ● = core causal condition present; ⊗ = core causal condition absent

high recovery responsiveness (product recovery practices can be either low or high).

### 3. State of fuzzy set qualitative comparative analysis use within business-to-business marketing literature

We adopted a systematic approach to carrying out a literature review to help assess the current state of fsQCA use within B2B marketing literature. A systematic literature review “locates existing studies, selects and evaluates contributions, analyzes and synthesizes data and reports the evidence in such a way that allows reasonably clear conclusions to be reached about what is and what is not known” (Denyer and Tranfield, 2009, p. 671). Importantly, we are not using a formal systematic literature review but rather observing these principles to ensure a rigorous and replicable review. The steps used are presented in Figure 1.

Following the steps described in Figure 1, we found 62 articles addressing B2B marketing phenomena. As the findings in Table 2 indicate, the 62 articles were spread out across 23 different journals. The journals with the most fsQCA publications in the context of B2B marketing were *Industrial Marketing Management* (21 publications), the *Journal of Business Research* (7 publications) and the *Journal of Business and Industrial Marketing* (3 publications). These three journals accounted for 50% of all publications in this area. The high number of fsQCA publications in the *Industrial Marketing Management* journal could be partly explained by the journal’s editorial policy to encourage methodological advancements within industrial marketing. For example, the journal has an ongoing call for papers on “Methodological Advances in B2B Research.”

Next, we analyzed and synthesized our data regarding the current methodological state of fsQCA use in industrial marketing research. A summary depicting the methodological focus, flexibility of fsQCA in terms of data types to which it can be applied and data sources are presented in Table 3.

FsQCA has been applied to a variety of B2B marketing research topics, such as big data analytics, buyer-supplier relationships, market orientation, pricing, service transition, strategy, entrepreneurship, social and environmental sustainability and firm performance. Among these, buyer-supplier relationships, service transition, strategy and firm performance were the topics that have been addressed the most using fsQCA. However, issues around big data analytics, market orientation, branding, pricing, entrepreneurship, customer engagement, social and environmental sustainability and tensions and dualities were underrepresented.

Research on buyer-supplier relationships adopting fsQCA explored several configurational questions and revealed findings that shed new light on a variety of B2B marketing phenomena. For example, Habib *et al.* (2020) examine buyers’ relationship exit strategy and find four alternative equifinal configurations, rather than an optimal one, of relationship dimensions and two exogenous factors that impact a buyer’s relationship exit. Likewise, based on their fsQCA analysis, Zaefarian *et al.* (2017) put forth different equifinal recipes for success in business relationships. They suggest that depending on the strategy type (i.e. whether they are adapting, shaping or stabilizing strategies), multiple configurations of relational characteristics, such as behavioral commitment, trust and communication, contribute to relationship performance. Similar to buyer-supplier relationships, research adopting fsQCA to explore service transition also points to different routes for servitization success based on different configurations of relevant factors. For example, Lexutt (2020) finds that a service-oriented organizational culture, decentralized decision-making and management commitment to services are essential for servitization success, with three different configurations enhancing and three other configurations hampering servitization success.

Questions involving B2B marketing strategy and firm performance were also examined through fsQCA with

Figure 1 Steps in the literature review search

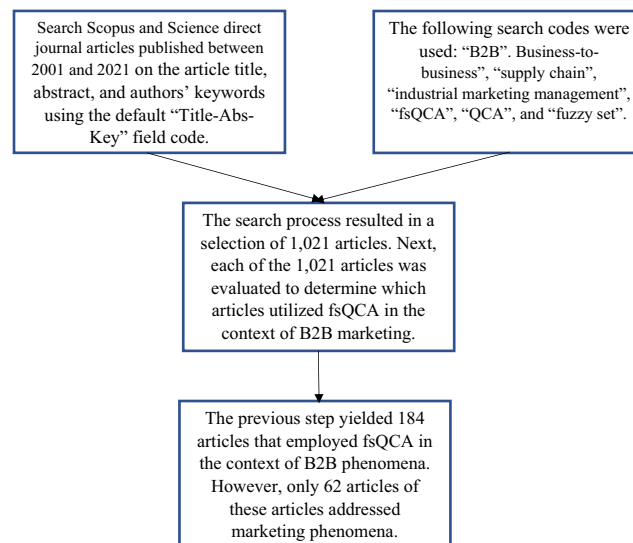




Table 2 Summary of fsQCA studies within B2B marketing literature

Publication name	No. of articles
<i>Industrial Marketing Management</i>	21
<i>Journal of Business Research</i>	7
<i>Journal of Business and Industrial Marketing</i>	3
<i>Journal of Supply Chain Management</i>	2
<i>Supply Chain Management: An International Journal</i>	2
<i>International Journal of Retail and Distribution Management</i>	2
<i>The Journal of Product Innovation Management</i>	2
<i>Benchmarking: An International Journal</i>	2
<i>International Marketing Review</i>	2
<i>Journal of Business Ethics</i>	2
<i>International Journal of Emerging Markets</i>	2
<i>Journal of Marketing</i>	2
<i>Journal of the Academy of Marketing Science</i>	2
<i>Australasian Marketing Journal</i>	2
<i>The Journal of Services Marketing</i>	1
<i>Journal of Business and Management</i>	1
<i>Journal of Purchasing and Supply Management</i>	1
<i>European Journal of Marketing</i>	1
<i>Independent Journal of Management and Production</i>	1
<i>Journal of Service Research</i>	1
<i>Journal of Marketing Management</i>	1
<i>Journal of Fashion Marketing and Management</i>	1
<i>International Journal of Internet Marketing and Advertising</i>	1

Table 3 Methodological overview of fsQCA use in industrial marketing

Methodological issue	Current state
Methodological focus	54 articles adopted fsQCA as the main means of data analysis 3 articles adopted fsQCA as a complementary means of data analysis to enhance the robustness of the findings 5 articles discussed fsQCA from a methodological point of view
Flexibility of fsQCA in terms of data types to which it can be applied	fsQCA can be applied to both qualitative and quantitative B2B data 57 articles adopting fsQCA were quantitative 4 articles adopted a mixed-methods research approach 1 paper adopted a qualitative perspective.
Data sources	56 articles used primary data (mostly surveys ( $n = 54$ ) but also interviews ( $n = 2$ )) 4 articles used secondary data sources 2 articles used multiple sources of data

interesting findings. For example, [Nenonen et al. \(2020\)](#) examine firms' value propositions as market-shaping devices and find that although value propositions can influence markets without disclosing all characteristics of enhanced resource integration, collaborative value proposition, systemic and verified value promise and new representations for value communication, none of these characteristics alone can create all of the desired outcomes. Likewise, [Nagy et al. \(2019\)](#) explore whether the dynamic and operational capabilities of B2B firms are complementary or substitute to each other and find that dynamic and operational capabilities are more complementary than substitutive. However, such complementarity is more pronounced when competitive intensity and technological turbulence are high and small firms may prefer developing core rather than a large set of capabilities. When it comes to the configurational approach to investigating firm performance, the study by

[Brenes et al. \(2017\)](#) sets an interesting example. They find that constructing complex antecedent configurations is beneficial for consistently displaying high performance or negating high performance and note that the drivers of successful outcomes are not the mirror opposite of the drivers of unsuccessful outcomes. In sum, our review offers a perspective on the current state of fsQCA use within B2B marketing literature.

#### 4. Potential avenues for future fuzzy set qualitative comparative analysis research within business-to-business marketing

First, there are fruitful research opportunities from the perspective of joint application/mixed-use of fsQCA with other tools. One of the fundamental premises of a contemporary research design is the acknowledgment that the use of multiple analytical tools improves the rigor of research findings

(Mcgrath, 1981). The synergistic application of fsQCA with other analytical tools can enable scholars to leverage fsQCA's five above-mentioned advantages in conjunction with the advantages other analytical tools offer. Despite some potential challenges associated with mixed methods (Creswell, 2013), we argue that jointly applying fsQCA with other tools will lead to more insightful and triangulated findings in B2B marketing. As such, we put forth the following conclusion as guidance for future research:

*Conclusion 1:* The joint adoption of fsQCA with other methodological and analytical tools can result in richer and more rigorous insights into B2B marketing phenomena than a single adoption of any tool.

Second, fsQCA also offers fruitful future research potential at the interface of B2B marketing and affiliated research fields of branding and entrepreneurship. In B2B marketing, branding mechanisms enable buyer-supplier relationships, as brands allow gaining precursory information on possible partners, help attain legitimacy, reinforce reputations and build expectations for participating in B2B exchange (Czinkota et al., 2014; Leek and Christodoulides, 2011). As such, B2B research has lately recognized its salience and made noteworthy investigations about its role in B2B markets (Leek and Christodoulides, 2011). Likewise, as a behaviorally complex phenomenon, branding could largely benefit from research adopting fsQCA. Doing so can help reveal the various combinations of factors that drive individuals' behavior toward brands. However, our findings indicate that branding has witnessed limited attention from B2B scholars adopting fsQCA compared to research adopting fsQCA within other areas. Therefore, we believe there is a promising potential for researchers to examine issues, such as brand choice, brand image and brand value within the B2B research domain.

Similarly, entrepreneurial marketing is becoming an increasingly important research area in B2B marketing (Genc et al., 2019; Woodside et al., 2016; Yang and Gabrielsson, 2017). It captures the increasing dynamism of the global marketplace and firms' potential responses to rapid change. Nonetheless, despite one exceptional case (Woodside et al., 2016), entrepreneurial marketing has not been examined adequately through fsQCA. Adopting fsQCA has the potential to offer unique answers to interesting research topics, such as growth phases and survival of new ventures, behavioral patterns and performance outcomes in heterogeneous entrepreneurial ecosystems, entrepreneurial resilience and different financial configurations for entrepreneurial marketing initiatives in entrepreneurial marketing. Thus, we propose:

*Conclusion 2:* The application of fsQCA on the interfaces of B2B marketing and related fields of branding and entrepreneurship can reveal the complexity and heterogeneity of the relevant phenomena taking place at these interfaces.

Third, fsQCA can be applied to examine contemporary marketing processes of big data analytics, market orientation, customer engagement and pricing in the B2B domain. While big data analytics were examined using fsQCA in B2B marketing (Sun et al., 2020), other domains of digital marketing have received scant attention. Digital marketing captures a central place in marketing research and practice, increasingly including B2B marketing (Hofacker et al., 2020). B2B marketing has recently been transformed by digitalization that has been overturning the way markets work and the way

customers understand firms' value proposals (Vendrell-Herrero et al., 2017; Zhu et al., 2020). Thus, fsQCA-based research could explore issues, such as competition in digital platforms, different routes to value co-creation through digital technologies and the role of digital tools in B2B relationship dynamics to reveal interesting findings and offer a configurational approach to understanding the increasingly prevalent phenomenon of digitalization in B2B marketing.

In addition, B2B marketing researchers can successfully apply fsQCA to provide additional insights into customer-related behaviors, such as market orientation, customer engagement and pricing. For example, while market orientation has been extensively examined, especially in the business-to-consumer (B2C) context (Kumar et al., 2011), its configurational interplay with and outcomes in relation to other strategic orientations has received less attention (Schweiger et al., 2019). Likewise, the collective role of supply chain partners' market orientation in and fit between market orientations of different supply chain actors could be explored further using fsQCA.

Pricing is one of the fundamental pillars of marketing that has been addressed extensively in the past (Choi, 1991) but has witnessed a paucity of research in recent years. As such, less attention has been paid to pricing as a behavioral phenomenon to capture its complexity, explicate its heterogeneity and achieve high-predictive validity (Woodside, 2015b). However, in an age of unprecedented dynamism, complexity and turbulence (Bennett and Lemoine, 2014), pricing processes in B2B marketing cannot be explained through outdated models and assumptions. Instead, it can be rejuvenated by applying fsQCA and revealing its evolved, interactive and complicated nature (Woodside, 2015b).

B2C research has successfully adopted fsQCA to explore the complex relationships between the myriad of factors impacting customer engagement. For example, Gligor and Bozkurt (2020) identified different combinations of factors that lead customers to engage with firms. Specifically, they revealed eight different combinations of customer satisfaction, perceived interactivity, perceived value, perceived fairness, brand identification and brand involvement. Interestingly, neither one of these factors is present in all the combinations. To illustrate, both low customer satisfaction and high customer satisfaction can lead to customer engagement when combined with some of these other factors. Considering the growing importance of customer engagement in the B2B context (Christodoulides et al., 2019; Gopalakrishna et al., 2019; Iankova et al., 2019; Youssef et al., 2018), fsQCA can help offer novel insights into the complex nomological network of relationships impacting this phenomenon. Accordingly, we put forth the following conclusion on the role of fsQCA in analyzing relevant B2B marketing processes:

*Conclusion 3:* The adoption of fsQCA to analyze B2B marketing processes of big data analytics, market orientation, customer engagement and pricing is likely to reveal configurational and asymmetrical aspects of these processes.

Fourth and finally, pressing challenges in B2B marketing, such as organizational paradoxes and social and environmental sustainability, can be explored via fsQCA. While paradoxical issues, such as exploration and exploitation (Lisboa et al., 2011; Strese et al., 2016) and demand and supply paradoxes (Gölgeci et al., 2019; Hung, 2010) constitute an increasingly important

research domain in B2B marketing, less attention paid to the phenomenon through the fsQCA angle. Organizational paradoxes are multifaceted and dialectic phenomena with conflicting and sometimes seemingly irreconcilable demands that entail a creative third-way approach to overcome (Putnam et al., 2016). Accordingly, they may suit well to explore through the fsQCA approach. In particular, fsQCA can be applied to gain insights into the complicated and asymmetrical nature of intra- and inter-organizational paradoxes experience in B2B marketing (Fiss, 2011; Woodside, 2015a). It may also enable calibrating different paradoxical elements within their intertwined interactions in explaining B2B phenomena (Meuer and Fiss, 2020). By enabling untangling the influence of different combinations of a complex set of variables, fsQCA may reveal subtle and otherwise unrecognizable paths to overcome and transcend paradoxes in B2B marketing.

In a similar vein, social and environmental sustainability is now a substantial research domain related to pressing challenges and has a growing presence in B2B marketing (Czinkota et al., 2014; Lee and Lam, 2012). While our findings also confirm that fsQCA-based research examines sustainability and climate change issues in broader organizational domains, such a pattern is not sufficiently reflected in fsQCA-based research in B2B marketing. However, social and environmental sustainability represent broad and complex phenomena that may entail different routes to the same outcome. Various configurations of different factors may lead to surprising equifinal social and environmental outcomes. Applying fsQCA to examine social and environmental sustainability-related challenges can reveal interesting third-way solutions that could be overlooked when adopting conventional analytical approaches like MRA. Thus, B2B marketing research adopting fsQCA could reveal interesting insights into issues, such as green marketing, cause-related marketing and sustainable marketing across organizations.

*Conclusion 4: FsQCA can reveal innovative and hidden insights to overcome and transcend pressing challenges in B2B marketing that could be overlooked using correlation-based and mainstream analytical tools.*

## 5. Implications for business-to-business research

The current manuscript seeks to contribute to the current effort within B2B marketing to advance methodological developments (Naudé and Sutton-Brady, 2019). As the complexity of B2B marketing topics increases, it is essential for methodological approaches to possess the ability to provide adequate explanations for the phenomena of interest (Woodside, 2018). Our research effort offers several implications and takeaways for researchers.

For researchers, we highlight that fsQCA has at least four main advantages in the B2B context. First, B2B researchers can use fsQCA to uncover how different causal attributes combined into different configurations lead to an outcome, known as *conjunctural causation* or *causal complexity* (Ragin and Fiss, 2008). In regression analysis, these interdependencies are usually examined as interactions, while fsQCA is designed to identify the configurations of causal conditions that are sufficient to produce an outcome.

The second advantage of fsQCA is *asymmetry*. FsQCA can help explain situations that entail low and high values of the same antecedent within a data set having the same impact on an outcome variable. To illustrate, some of the firms in the data set examined earlier exhibit low recovery responsiveness (firms in solutions 1 and 2) and high customer satisfaction, while other firms exhibit high recovery responsiveness (firms in solution 3) and high customer satisfaction. Correlation-based methods use symmetric statistical tests that report the net effects of independent variables on dependent variables and do not consider asymmetric relationships among independent variables and dependent variables (Gligor et al., 2019; Fiss, 2011; Woodside, 2015a). In other words, fsQCA helps researchers identify contrarian cases, and thus accounts for all the cases in a data set (e.g. cases of low recovery responsiveness leading to high customer satisfaction and cases of high recovery responsiveness leading to high customer satisfaction).

Third, fsQCA explicitly allows for *equifinality* of different combinations of causal conditions (when a result may be equally explained by alternative sets of causal conditions). That is, fsQCA can reveal that a business problem or business system can achieve a particular state in more than one way (Gresov and Drazin, 1997; Russo et al., 2016; Schneider and Wagemann, 2010; Wagemann et al., 2016). In the illustration presented in the earlier section, we found three possible solutions/combinations of attributes (e.g. low/high product return practices, low/high recovery responsiveness) that lead to the same outcome (i.e. high customer satisfaction). Similarly, B2B researchers can use fsQCA to provide alternate solutions, and thus offer a more comprehensive perspective on how the desired outcome (i.e. the dependent variable of interest) can be achieved.

Fourth, fsQCA is different from correlation-based methods in that it allows for an analysis of causal diversity (Wagemann et al., 2016). FsQCA resides comfortably in a central position between qualitative and quantitative research and proposes a third way (Jordan, 2011; Wagemann et al., 2016; De Villiers and Tipgomut, 2018). Many business phenomena are complex with mixed evidence. Thus, a sequential mixed-method approach that starts with quantitative (i.e. survey) or qualitative (i.e. interviewing B2B decision-makers) inquiry and explores more case-based fsQCA is another benefit to overcome the limitations of a single study. In this case, B2B researchers can use fsQCA as a complementary method to provide more detailed insights on the phenomena of interest.

As illustrated in the above discussion, this method has the potential to make unique contributions to the field of B2B marketing. It enables revealing different routes to the same outcome beyond covariance analysis between the variables and improves the predictive value of the insights gained from a research inquiry (LaPlaca and da Silva, 2016). Importantly, we do not claim that fsQCA is the only approach to dealing with the issue of asymmetry. Other segmentation-based analyzes (e.g. finite mixture partial least squares and prediction oriented segmentation) might, arguably, address issues of asymmetry.

In sum, we illustrate to B2B industrial marketing researchers the benefits that can be derived from the use of fsQCA. The discussion on the benefits that can result from the application of fsQCA provides compelling arguments for scholars in our discipline to consider incorporating this approach into their

method toolbox. As detailed in the manuscript, fsQCA has the potential to offer unique insights and complement regression-based approaches.

In addition, we present an overview of fsQCA use within industrial marketing. This effort helped us gain insights into the distribution of fsQCA studies across industrial marketing journals, the methodological nature of the articles using fsQCA (i.e. qualitative, quantitative, mix and conceptual/methodological) and the type of phenomena that have already been explored using this approach. Our findings indicate that B2B topics that have been explored using fsQCA marketing research include big data analytics, buyer-supplier relationships, market orientation, pricing, service transition, strategy, entrepreneurship, social and environmental sustainability and firm performance. Among these topics, buyer-supplier relationships, service transition, strategy and firm performance were relatively more common than other topics. As such, we were able to present the current state of fsQCA use within industrial marketing, and thus determine the areas, such as big data analytics, branding, entrepreneurship, customer engagement and social and environmental sustainability, that could further benefit from the application of fsQCA.

Further, we make an interesting contribution to B2B research by uncovering and discussing the research topics that can be explored using fsQCA within industrial marketing. Thus, we offer a noteworthy future research agenda for B2B scholars and seek to spur further methodological developments in our discipline. Specifically, we found that the application of fsQCA could be fruitful when exploring B2B topics, such as branding mechanisms, entrepreneurial marketing, big data analytics, customer-related behaviors (e.g. customer engagement) and social and environmental sustainability. Applying fsQCA to explore these issues can untangle interesting findings that could have been overlooked by correlation-based research approaches. As the complexity of the contemporary business environment accelerates to

unprecedented levels and what may seem as an outlier may exhibit unexpected influence on the important outcome, fsQCA may enable better capturing the impact of outlier cases and reveal alternative routes to equifinal outcomes. As such, our research can be a useful platform for scholars to apply fsQCA in their research.

Moreover, to provide a resource that is easy to reference by B2B researchers seeking to use fsQCA, we provide a summary of these implications in [Table 4](#). We also include recommendations and suggested best practices (e.g. when to use fsQCA, when not to use fsQCA, steps to apply fsQCA and validity checks).

## 6. Limitations

Although we conducted a comprehensive literature review, the study is not free of limitations. Our study focused on B2B literature and suggested areas for fsQCA application within industrial marketing literature. While this is consistent with the focus of this journal, future research should attempt a similar literature review focusing on the B2C context. Moreover, we focused on the potential B2B marketing research areas that could benefit from the application of fsQCA. Future studies could explore the areas that will not benefit from the application of fsQCA.

Although we encourage the use of fsQCA within industrial marketing, no approach is free of limitations. FsQCA offers interesting insights when used within small and medium-size samples, as opposed to very large sample sizes. Importantly, we do not argue that fsQCA is superior to other methods but that it can add unique insights, and thus complement regression-based approaches.

In sum, the fsQCA approach serves to reveal much about the dynamics and evolution of B2B research problems. It considers feedback effects and two-way causation, the impact of different factors and their interaction effects (Gligor *et al.*, 2020; Woodside, 2015a; Wagemann *et al.*, 2016). The flexibility of fsQCA in terms of data types to which it can be applied was

**Table 4** FsQCA overview and recommendations

<b>Benefits of fsQCA</b>	Identifies how different causal attributes combined into different configurations lead to an outcome Explains situations that entail low and high values of the same antecedent within a data set having the same impact on an outcome variable Reveals how an outcome may be equally explained by alternative sets of causal conditions Allows for analysis of causal diversity
<b>When to use fsQCA</b>	When the phenomenon of interest is complex When examining a large number of causal factors When dealing with small samples (low number of observations) and regression analysis lacks statistical power To explain findings that are insignificant in regression analysis (i.e. large $p$ -values)
<b>When not to use fsQCA</b>	When dealing with very large samples (300+ observations) When only examining a small number of causal factors (e.g. 2–3) When establishing generalizability of findings is a key objective:
<b>Steps to implement fsQCA</b>	define the property space, calibrate the variables, apply the three validity criteria (frequency, consistency and coverage) and generate solutions
<b>Validity checks for fsQCA</b>	Frequency should equal or exceed 1 for relatively small samples (10–50 cases), while for larger samples this threshold can be higher (e.g. 2 or 3) (Ragin, 2009). Consistency should equal or exceed 0.75 (Fiss, 2011) Coverage should equal or exceed 0.10 (Ragin, 2009)



evident in the empirical research on B2B marketing that we identified in our review. That is, fsQCA can be applied to both qualitative and quantitative B2B data. Applying fsQCA to qualitative data allows for a quantitative approach to the interpretation of qualitative data. That is, industrial marketing scholars can use the fsQCA approach to provide additional justification (i.e. a clear process depicting how the results emerged) for their interpretation of qualitative data. Such an approach can help mitigate some of the concerns associated with the subjective nature of the data interpretation of qualitative studies.

## Note

- 1 The fsQCA software can be accessed at [www.socsci.uci.edu/~cragin/fsQCA/software.shtml](http://www.socsci.uci.edu/~cragin/fsQCA/software.shtml)

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