Industrial Marketing Management xxx (2016) xxx–xxx

Contents lists available at ScienceDirect

Industrial Marketing Management

Addressing the 'Qualitative' in fuzzy set Qualitative Comparative Analysis: The Generic Membership Evaluation Template

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ARTICLE INFO

Article history:
Received 28 November 2014
Received in revised form 12 September 2016
Accepted 12 September 2016
Available online xxxx

Keywords:
FsQCA
Qualitative data analysis
Calibration
Generic Membership Evaluation Template

ABSTRACT

Fuzzy set Qualitative Comparative Analysis (fsQCA) can help researchers to address causal complexity, especially in relation to the interactions between different conditions leading to the outcome in question. FsQCA helps investigate how alternative solutions (different configurations of conditions) make up the outcome, and considers the asymmetrical nature of social phenomena. An important challenge that researchers often face when they apply fsQCA to qualitative data is the lack of distinct and operationalizable anchor points for fuzzy set calibration. This study offers the Generic Membership Evaluation Template (GMET) to support the decision making about assigning fuzzy set values to conditions, and therefore improves the transparency of the qualitative calibration process. This paper aims to highlight why and how fsQCA can be carried out to obtain a more in-depth understanding of complex problems using qualitative data, to identify some core method issues involved in this analytical process, and to develop a conceptual and empirical framework that helps in managing some methodological issues, with special regard to the calibration process. For illustration of the method we scrutinize ways in which the customer firm can achieve attractiveness in the eyes of the supplier. Our study explores configurations leading to the Relational Attractiveness of the Customer (RAC) based on 28 in-depth interviews with senior managers on the supplier side. In the interest of methodological reflections and parsimony, it is assumed that the reader is familiar with the principles of fsQCA.

1. Introduction

The appeal of the method of fuzzy set Qualitative Comparative Analysis (fsQCA) is rooted in its ability to address causal complexity, through an integration and formalization of variable- and case-oriented approaches (Ragin, 2009), and by applying the equifinality principle (i.e. the same outcome is achievable through the combination of different conditions) (Rihoux & Ragin, 2009). We apply these methodological characteristics in the context of business relationships, as their complexity is multi-faceted, and comprises several important interrelated dimensions (Håkansson & Ford, 2002; Holmlund, 2004; Möller & Halinen, 1999). In many respects, relational phenomena can be characterized as the outcome of synergy mechanisms of the constituting elements (Forkmann, Wang, Henneberg, Naudé, & Sutcliffe, 2012; Slater & Narver, 1995). Some of the most studied constructs in business marketing such as trust (Morgan & Hunt, 1994), relationship performance (Palmatier, Dant, & Grewal, 2007), market orientation (Frösén, Luoma, Jaakkola, Tikkanen, & Aspara, 2016) and relationship quality (Naudé & Buttle, 2000), are the outcomes of sets of interrelated conditions. Empirical research that entails efforts to address such complexity normally takes primarily either a variable-focused or case-oriented view. On the one hand, the variable-focused approach is mainly quantitative and tests direct and indirect net causal pathways based on the amount of variance in the dependent variable accounted for by the independent variables (Hair, Black, Babin, Anderson, & Tatham, 2005). On the other hand, qualitative research drawing on data from interviews, observations, and other documents places more emphasis on selecting relevant cases and subjects and then studying them in a more comprehensive way while paying attention to contextual details and dynamics (King & Horrocks, 2010).

There have been various attempts to apply fsQCA for the analysis of qualitative data. Despite the growing interest in configurational approaches, only a limited number of researchers use this data analysis method in the case of qualitative data, especially in the business marketing domain. This neglect of qualitative input data for fsQCA is arguably at odds with aims focused on theory-building or motivations to gain understanding of configurational patterns of research phenomena. This represents the starting point for this study. The *objective is to elucidate methodological as well as procedural issues of this approach, in particular by showing a primarily qualitative application of fsQCA, and thereby to*

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http://dx.doi.org/10.1016/j.indmarman.2016.10.008
0019-8501/

help researchers to effectively circumnavigate some potential pitfalls. We identified problematic issues in relation to qualitative applications of fsQCA: some of the core issues are related to the choice of methods, i.e. in which cases to apply a configurational approach, and others are rooted in the research design. Finally, and most importantly for this study, despite fsQCA being an appropriate choice and the research design being well-thought through, researchers face difficulties with data categorization, and in assigning membership values in the set-theoretic analysis.

Set-theoretic intra-case categorization in qualitative research should meet the requirements of credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). Therefore, while there is no such thing as a 'one best way' to manage the calibration process as part of fsQCA, this study provides a methodological contribution by offering a framework, the Generic Membership Evaluation Template (GMET) to introduce structure, rigor, and transparency (Dubois & Gibbert, 2010) to the calibration of qualitative data. The use of the GMET reflects the need for a more systemized methodological approach at the operational levels of the calibration process of qualitative data (more specifically, data categorization and membership evaluation) as well as addressing Ragin's (2006) call "*to make sense of the diversity of empirical cases in ways that resonate with the researcher's theoretical ideas about social phenomena*" (p. 310).

To illustrate the creation and use of the GMET, we use as the outcome the condition of Relational Attractiveness of the Customer[1] (RAC) (Tóth, Thiesbrummel, Henneberg, & Naudé, 2015) as an example of a complex relational phenomenon to be explained by fsQCA. RAC refers to the attitude of the managers on the supplier side towards the customer firm; in particular it comprises an evaluation of the customer company's future attractiveness as a relational partner (Manstead, 1996), and therefore RAC is essential for developing and maintaining business relationships (Harris, O'Malley, & Patterson, 2003). RAC is an attitudinal and perception-based construct and as such, falls into the category of not having quantitative anchor points such as actual profits or frequency of communications. Consequently, the case of RAC is appropriate for demonstrating some methodological challenges where the indicators for the calibration based on qualitative data are not easily quantifiable. A total of 28 in-depth interviews were conducted with senior managers on the supplier side. These interviews provide the qualitative input data for the fsQCA analysis that results in four causal recipes for the presence of RAC, and two causal recipes for the absence of RAC. While different constructs and different sources of qualitative data could also have provided an appropriate way for demonstrating the use of the GMET, RAC is used in the present study as an illustrative exemplar.

2. Use of fsQCA to analyze qualitative data: methodological considerations and pitfalls

There are several reasons why fsQCA can serve as an appropriate tool to facilitate the analysis of qualitative data.[2] First, it is a powerful analytical approach to advance theory building as well as for testing existing theories. The combined case and variable-oriented approach of fsQCA produces configurations of conditions as typologies for complex theoretical statements that emerge as unique forms of theory building and testing (Fiss, 2011), which by offering alternative (equifinal) solutions to the previously presumed 'one recipe for success' mantra, fits well with in the Popperian philosophy of falsification (Popper, 2005 [1972]). The theory-building power of fsQCA is demonstrated, for example, by Crilly's (2011) mid-range theory in the context of stakeholder orientation, which uses a configurational approach that enables the linking of conditions of resource and institutional pressures, as well as organizational attributes at the level of empirical investigation. Secondly, fsQCA embraces the asymmetrical and non-linear nature of social phenomena: it is capable of exploring configurations of conditions not only for the outcome but also for the absence of the outcome. The configurations for the absence of the outcome are normally not simply negations of the ones for the presence of the outcome, but they show asymmetric patterns instead. This mirrors real-life issues more than a primarily linear and symmetric approach (Woodside, 2013). The non-linearity principle of fsQCA is well aligned with other qualitative methods, i.e. the changes in the conditions are not directly proportionate with changes in the outcome. Thirdly, QCA enables the analysis of necessary conditions that are by themselves causing the outcome, i.e. they are a superset of the occurrence of the outcome (Schneider & Wagemann, 2010). This investigation happens 'in kind' and not 'in degree' as part of fsQCA (compared to Necessary Condition Analysis (NCA); Dul, 2016), i.e. the analysis shows whether overall a condition is or is not necessary for the occurrence of an outcome, but it does not provide information about the necessity of a condition at different outcome levels. Such an 'in kind' investigation of necessity might work with a qualitative approach that aims less at in degree explanations (as applied in Vis, 2010), yet NCA can provide a more fine-grained investigation of necessity even in these cases (Dul, 2015).

Through exploring equifinal configurations, necessary conditions, and asymmetric as well as non-linear ways to achieve an outcome in question (as well as its negation), fsQCA demonstrates a considerable breadth of analysis, while maintaining an in-depth understanding of the phenomenon. There are, however, limitations to using fsQCA. As Greckhamer, Misangyi, Elms, and Lacey (2008) point out, fsQCA does not proof causal relationships between conditions and outcome and thus inferences about causal relationships are based on theory or other empirical research which inform the development of a nomological model. Another limitation is that the same conditions should appear across all the examined cases in order to investigate the configurations of these conditions. Less structured exploratory research, with flexible or no frameworks and which focuses primarily on discovery, seldom adheres to this assumption. There are also practical limitations in the number of conditions fsQCA is capable of handling in relation to the number of studied cases (see issues around limited diversity; Marx & Dusa, 2011).

Pitfalls using fsQCA with qualitative data may occur when these limitations are not taken into account. First, one of the more subtly concealed pitfalls is the tendency to assume that fsQCA is applicable in most research contexts. Several failed attempts of applying fsQCA to previously collected interview data as well as combining fsQCA and constructivist grounded theory exemplify this issue (Charmaz, 2014). In such cases analytical codes and categories are inductively developed from data and not through the use of pre-existing conceptualizations. In many of these cases the lack of a common set of conditions proved to be a major issue: some cases displayed some conditions but not others, and this hindered the exploration of configurational patterns across the cases. Secondly, sampling and data collection should be carefully planned. There exists no strict limitation in terms of the number of cases, yet inadequate sample size might have analytical trade-offs. As Vis (2012) points out, the goal in comparative research is to learn about the cases (e.g. welfare state development in specific countries) and not so much to draw causal inferences. Therefore, an intermediate number of cases (between 10 and 50) seems ideal for fsQCA with qualitative data. Marx (2010) proposes a ratio of conditions to cases ranging from 0.33 for small/medium-N to 0.20 for medium/large-N, and an upper limit of seven or eight conditions. Maggetti and Levi-Faur (2013) confirm that this 'rule' applies to both crisp as well as fuzzy set QCA. The authors also provide a more extensive review on different errors (condition, systematic, random, model misspecification, and deviant case errors) generally applicable to most QCA studies (fuzzy/crisp;

[1] Conditions and outcomes are capitalized in the text to enable better readability.

[2] As the focus of the present study is on methodological reflections, and in the interest of parsimony, it is assumed that the reader is familiar with the principles of fsQCA. Good introductions to fsQCA are provided by Rihoux and Ragin (2008) and Ragin (2009), while Woodside and Baxter (2013) exemplify recent applications in the area of marketing.

Please cite this article as: Tóth, Z., et al., Addressing the 'Qualitative' in fuzzy set Qualitative Comparative Analysis: The Generic Membership Evaluation Template, *Industrial Marketing Management* (2016), http://dx.doi.org/10.1016/j.indmarman.2016.10.008