Qualitative comparative analysis: justifying a neo-configurational approach in management research

Tobias Coutinho Parente
Universidade de São Paulo, São Paulo, Brazil and
Instituto Brasileiro de Governança Corporativa – IBGC, São Paulo, Brazil, and

Ryan Federo
ESADE Business School, Barcelona, Spain

Abstract

Purpose – The purpose of this paper is to critically reflect and offer insights on how to justify the use of qualitative comparative analysis (QCA) as a research method for understanding the complexity of organizational phenomena, by applying the principles of the neo-configurational approach.

Design/methodology/approach – We present and critically examine three arguments regarding the use of QCA for management research. First, they discuss the need to assume configurational theories to build and empirically test a causal model of interest. Second, we explain how the three principles of causal complexity are assumed during the process of conducting QCA-based studies. Third, we elaborate on the importance of case knowledge when selecting the data for the analysis and when interpreting the results.

Findings – We argue that it is important to reflect on these arguments to have an appropriate research design. In the true spirit of the configurational approach, we contend that the three arguments presented are necessary; however, each argument is insufficient to warrant a QCA research design.

Originality/value – This paper contributes to management research by offering key arguments on how to justify the use of QCA-based studies in future research endeavors.

Keywords QCA, Case knowledge, Causal complexity, Configurational theory

Paper type Conceptual paper

Introduction

In the past two decades, management research has developed a significant interest in advancing the neo-configurational approach, which "enables researchers to theorize and empirically examine causal complexity" (Misangyi et al., 2017, p. 257). Causal complexity is guided by the three principles of:

(1) *conjunction*, which refers to an outcome occurring from the interdependence of multiple conditions (Schneider & Wagemann, 2012);

(2) *equifinality*, which suggests the possibility of multiple pathways leading to the same outcome (Gresov & Drazin, 1997); and

(3) *asymmetry*, which means that attributes "found to be causally related in one configuration may be unrelated or even inversely related in another" (Meyer, Tsui, & Hinings, 1993, p. 1178).

However, the dominant research tools, primarily based on correlations, are not designed to capture these three principles of causal complexity (Ragin, 1987, 2000); instead, these tools are characterized by single (and net effect logic), linear, and symmetric theorizing (Abbott, 1988; Delbridge & Fiss, 2013; Ragin, 2008). Thus, through Ragin's (1987) seminal work, qualitative comparative analysis (QCA) has emerged and gained prominence over the years as a widely embraced research tool for the empirical exploration of the configurational approach.

Departing from the epistemological foundation of correlation-based methods that use linear algebra, QCA relies on set-theoretic relations by adopting Boolean algebra to understand interactions or unions of set memberships that take into account each case as a configuration or bundle of causal attributes. Thus, in using QCA, it is possible to compare and examine cases with different sets of causally relevant conditions to identify the decisive configurations, and thereby unravel causal complexity (Ragin, 2008).

Developed initially for case-based analysis in sociology by Ragin (1987), QCA is increasingly applied in different management research sub-disciplines (Wagemann, Buche, & Siewert, 2016) such as organization design (e.g., Grandori & Furnari, 2008), strategy (e.g., Fiss, 2011; Greckhamer, Misangyi, Elms, & Lacey, 2008), marketing (e.g., Frambach, Fiss, & Ingenbleek, 2016; Johansson & Kask, 2017), corporate governance (e.g., Bell, Filatotchev, & Aguilera, 2014; García-Castro, Aguilera, & Ariño, 2013), public administration (e.g., Federo & Saz-Carranza, 2018b; Verweij, Klijn, Edelenbos, & van Buuren, 2013), international business (e.g., Crilly, 2011; Schneider, Schulze-Bentrop, & Paunescu, 2010) and family business (e.g., García-Castro & Aguilera, 2014; García-Castro & Casasola, 2011), among others.

The key advantage of QCA over other research tools rests on its capability to capture altogether the three principles of causal complexity (Misangyi et al., 2017). First, it is primarily used to analyze how multiple, independent causal attributes are combined so that they are consistently associated with a given outcome (i.e. conjunction). Second, it helps to assess whether there are different combinations of conditions associated with the same outcome (i.e. equifinality). Finally, it explores the possibility that both the presence and the absence of attributes could be associated with the outcome (i.e. asymmetry).

However, despite the surge in the number of studies over the past two decades, demonstrating the shift toward using configurational theories to understand the complexity of organizational phenomena, there are persistent scholarly debates in the literature over the use of QCA to analyze causal complexity. On the one hand, the QCA scholarly community advocates QCA as a novel and available tool that is capable of capturing all three principles of causal complexity and is thus the preferred choice for empirically testing configurational theories (Fiss, Marx, & Cambré, 2013). On the other hand, scholars have underscored the various pitfalls of QCA, particularly when contrasting it to conventional quantitative methods. For example, Lieberson (2004) argued that there is no evidence for supplanting existing correlation-based practices by QCA because of QCA's deterministic approach and disregard of probabilistic processes. In a similar vein, Seawright (2005) pointed out three assumptions about causal inference that QCA has failed to address: the absence of an established testing tool for nonlinear functional form, the treatment of missing variables, and the inherent implied causation.

Although Ragin and Rihoux (2004, p. 22) have previously addressed these concerns, stating that "supplanting regression analysis and related techniques is not our goal, nor is it the goal of others who advocate QCA", that the application of QCA also involves probabilistic approaches, and that QCA carefully takes into account nonlinearity, omitted variables, and case-based causal inferences, skeptics continue to emphasize how QCA might not be useful; for instance, Tanner (2014) argued that QCA is of questionable value for policy research, while Hug (2012) highlighted the measurement error underlying the application of QCA. As a result, QCA scholars have published several papers listing best practices when conducting QCA to avoid the pitfalls (e.g., Greckhamer, Furnari, Fiss, & Aguilera, 2018; Leppänen, McKenny, & Short, 2019; Misangyi et al., 2017; Thiem, 2017), in addition to the detailed QCA methodological principles previously discussed in the literature (Ragin, 1987, 2000, 2008; Rihoux & Ragin, 2009; Schneider & Wagemann, 2012). Furthermore, alternative techniques to QCA as a configurational comparative method also have emerged (Baumgartner, 2009), wherein other scholars advocating the configurational approach have criticized some of the assumptions and generally accepted best practices of QCA (Baumgartner & Thiem, 2017). However, our goal here is not to review these prior works, but instead we aim to critically reflect and offer insights on how to justify the use of a QCA-based study for future research endeavors in the field of management.

We focus on three underlying arguments that warrant the use of QCA in a study. First, we discuss the importance of using configurational theories that sparked the adoption of QCA. Second, we elaborate on the need to understand altogether the three principles of causal complexity, which is the logic behind the development of QCA in the first place. Third, we emphasize the role of case knowledge as the foundation of QCA-based studies. We argue that understanding the core of these three arguments provides researchers with a justification for whether or not QCA is the appropriate method to explain the phenomenon of interest.

In the next section, we discuss the three arguments justifying why a QCA research design would be warranted to examine causal complexity and to identify the stages in which QCA supports such reasons. We then describe the general steps in conducting a QCA-based study. We conclude with a future outlook for the configurational perspective and QCA.

Underlying arguments for when to use qualitative comparative analysis

Before choosing QCA, the researcher must be aware of whether the method is warranted for the study. QCA is only applicable for studies that seek to offer theoretical contributions from a configurational perspective. It will also be useful only if the intention is to unravel causal complexity relations and if it is based on case knowledge, in which the researcher seeks to observe how different attributes of the cases consistently fit together to produce an outcome. If these three goals are the purpose of the study, researchers may then choose QCA to conduct the study. To make this clear, we give further detail on each of them below.

Configurational theory

A theoretical contribution is at the core of publishing in top management journals (Corley & Gioia, 2011). The craft of theorizing, at its simplest, can be carried out via universalistic arguments that suggest a linear relationship between an independent variable and a dependent variable across organizations, or it can take a more complex form through contingency arguments implying interactions rather than simple linear relationships (Delery & Doty, 1996). An alternative approach to theorizing that has developed and grown in prominence over the years points to configurational arguments (Doty & Glick, 1994; Meyer et al., 1993). In contrast to universal and contingency arguments that assume individual net

effects of a specific variable, configurational arguments produce theories that allude to a pattern of multiple independent variables that are related to a dependent variable (Delery & Doty, 1996). Configurational theories rely on a holistic perspective (Miller & Friesen, 1984), assume equifinality (Doty, Glick, & Huber, 1993) and create typologies based on theoretical constructs (Doty & Glick, 1994).

In understanding organizational phenomena in a holistic manner, the logics of complementarity and substitution help us to understand how multiple attributes are interdependent within a bundle (Misangyi & Acharya, 2014). On the one hand, the complementarity logic suggests a synergetic relationship (Milgrom & Roberts, 1992) that mutually enhances the effect of the attributes (Aguilera, Filatotchev, Gospel, & Jackson, 2008). On the other hand, the substitution logic implies that attributes can replace one another in producing the outcome (Rediker & Seth, 1995). Configurational theorizing assumes the possibility of complementarity and substitution among the attributes, paving the way for different combinations of attributes (i.e. conjunction) that result in the same outcome (i.e. equifinality). The principle of equifinality provides a solid foundation to enhance theories underlying typologies in management research (Fiss, 2011). However, empirically exploring or testing this type of theorizing did not materialize until the introduction of QCA.

QCA has been developed for systematizing the analysis of configurational thinking to disentangle complex causal relationships (Fiss et al., 2013). Therefore, one must not use QCA if configurational theorizing is not involved. QCA should be used solely for the purpose of both conceptualizing and analyzing the causal complexity underlying many organizational phenomena (Fiss, 2007).

Theorizing using configurational theories is typically embedded during the model specification stage. Researchers will need to identify the most salient conditions that can explain the occurrence of the outcome of interest. A large bulk of studies using QCA is inductive in nature, operating through an exploratory theory-building analysis, which is applicable if the relationship cannot be theoretically established beforehand (e.g., Campbell, Sirmon, & Schijven, 2016; Federo & Saz-Carranza, 2018a, 2018b; Haxhi & Aguilera, 2017; Misangyi & Acharya, 2014). In this way, hypotheses or propositions are generated after the analysis. However, QCA can also be deductive in nature, operating as a hypothesis-testing analysis, if it is possible to establish a priori expectations on the relationship being studied (e.g., García-Castro et al., 2013; García-Castro & Aguilera, 2014; García-Castro & Francoeur, 2016). This can be done by advancing either hypotheses or propositions before the analysis is performed. In both ways of theorizing, it is important to craft the hypotheses or propositions in a configurational manner by developing substitution and complementarity logics among the conditions to produce an outcome or by identifying different combinations of conditions that embody prototypes of cases.

Causal complexity
The configurational approach assumes the three principles of causal complexity. First, it considers the principle of conjunction, in which organizational phenomena are characterized by multiple interactions among organizational attributes. An outcome rarely has a single cause, but, rather, results from the interdependence of multiple conditions (Misangyi et al., 2017). Second, it emphasizes the principle of equifinality, where there is the possibility that more than one combination of attributes results in the same outcome (Gresov & Drazin, 1997). Third, it explores the principle of asymmetry, by assuming the possibility of nonlinear relationships among the organizational attributes (Ragin, 2008), so that "[...]

variables found to be causally related in one configuration may be unrelated or even inversely related in another" (Meyer et al., 1993, p. 1178).

Although contingency theorists have also assumed equifinality, the tools employed to analyze empirical data to examine equifinality have not been fully developed (Drazin & Van de Ven, 1985; Meyer et al., 1993; Van de Ven, Ganco, & Hinings, 2013). The tools that attempted to test configurational theories prior to the rise of QCA have suffered a similar fate, since they are at an embryonic stage that cannot altogether capture the three principles of causal complexity (Van de Ven et al., 2013). QCA eventually emerged as a promising tool to address the need for a specific research method for configurational theories (Fiss et al., 2013). "QCA explicitly casts causal relations along all three lines of complexity highlighted by earlier configurational theories in management" (Misangyi et al., 2017, p. 257).

QCA should be used when the research aims to identify the combinations (or recipes) of causal conditions for the occurrence of an outcome, particularly when the researcher may have good reason to suspect that there are several different recipes for the outcome (Ragin, 2008). QCA compares a number of cases to identify whether causal conditions are necessary and/or sufficient to produce an outcome, rather than identifying the net effects of the causal conditions (Wagemann et al., 2016). QCA does not aim to identify which condition gives the greatest explanatory power, because it assumes that the outcome comes from the interdependence of multiple conditions.

Causal complexity is at the core of all QCA-based studies. The principles of conjunction and equifinality are assumed when a researcher specifies the configurational model, and this occurs even before the data collection and analysis are performed. More importantly, QCA is an iterative exercise that allows researchers to modify the model during the actual data analysis stage, using QCA as a means of dialogue with the data to uncover latent attributes that can refine the model (Greckhamer et al., 2018). Furthermore, the principle of asymmetry is explored whenever the researcher also performs an analysis of the absence of the outcome. It is a recommended practice to conduct separate analyses of the presence and absence of the outcome because they have distinct, although interrelated, explanations, or even different model specifications (Schneider & Wagemann, 2012). Thus, if the study does not assume the three principles of causal complexity, or if the goal is to identify the additive effect of each condition to the outcome, then QCA will not be suitable for the analysis.

Case knowledge

One of the main characteristics of QCA is that it allows researchers to analyze the cases as combinations of attributes that jointly produce a specific outcome; this is different from the traditional methods that lead researchers to conceptualize cases using separable independent variables and to examine the net effects of such variables on the outcome (Fiss, 2007; García-Castro et al., 2013; Misangyi et al., 2017). This feature makes QCA uniquely suitable for testing configurational theories, because it emphasizes the combinations of attributes that give cases their uniqueness in explaining an outcome (Fiss, 2011).

Although identifying different configurations from cases is the main advantage of QCA, the real test of any configuration is how well it resonates with case knowledge (Ragin, 2008), which means that the researcher has empirical intimacy with the cases being analyzed (Rihoux, Ragin, Yamasaki, & Bol, 2009). Before engaging further in QCA, researchers should also have access to the cases, as there may be circumstances in which more information is needed during the analysis (Berg-Schlosser & De Meur, 2009). Case knowledge is particularly important during sample selection, since having in-depth case knowledge helps researchers to purposively choose suitable cases that can explain the phenomenon.

However, familiarity with cases is not only about sample selection. It also provides evidence to support the results derived from the analysis. The crucial aspect of QCA is returning to individual cases after cross-case analysis has been conducted, to facilitate a dialogue with the data (Ragin, 2008). Although case knowledge helps explain the results by providing exemplar cases for the configurations, returning to the cases can untangle further explanations of the results, especially when it comes to relatively small sample size studies. For example, based on intimate case knowledge, Aversa, Furnari, and Haefliger (2015), Haxhi and Aguilera (2017) and Federo and Saz-Carranza (2018a, 2018b) identified mechanisms from latent attributes underlying the configurations that emerged from the analysis to build prototypes among their cases. However, it becomes more difficult to develop familiarity and an adequate level of knowledge of each case as the number of cases increases. Dwivedi, Joshi, and Misangyi (2018), however, have demonstrated that it is possible to do a similar process with large-N analysis. Nevertheless, it might still be fruitful to have an iterative process between the findings and returning to empirical cases in large-N settings, even without the intimate case knowledge typical of small-N QCA studies (e.g., Campbell et al., 2016; Crilly, 2011; Misangyi & Acharya, 2014). These post-QCA case analytical procedures (see Schneider & Rohlfing, 2013 for more details) enable researchers to identify whether configurations have emerged from typical or deviant cases (Schneider & Wagemann, 2012).

In sum, QCA-based studies should be based on case knowledge. Although intimate case knowledge might not always be necessary, without any sort of case knowledge it will be difficult to establish whether QCA is a suitable method for the study, and the study may merely become a mechanistic application of the method.

Procedure for conducting qualitative comparative analysis

Although the process of conducting QCA has been discussed in great detail elsewhere, we argue that it is useful to provide a brief overview of the process involved when adopting a QCA-based study. The procedure for conducting QCA is made up of four general steps (see Figure 1): designing the configurational model, building the empirical data, calibrating and analyzing the data, and reporting and interpreting the results.

Once the phenomenon to be studied and the outcome are identified, the first step is to design the configurational model. Based on theory and case knowledge, the researchers need to identify the conditions that could explain the outcome of interest. It is important to adopt a configurational perspective by identifying which conditions should have joint effects, rather than net effects, on the outcome. The challenge is to maintain a balance between the number of conditions and the sample size, to minimize limited diversity, which refers to the likelihood of having unobserved configurations because of the exponential increase in logically possible configurations associated with an increase in the number of conditions.

The next step is to build the empirical data by purposively choosing the theoretically defined sample cases for the analysis (Ragin, 2008). The goal is to ensure that the chosen cases are fitted to answering the research question (Greckhamer et al., 2018). Although initially developed to find consistent relationships in sample sizes that are too large for comparative case studies but not large enough for quantitative research designs (Ragin, 1987), QCA has been applied to studies with N that ranges from relatively small (e.g., Federo & Saz-Carranza, 2018a, 2018b; Verweij et al., 2013) through medium (e.g., Grandori & Furnari, 2008; Haxhi & Aguilera, 2017) to large (e.g., Bell et al., 2014; García-Castro et al., 2013; Misangyi & Acharya, 2014) or extremely large (e.g., Campbell et al., 2016; García-Castro & Aguilera, 2014; García-Castro & Casasola, 2011). Case selection can be made by taking into account the entire population or representative sample of a population. Random
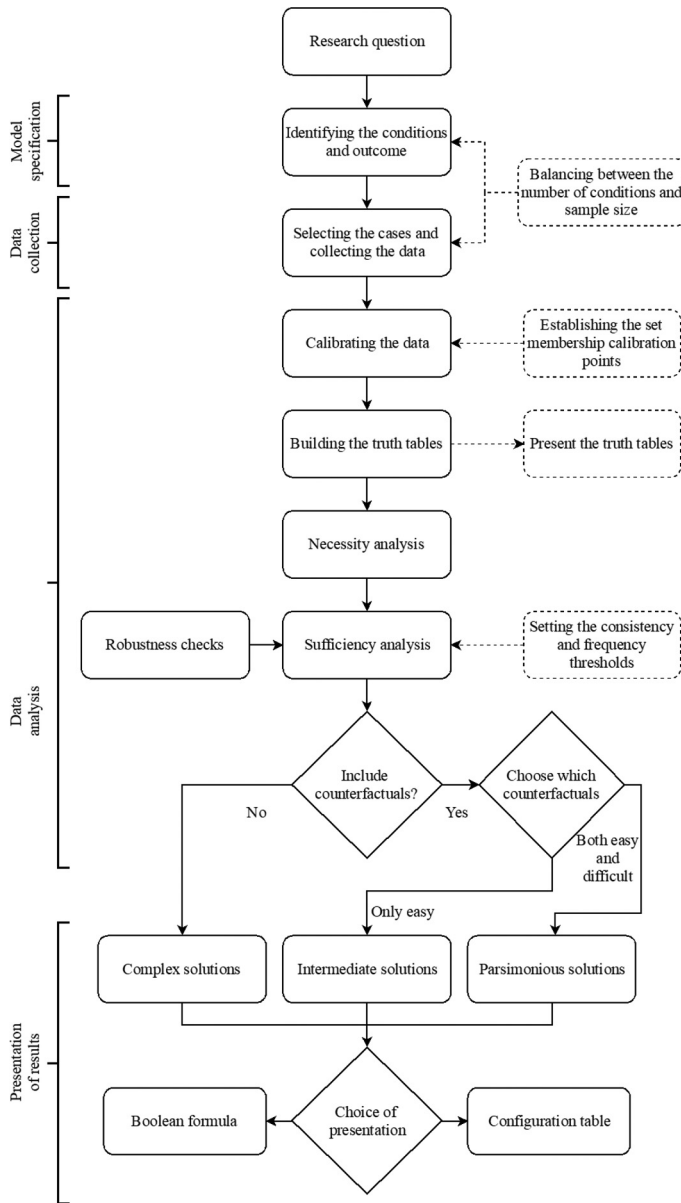
sampling typically is not advised, because exceptional cases, also known as outliers or deviant cases, might be relevant in explaining the outcome (Greckhamer, Misangyi, & Fiss, 2013).

After case selection, the outcome and conditions need to be calibrated for set memberships (Ragin, 2008). QCA application has evolved from using solely crisp sets, where set membership is distinguished between full membership or full non-membership, into incorporating in the analysis fuzzy sets with more finely-grained degrees of membership (Ragin, 2000). Another QCA variant, that is multi-value QCA, also has emerged for analyzing specifically categorical variables or intermediate set memberships (Cronqvist & Berg-Schlosser, 2009). Nevertheless, the main steps for conducting QCA along the three types are similar (Herrmann & Cronqvist, 2009). The calibration technique rests on transparency when identifying theoretically or substantively based thresholds, to ensure validity and replicability of the calibration process (Greckhamer et al., 2018; Misangyi et al., 2017). Although sample-based calibration is discouraged, the properties of the sample through its frequency distribution can also be adopted in circumstances where there is no existing theoretical knowledge that can be used for calibration thresholds (Greckhamer, 2016).

The next step after data calibration is data analysis. To do this, researchers need to build and analyze truth tables, referring to the number of rows representing the logically possible configurations from the given bundle of conditions (2^k where k is the number of conditions used in the analysis). Using the logic of necessity and sufficiency (Ragin, 2008), the goal here is to identify the configurations that consistently produce the outcome. Consistency and coverage scores are used to evaluate the results; the former refers to the measure of fit among the different conditions comprising a configuration yielding the outcome, while the latter refers to the empirical relevance of the configuration (Ragin, 2008). Consistency scores suggest how often the cases exemplifying the configuration produce the outcome of interest. Hence, a consistency score of 0.80 would mean that 80 per cent of the cases are showing the relationship. A consistency score of at least 0.90 is recommended for a condition to be considered necessary, meaning that the condition always needs to be present to produce the outcome. Meanwhile, a raw consistency score of at least 0.80 and a proportional reduction for inconsistency (PRI) of at least 0.65 are recommended to consider a condition or configuration to be sufficient (Greckhamer, 2016), meaning that the condition or configuration would be enough to produce the outcome. It is important to conduct a necessity analysis of individual conditions before conducting a sufficiency analysis. A frequency threshold, referring to the minimum number of observed cases representing a row, is also set during the analysis. Although one case is typically used in small-N analysis, a higher number can be set in medium-N and large-N analyses, provided that the analysis retains at least 80 per cent of the cases (Greckhamer et al., 2013).

Furthermore, as with any other research methods, QCA is sensitive to various methodological decisions when performing the analysis, and hence robustness checks are also encouraged to ensure the validity of the findings. However, an examination of the findings' robustness needs to follow the set-theoretic logic in which the resulting necessity and sufficiency of the conditions after the checks do not offer substantively different interpretations of the findings (Schneider & Wagemann, 2012). Some ways of conducting the robustness checks include adding, dropping or changing the conditions in the model (e.g., García-Castro & Francoeur, 2016), modifying the calibration thresholds (e.g., Fiss, 2011), and exploring multiple consistency thresholds (e.g., Ragin & Fiss, 2017).

The final step in conducting QCA is to present and interpret the results. In presenting the results, researchers may opt to display the consistent results in a configuration table using

Boolean formulas or the notation suggested by Ragin and Fiss (2008). An example of a Boolean formula is: Condition A+Condition B*~Condition C → Outcome, where the plus sign (+) denotes "or", the asterisk (*) denotes "and", the tilde (~) denotes absence, and the arrow (→) shows the causal direction. The notation by Ragin and Fiss (2008) uses "●" for the presence of the condition and "⊗" for the absence of the condition. In some instances, unobserved configurations known as counterfactuals or logical remainders are present during the analysis. QCA allows researchers to perform counterfactual analysis to identify core and contributing conditions (Fiss, 2011). When considering easy counterfactuals (i.e. those that are consistent with theoretical knowledge and empirical evidence) and difficult counterfactuals (i.e. those that are only consistent with empirical evidence), parsimonious solutions are generated, which produce the core conditions. However, if only easy counterfactuals are considered, intermediate solutions are generated, which produce both core (only those conditions from the parsimonious solutions) and contributing conditions. If no counterfactual analysis is performed, complex solutions are generated. Although it is recommended that intermediate solutions are presented as results, scholars have also used complex solutions to present findings as close to the data as possible (e.g., García-Castro et al., 2013; García-Castro & Aguilera, 2014). Another best practice in conducting QCA is to perform analyses for both the presence and the absence of the outcome, to explore the asymmetry assumption underlying causal complexity. This step is particularly important to ensure that the inverse combinations of conditions resulting to the presence of an outcome are not related to the absence of the outcome.

Finally, to interpret the results, researchers will need to rely on case knowledge to make sense of the configurations that emerge from the analysis. QCA remains a qualitative exercise, and thus entails an understanding of the cases selected for the analysis. The cases could determine whether the configurations are exemplified by typical or deviant cases that can be helpful in interpreting the results.

Discussion and conclusion

Our aim in this article was to critically reflect and offer insights on how to justify the use of QCA in future research endeavors in the field of management. We have done this by critically analyzing three arguments as to why QCA would be warranted for use in a research study. First, we discussed the need to assume configurational theories to build and empirically test a causal model of interest. Second, we explained how the three principles of causal complexity are assumed during the process of conducting QCA-based studies. Third, we elaborated on the importance of case knowledge when selecting the data for the analysis and when interpreting the results. We contend that these three arguments need to be the underlying goals of the research to justify choosing QCA as the method.

Our article primarily contributes to configurational research by reinforcing the importance of QCA-based studies, while we underscore these three arguments that have now been taken for granted when choosing QCA as the research method. We argue that it is important to reflect on these arguments to have the appropriate research design. In the true spirit of the configurational approach, we contend that the three arguments we have presented above are necessary; however, each argument is insufficient to warrant a QCA research design.

The strength of QCA lies in how it can integrate the three arguments altogether. As QCA analyzes joint effects rather than linear relationships or the net effects of conditions, in contrast to correlation-based methods, it builds a better configurational model based on case knowledge while assuming the principles of causal complexity. Previous research has shown that QCA overcomes the limits of structural equation modeling (SEM), that is argued

to capture multiple interactions; yet, SEM fails to capture the necessity or sufficiency of conditions to produce an outcome (Tho & Trang, 2015). Moreover, QCA helps create more finely grained typologies, since it segregates cases on the basis of their attributes that are associated with a specific outcome (Fiss, 2011), which is in stark contrast to cluster analysis that merely looks commonalities among variables. Misangyi and colleagues (2017), however, contend that one of the prospects for QCA is to be a complementary approach to other research methods. Indeed, Ragin and Rihoux (2004) have strongly argued that QCA is not meant to replace any existing and established research methods. Rather, QCA should be viewed as a way to provide alternative theorizing and empirical testing of a phenomenon that researchers want to explain. Despite the difference between the epistemological and methodological traditions of QCA and those of other research methods, the scholarship has in fact now shifted toward using QCA not only to compare findings with results from regression analyses (e.g., Fiss, 2011; García-Castro et al., 2013; Huang & Huarng, 2015; Meuer, Rupietta, & Backes-Gellner, 2015) but also to reinforce grounded theorizing from traditional comparative cross-case studies using qualitative data (Aversa et al., 2015; Bromley, Hwang, & Powell, 2012; Mol & Birkinshaw, 2014). We concur with this future outlook for QCA, in which useful insights may be generated by combining QCA with other methods to enhance our understanding of the complexity of the phenomenon that researchers want to study (Misangyi et al., 2017).

Nevertheless, QCA is still a work in progress. There are facets underlying the process of conducting the research method needing to be developed. For instance, in building the configurational model, it is challenging to account for all the conditions, or at least the most salient ones, that can explain the outcome of interest. This issue is reflected in the fact that there are several published large-N studies even in top management journals showing relatively low overall solution coverage scores, which might suggest that the configurational model is not adequately explaining the outcome. A question that we want to raise is whether it would also be useful to establish a minimum threshold for overall solution coverage scores to minimize alternative explanations.

Moreover, the challenge of data calibration has also persisted as an issue in QCA-based studies. Although QCA scholars have stressed the importance of theoretical and substantive knowledge in data calibration, the use of data-specified calibration techniques (such as percentiles, data distribution, and rank order as thresholds) in published studies in top management journals (e.g., Ganter & Hecker, 2014; Greckhamer, 2016) has deviated from this best practice. This can be attributed to nonexistent qualitative anchors for set memberships, which scholars argue can still be acceptable when conducting QCA provided that researchers are transparent about the calibration decisions (e.g., Greckhamer, 2016; Thiem & Duşa, 2013; Verkuilen, 2005). However, such calibration techniques raise questions about the subjectivity of the thresholds and the sensitivity of the results to slight changes in the calibration decisions. Thus, we still have to ponder how to standardize data calibration, since it is a crucial step in conducting QCA-based studies.

Finally, despite the growth in the application of QCA in several sub-disciplines of management research, there are notable sub-disciplines that are yet to produce QCA-based studies. For instance, we have still not seen studies in operations research, finance or psychology that have adopted QCA. A question that we can raise here is why these sub-disciplines continue to distance themselves from using QCA. It would be a rich ground for future research in these sub-disciplines to explore the neo-configurational approach using QCA.

In conclusion, QCA was developed as a method for empirically examining causal complexity, and eventually emerged as the pillar of the neo-configurational approach.

Although relatively new in management research, with its first application only in the 2000s, QCA has become a promising tool for management scholars. As a result of its infancy as a research method, QCA is not without its limitations; however, the growing scholarly interest in QCA has put pressure on the continuous development and improvement of its application for management research. For this reason, the number of scholars advocating QCA has also increased over the years, and we expect this trend to continue in the future. Because of this outlook, we hope that, although parts of it are prescriptive, this article will contribute to the field, as we offer insights for future scholars who wish to adopt QCA in their research endeavors to enable them to consider a neo-configurational approach and justify the use of QCA.

References

Abbott, A. (1988). Transcending general linear reality. *Sociological Theory*, *6*, 169–186.

Aguilera, R. V., Filatotchev, I., Gospel, H., & Jackson, G. (2008). An organizational approach to comparative corporate governance: Costs, contingencies, and complementarities. *Organization Science*, *19*, 475–492.

Aversa, P., Furnari, S., & Haefliger, S. (2015). Business model configurations and performance: a qualitative comparative analysis in formula one racing, 2005-2013. *Industrial and Corporate Change*, *24*, 655–676.

Baumgartner, M. (2009). Inferring causal complexity. *Sociological Methods and Research*, *38*, 71–101.

Baumgartner, M., & Thiem, A. (2017). Often trusted but never (properly) tested: Evaluating qualitative comparative analysis. *Sociological Methods and Research*. Retrieve from https://doi.org/10.1177/0049124117701487.

Bell, R. G., Filatotchev, I., & Aguilera, R. V. (2014). Corporate governance and investors' perceptions of IPO foreign value: an institutional perspective. *Academy of Management Journal*, *57*, 301–320.

Berg-Schlosser, D., & De Meur, G. (2009). Comparative research design: Case and variable selection. In B. Rihoux, & C. C. Ragin (Eds) *Configurational comparative methods: Qualitative Comparative Analysis (QCA) and related techniques* (pp. 19–32) Thousand Oaks, CA: SAGE Publications.

Bromley, P., Hwang, H., & Powell, W. W. (2012). Decoupling revisited: Common pressures, divergent strategies in the US nonprofit sector. *M@n@gement*, *15*, 469–501.

Campbell, J. T., Sirmon, D. G., & Schijven, M. (2016). Fuzzy logic and the market: a configurational approach to investor perceptions of acquisition announcements. *Academy of Management Journal*, *59*, 163–187.

Corley, K. G., & Gioia, D. A. (2011). Building theory about theory building: What constitutes a theoretical contribution?. *Academy of Management Review*, *36*, 12–32.

Crilly, D. (2011). Predicting stakeholder orientation in the multinational enterprise: a mid-range theory. *Journal of International Business Studies*, *42*, 694–717.

Cronqvist, L., & Berg-Schlosser, D. (2009). Multi-value QCA (mvQCA). In B. Rihoux, & C. C. Ragin (Eds) *Configurational comparative methods: Qualitative Comparative Analysis (QCA) and related techniques* (pp. 69–86) Thousand Oaks, CA: SAGE Publications.

Delbridge, R., & Fiss, P. C. (2013). Editors' comments: Styles of theorizing and the social organization of knowledge. *Academy of Management Review*, *38*, 325–331.

Delery, J. E., & Doty, D. H. (1996). Modes of theorizing in strategic human resource management: Tests of universalistic, contingency, and configurational performance predictions. *Academy of Management Journal*, *39*, 802–835.

Doty, D. H., & Glick, W. H. (1994). Typologies as a unique form of theory building: toward improved understanding and modeling. *The Academy of Management Review*, *19*, 230–251.

Doty, D. H., Glick, W. H., & Huber, G. P. (1993). Fit, equifinality, and organizational effectiveness: a test of two configurational theories. *Academy of Management Journal*, *36*, 1196–1250.

Drazin, R., & Van de Ven, A. H. (1985). Alternative forms of fit in contingency theory. *Administrative Science Quarterly*, *30*, 514–539.

Dwivedi, P., Joshi, A., & Misangyi, V. F. (2018). Gender-inclusive gatekeeping: How (mostly male) predecessors influence the success of female CEOs. *Academy of Management Journal*, *61*, 379–404.

Federo, R. (2019). Qualitative comparative analysis. In F. Badache, E. Dairon, L. Kimber, & L. Maertens (Eds), *Introduction to International Organization Research Methods*, Forthcoming.

Federo, R., & Saz-Carranza, A. (2018a). A configurational analysis of board involvement in intergovernmental organizations. *Corporate Governance: An International Review*, *26*, 414–428.

Federo, R., & Saz-Carranza, A. (2018b). A typology of board design for highly effective monitoring in intergovernmental organizations under the United Nations system. *Regulation & Governance*, https://doi.org/10.1111/rego.12216.

Fiss, P. C. (2007). A set-theoretical approach to organizational configurations. *Academy of Management Review*, *32*, 1180–1198.

Fiss, P. C. (2011). Building better causal theories: a fuzzy set approach to typologies in organization research. *Academy of Management Journal*, *54*, 393–420.

Fiss, P., Marx, A., & Cambré, B. (2013). Configurational theory and methods in organizational research: Introduction. *Research in the Sociology of Organizations*, *38*, 1–22.

Frambach, R. T., Fiss, P. C., & Ingenbleek, P. T. M. (2016). How important is customer orientation for firm performance? A fuzzy set analysis of orientations, strategies, and environments. *Journal of Business Research*, *69*, 1428–1436.

Ganter, A., & Hecker, A. (2014). Configurational paths to organizational innovation: Qualitative comparative analyses of antecedents and contingencies. *Journal of Business Research*, *67*, 1285–1292.

García-Castro, R., & Aguilera, R. V. (2014). Family involvement in business and financial performance: A set-theoretic cross-national inquiry. *Journal of Family Business Strategy*, *5*, 85–96.

García-Castro, R., Aguilera, R. V., & Ariño, M. A. (2013). Bundles of firm corporate governance practices: A fuzzy set analysis. *Corporate Governance: An International Review*, *21*, 390–407.

García-Castro, R., & Casasola, M. J. (2011). A set-theoretic analysis of the components of family involvement in publicly listed and major unlisted firms. *Journal of Family Business Strategy*, *2*, 15–25.

García-Castro, R., & Francoeur, C. (2016). When more is not better: Complementarities, costs and contingencies in stakeholder management. *Strategic Management Journal*, *37*, 406–424.

Grandori, A., & Furnari, S. (2008). A chemistry of organization: Combinatory analysis and design. *Organization Studies*, *29*, 459–485.

Greckhamer, T. (2016). CEO compensation in relation to worker compensation across countries: The configurational impact of country-level institutions. *Strategic Management Journal*, *37*, 793–815.

Greckhamer, T., Furnari, S., Fiss, P. C., & Aguilera, R. V. (2018). Studying configurations with qualitative comparative analysis: Best practices in strategy and organization research. *Strategic Organization*, *16*, 482–495.

Greckhamer, T., Misangyi, V. F., Elms, H., & Lacey, R. (2008). Using qualitative comparative analysis in strategic management research: An examination of combinations of industry, corporate, and business-unit effects. *Organizational Research Methods*, *11*, 695–726.

Greckhamer, T., Misangyi, V. F., & Fiss, P. C. (2013). The two QCAs: From a small-N to a large-N set theoretic approach. In P. C. Fiss, B. Cambré, & A. Marx (Eds) *Configurational theory and*

methods in organizational research (pp. 49–75) Bingley, United Kingdom: Emerald Group Publishing Limited.

Gresov, C., & Drazin, R. (1997). Equifinality: Functional equivalence in organization design. *The Academy of Management Review, 22*, 403–428.

Haxhi, I., & Aguilera, R. V. (2017). An institutional configurational approach to cross-national diversity in corporate governance. *Journal of Management Studies, 54*, 261–303.

Herrmann, A. M., & Cronqvist, L. (2009). When dichotomisation becomes a problem for the analysis of middle-sized datasets. *International Journal of Social Research Methodology, 12*, 33–50.

Huang, C. W., & Huarng, K. H. (2015). Evaluating the performance of biotechnology companies by causal recipes. *Journal of Business Research, 68*, 851–856.

Hug, S. (2012). An MCA of QCA. Working Paper. Université de Genève.

Johansson, T., & Kask, J. (2017). Configurations of business strategy and marketing channels for e-commerce and traditional retail formats: A qualitative comparison analysis (QCA) in sporting goods retailing. *Journal of Retailing and Consumer Services, 34*, 326–333.

Leppänen, P. T., McKenny, A. F., & Short, J. C. (2019). Qualitative comparative analysis in entrepreneurship: Exploring the approach and noting opportunities for the future. In B. Boyd, T. R. Crook, J. K. Le, & A. D. Smith (Eds) *Standing on the shoulders of giants: Traditions and innovations in research methodology* (pp. 155–177) Bingley, United Kingdom: Emerald Publishing Limited.

Lieberson, S. (2004). Comments on the use and utility of QCA. *Qualitative Methods, 2*, 13–14.

Meuer, J., Rupietta, C., & Backes-Gellner, U. (2015). Layers of co-existing innovation systems. *Research Policy, 44*, 888–910.

Meyer, A. D., Tsui, A. S., & Hinings, C. R. (1993). Configurational approaches to organizational analysis. *Academy of Management Journal, 36*, 1175–1195.

Milgrom, P., & Roberts, J. (1992). *Economics, organization and management*, New York, NY: Prentice Hall.

Miller, D., & Friesen, P. H. (1984). A longitudinal study of the corporate life cycle. *Management Science, 30*, 1161–1183.

Misangyi, V. F., Greckhamer, T., Furnari, S., Fiss, P. C., Crilly, D., & Aguilera, R. V. (2017). Embracing causal complexity: The emergence of a neo-configurational perspective. *Journal of Management, 43*, 255–282.

Misangyi, V. F., & Acharya, A. G. (2014). Substitutes or complements? A configurational examination of corporate governance mechanisms. *Academy of Management Journal, 57*, 1681–1705.

Mol, M. J., & Birkinshaw, J. (2014). The role of external involvement in the creation of management innovations. *Organization Studies, 35*, 1287–1312.

Ragin, C. C. (1987). *The comparative method: Moving beyond qualitative and quantitative strategies*, Berkeley, CA: University of CA Press.

Ragin, C. C. (2000). *Fuzzy set social science*, Chicago, IL: University of Chicago Press.

Ragin, C. C. (2008). *Redesigning social inquiry: Fuzzy sets and beyond*, Chicago, IL: University of Chicago Press.

Ragin, C. C., & Fiss, P. C. (2008). Net effects analysis versus configurational analysis: An empirical demonstration. In C. C. Ragin (Ed.) *Redesigning social inquiry: Fuzzy sets and Beyond* (pp. 190–212) Chicago, IL: University of Chicago Press.

Ragin, C. C., & Fiss, P. C. (2017). *Intersectional inequality: race, class, test scores, and poverty*, Chicago, IL: University of Chicago Press.

Ragin, C. C., & Rihoux, B. (2004). Replies to commentators: Reassurances and rebuttals. *Qualitative Methods, 2*, 22–24.

Rediker, K., & Seth, A. (1995). Boards of directors and substitution effects of alternative governance mechanisms. *Strategic Management Journal*, *16*, 85–99.

Rihoux, B., & Ragin, C. C. (2009). *Configurational comparative methods: Qualitative comparative analysis (QCA) and related techniques*, Thousand Oaks, CA: SAGE Publications.

Rihoux, B., Ragin, C. C., Yamasaki, S., & Bol, D. (2009). Conclusions – the way (s) ahead. In B. Rihoux, & C. C. Ragin (Eds) *Configurational comparative methods: Qualitative comparative analysis (QCA) and related techniques* (pp. 167–178) Thousand Oaks, CA: SAGE Publications.

Schneider, C. Q., & Rohlfing, I. (2013). Combining QCA and process tracing in set-theoretic multi-method research. *Sociological Methods and Research*, *42*, 559–597.

Schneider, C. Q., & Wagemann, C. (2012). *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*, Cambridge, MA: Cambridge University Press.

Schneider, M. R., Schulze-Bentrop, C., & Paunescu, M. (2010). Mapping the institutional capital of high-tech firms: A fuzzy-set analysis of capitalist variety and export performance. *Journal of International Business Studies*, *41*, 246–266.

Seawright, J. (2005). Qualitative comparative analysis vis-à-vis regression. *Studies in Comparative International Development*, *40*, 3–26.

Tanner, S. (2014). QCA is of questionable value for policy research. *Policy and Society*, *33*, 287–298.

Thiem, A. (2017). Conducting configurational comparative research with qualitative comparative analysis: A hands-on tutorial for applied evaluation scholars and practitioners. *American Journal of Evaluation*, *38*, 420–433.

Thiem, A., & Duşa, A. (2013). Boolean minimization in social science research: A review of current software for qualitative comparative analysis (QCA). *Social Science Computer Review*, *31*, 505–521.

Tho, N. D., & Trang, N. T. M. (2015). Can knowledge be transferred from business schools to business organizations through in-service training students? SEM and fsQCA findings. *Journal of Business Research*, *68*, 1332–1340.

Van de Ven, A. H., Ganco, M., & Hinings, C. R. (2013). Returning to the frontier of contingency theory of organizational and institutional designs. *Academy of Management Annals*, *7*, 393–440.

Verkuilen, J. (2005). Assigning membership in a fuzzy set analysis. *Sociological Methods & Research*, *33*, 462–496.

Verweij, S., Klijn, E. H., Edelenbos, J., & van Buuren, A. (2013). What makes governance networks work? A fuzzy set qualitative comparative analysis of 14 Dutch spatial planning projects. *Public Administration*, *91*, 1035–1055.

Wagemann, C., Buche, J., & Siewert, M. B. (2016). QCA and business research: Work in progress or a consolidated agenda?. *Journal of Business Research*, *69*, 2531–2540.

Corresponding author

Tobias Coutinho Parente can be contacted at: tobiascoutinho@gmail.com