

Transcending the qualitative-quantitative divide in IS research using QCA as a configurational, comparative approach

1 | INTRODUCTION

In August 2021, we issued a call for papers (CfP) with the aim of bringing together information systems (IS) research that transcends the qualitative-quantitative divide using qualitative comparative analysis (QCA) as a configurational, comparative approach. We received 35 submissions and eventually selected six papers for publication in the special issue (SI). We want to thank the anonymous Reviewers and the SI Associate Editors for their insightful and constructive feedback to the authors and the Scientific Advisors for their invaluable help throughout the peer-reviewing process.

QCA is a burgeoning methodology in IS. A cursory look at the number of publications in the basket of 11 shows that the number of QCA papers is on the rise.¹ With the rising number of QCA papers, it is important to see how the articles published in this SI can contribute to this evolving discourse. Broadly speaking, the studies published in the SI can be categorised along three dimensions:

1. Mode of reasoning: inductive, abductive or deductive (cf. Thomann & Maggetti, 2020);
2. Theoretical approach: theory building, theory extension or theory testing (cf. Zhou et al., 2023);
3. Methodological approach: single method, mixed-methods or multi-methods (cf. Venkatesh et al., 2013; Venkatesh et al., 2016).

Table 1 below categorises the papers published in this SI with regard to their mode of reasoning, theoretical approach, and methodological approach.

2 | MODE OF REASONING

Thus far, QCA studies in IS have primarily followed an abductive reasoning mode. Drawing on Ragin (1987) insight that social science advances most when it entails an iterative dialogue between ideas and evidence (Ragin, 1987), IS scholars have developed configurational propositions (or hypotheses) based on their dialogues between existing theories and empirical evidence. Compared to a purely deductive approach that relies on theoretical logic rather than empirical evidence, IS scholars have used QCA to bridge the gap between theoretical knowledge and empirical evidence. Compared to a purely inductive approach that focuses on empirically grounded knowledge, IS scholars have used QCA to develop middle-range theory often in the form of substantive theory to advance knowledge of IS phenomena in a specific area of inquiry.

¹Please see Huang et al. (2024)'s Appendix E (Table E1) for a recent review of empirical QCA papers published in the basket of 11 Journals.

TABLE 1 Overview of the special issue (SI) papers with regard to their mode of reasoning, theoretical approach, and methodological approach.

Paper	Phenomenon of interest	Mode of reasoning	Theoretical approach	Methodological approach
Huang et al., 2024	Digital disruption	Inductive (exploratory)	Theory building (configurational theory of digital disruption revolving around four industry factors that contingently lead to two different types of digital disruption, namely transformational and destructive digital disruption)	Multi-method, three-stage design (grounded theory method combined with fsQCA in a sequential fashion by using a sample of 21 digitally-disrupted industries to develop a configurational theory of digital disruption and, subsequently, validate it by means of a holdout sample of 33 digitally-disrupted industries)
Ma et al., 2023	Technostress	Deductive (confirmatory)	Theory extension (aimed at identifying and validating moderated configurational relationships)	Single method (theoretical argument and empirical illustration developed by using fsQCA only)
Meier et al., 2023	Telework success	Deductive (confirmatory)	Theory testing (aimed at refining, extending, and delimiting theory by identifying intersections of proposed causal recipes with the empirically identified sufficient configurations)	Mixed-methods approach (fsQCA combined with qualitative analysis of semi-structured interviews in a sequential fashion by conducting two separate studies)
Meier et al., 2024	Chatbot interactions	Abductive (exploratory)	Theory extension (the authors develop propositions about the theoretical mechanisms across and within sufficient configurations)	Mixed-methods (qualitative analysis of semi-structured interviews combined with a follow-up scenario-based study that employed fsQCA)
Soltani Delgosha et al., 2024	Civic crowdfunding platforms	Abductive (exploratory)	Theory extension (middle-range theory of five distinctive configural profiles that display the heterogeneity of civic backers' motivations, including civic champions, prosocial advocates, normative supporters, reward seekers and regret-averse contributors)	Mixed-methods (fsQCA combined with a follow-up, extreme case study aimed at identifying four boundary conditions that are not captured by the fsQCA results, namely, world-view, self-efficacy, social trust, and next-generation needs and sustainability)
Zhang & Ramesh, 2023	Blockchain platforms	Abductive (exploratory)	Theory extension (middle-range theory of ideal types and non-ideal types of governance design elements with respect to generative and evaluative governance engagement)	Single method (fsQCA based on secondary data such as white papers, blogs, and official websites)

More recently, IS scholars have advocated using either deductive or inductive approaches by developing a set of prescriptive guidelines for conducting QCA research (Park et al., 2020). While the deductive approach is based on the intersection between theoretical propositions formulated in Boolean notation and empirically identified configurations, the inductive approach is based on an in-depth understanding of the phenomenon of interest and the ensuing formulation of empirically grounded propositions drawing on previous QCA findings. Drawing on these

prescriptive guidelines, recent IS studies have used the theorised–observed configuration comparison technique to test whether their configurational hypotheses were supported (Sun et al., 2024). For example, Sun et al. (2024) drew on the Technology–Organisation–Environment framework and incorporated strategic orientation as an aspect of decision-making for organisational technology adoption. Their study matched the theorised and observed configurations and outlined four possibilities: ‘when a configuration is theorised and observed, the hypothesis is supported. When a configuration is theorised but not observed, it indicates that the hypothesis is only supported under certain conditions, that is, conditionally supported. When a configuration is not theorised but observed, the hypothesis is rejected and some emergent findings are derived. When a configuration is not theorised nor observed, it is consistent yet irrelevant due to the asymmetry of configurational approaches’ (Ibid, p. 19). By expanding the scope of application of configurational theorising from exploratory to confirmatory research, Sun et al. (2024) have pushed the boundary of QCA methodological knowledge. Notably, they have argued that “the theorization of configurations should contain arguments for the presence or absence of an element, while simultaneously, arguing for the co-presence or absence of other pertinent elements” (Ibid, p. 22), thus setting two principles for hypothesis testing, namely, (1) matching theorised and observed configurations and (2) analysing configuration in anatomical fashion.

A few articles published in this SI join this evolving QCA discourse on the mode of reasoning. Drawing on a mixed-methods study, Meier et al. (2023) use deductive fsQCA to refine, extend, and delimit theory. More specifically, in their paper entitled ‘Cooking a telework theory with causal recipes: Explaining telework success with ICT, work and family related stress,’ they aim to offer novel insights on telework success that relies on the use of ICT at the intersection of work and family lives. They conducted two studies: in study 1, they used a quantitative approach to identify configurations of ICT, work and family-related challenge and hindrance stressors that lead to high or low telework success; in study 2, they used a qualitative approach to shed light on the interplay among ICT, work and family related conditions. By following Park et al. (2020) guidelines, Meier et al. (2023) first developed theoretical propositions in Boolean notation and subsequently conducted fsQCA to identify sufficient configurations of conditions. Then, they intersected the hypothesised theoretical propositions with the empirically identified fsQCA findings to refine, extend, or delimit their theory (cf. Schneider & Wagemann, 2012, pp. 295–305). Lastly, they triangulate their quantitative findings with a follow-up, qualitative study to derive fine-grained insights on the interplay between and among the ICT, work, and family-related challenge and hindrance stressors and develop meta-inferences accordingly. Moving from an opposite direction, in their study entitled ‘A configurational theory of digital disruption,’ Huang et al. (2024) demonstrate the merits of combining grounded theory with QCA to expand the theory-building potential of QCA. Using a multi-methods research design, they first used a grounded theory approach to understand the phenomenon of digital disruption and tease out several drivers of digital disruption. Subsequently, they used a sample of 21 cases of digitally disrupted industries to examine how those drivers might combine into configurations that are sufficient for achieving different types of digital disruption (i.e., transformational digital disruption vs. destructive digital destruction). Lastly, they used a holdout sample of 33 digitally-disrupted industries mainly for a theory testing purpose to conduct another empirical analysis of multiple configurations using QCA. By comparing the results of the two QCAs, they are able to validate their emergent theory, thus showing that satisfying a second empirical evaluation is a key step in rigorous theory development in QCA.

Thus far, many QCA studies have relied on primary data (e.g., data gathered by means of surveys, semi-structured interviews, etc.). It is important to note the merit of unstructured qualitative data in QCA studies (e.g., Nishant & Ravishankar, 2020). Our SI articles show various ways of theorising from unstructured qualitative data using QCA. Specifically, while Huang et al. (2024) use an inductive approach based on a grounded theory approach to analyse secondary data, in their study entitled ‘A configurational perspective on design elements and user governance engagement in blockchain platforms,’ Zhang and Ramesh (2023) use an abductive approach to engage in the dialogue between the blockchain platform literature and secondary data. Despite their use of different modes of reasoning, both studies use QCA on a relatively small sample of cases to make distinctive knowledge contributions in their respective areas of inquiry. Methodologically, both studies can be viewed as case-oriented applications of QCA that are sensitive to the contextual intricacies of the cases under investigation (cf. Thomann &

Maggetti, 2020). Whereas Huang et al. (2024) use a holdout sample to refine their emerging theory of digital disruption, Zhang and Ramesh (2023) instead include negative cases with low generative governance engagement and no evaluative governance engagement to ensure ‘sufficient variance between cases to differentiate the key design elements of blockchain governance, as well as adequate variance in the outcomes’ (Ibid, p. 18). Both studies make significant contributions to their relevant knowledge domains. While Huang et al. (2024) develop a configurational theory of digital disruption that shows how four drivers (i.e., downstream disruption, structural conflict, transferability of core competitive elements, and Industry player size) combine to produce the outcome of transformational or destructive digital transformation, Zhang and Ramesh (2023) ‘identify five key design elements for blockchain platforms, namely, access to decision rights, process visibility, protocol automation, and incentives for developers/miners and incentives for other stakeholders’ (Ibid, p. 30) and show that these factors combine in complex and asymmetric ways to produce different ideal types of blockchain platforms, namely, the centralised incentive model, the impartial incentive model, the automation-driven model (for high generative governance engagement) and the comprehensive model (for high evaluative governance engagement).

3 | THEORETICAL APPROACH

It is worth stressing that neither the quantitative nor the qualitative studies discussed above espouse the philosophical position of interpretivism. Although these studies use a non-interpretivist approach, some studies are exemplars of deductive fsQCA (e.g., Meier et al., 2023), whereas other studies are exemplars of either an abductive (e.g., Zhang & Ramesh, 2023) or inductive theorising approach (e.g., Huang et al., 2024). In particular, Meier et al. (2023) use fsQCA in a confirmatory, theory-testing fashion, whereas Huang et al. (2024) use fsQCA in an exploratory, theory-building manner. Nevertheless, fsQCA can also be used to extend theory (e.g., by introducing new mediators, moderators, and new constructs) or to develop middle-range theories. For example, Zhang and Ramesh (2023) use fsQCA to develop a middle-range theory of user-governance engagement in blockchain platforms. Ma et al.’s (2023) study entitled ‘Theorising moderation in the configurational approach: A guide for identifying and interpreting moderating influences in QCA’ instead develops a new template for theorising moderated configurational relationships in fsQCA. Specifically, they develop a two-stage approach: in the first stage, IS scholars use ‘QCA to achieve primary conjunctural causation without the consideration of the proposed moderator.’ In the second stage, IS scholars ‘include the proposed moderator and run QCA again to examine its influence on primary conjunctural causation by checking how the moderator affects the interdependence among causal factors in causal recipes’ (Ibid, p. 10). Crucially, the two-stage guidelines revolve around three requirements: ‘the first requirement for moderation is that there should be no changes in the causal factors within the causal recipe from the first to the second stage [sic] the second requirement for moderation is that there should be at least one moderated configuration that has change(s) of core/peripheral conditions (i.e., from core to peripheral or from peripheral to core) between the two stages. The third requirement for moderation is that in at least one of the moderated configurations, the moderator should be a core presence condition’ (Ibid, pp. 11–12). This template is subsequently validated by using an illustrative example of technostress. Empirically, Ma et al. (2023) show that ‘the importance of information features and system features in causal recipes varies depending on the level of subjective social support norm’ (Ibid, p. 19), thus opening a new direction for studying the configurational complexity of technostress by highlighting the moderating role of subjective social support norms (i.e., the social environment).

4 | METHODOLOGICAL APPROACH

Two studies stand out in this SI for their methodological approach aimed to develop a more thorough understanding of boundary conditions, namely Meier et al. (2024) and Soltani Delgosha et al. (2024). Meier et al.’s (2024) study

entitled 'Chatbot interactions: How consumption values and disruptive situations influence customers' willingness to interact' is yet another exemplar of abductive theorising breaking new methodological grounds in the study of boundary conditions. This study relies on a mixed-methods approach revolving around two steps: In the first step, Meier et al. (2024) use a qualitative research design and conduct semi-structured interviews ($N = 51$) to identify six values that generally influence willingness to interact with chatbots, irrespective of disruptive situations. In the second step, they integrate a scenario-based study with a quantitative study using fsQCA ($N = 153$) to reveal how a disruptive situation stimulates the relationship between combinations of the identified values and willingness to interact with chatbots. Based on a dialogue between their findings and the theory of consumption values, Meier et al. (2024) develop 'propositions for the theoretical mechanisms across the sufficient configurations and the theoretical mechanisms within the sufficient configurations' (Ibid, p. 3). Accordingly, they 'provide a novel theoretical perspective on how values influence behaviour, suggesting that a configurational perspective is needed to capture the symmetrical and asymmetrical paths that explain behaviour' (Ibid, p. 19). Ultimately, Meier et al. (2024) make a two-fold contributions: theoretically, they 'complement the picture of relevant values for technology interaction by identifying the epistemic value of curiosity as an important driver of willingness to interact with chatbots' (Ibid, p. 20); methodologically, they demonstrate that 'theorising on theoretical mechanisms across sufficient configurations offers insights into important boundary conditions, such as disruptive situations, that shape explanations of complex outcomes' (Ibid, p. 20).

Soltani Delgosha et al. (2024) make another outstanding contribution to the evolving QCA discourse with their mixed-methods study entitled 'A person-centred view of citizen participation in civic crowdfunding platforms: A mixed-methods study of civic backers.' By using a sequential, mixed-methods approach, they integrate their fsQCA findings with the results of an in-depth qualitative study. Accordingly, they discover five distinctive configural profiles that display the heterogeneity of civic backers' motivations first in their quantitative study and subsequently identify four boundary conditions in their follow-up qualitative study. Compared to Meier et al.'s (2024) condition-oriented study, Soltani Delgosha et al.'s (2024) study is a case-oriented exploration of boundary conditions (cf. Thomann & Maggetti, 2020). By conducting an in-depth follow-up study of Spacehive, a successful civic crowdfunding platform in the United Kingdom, Soltani Delgosha et al. (2024) identify four 'boundary conditions of citizens' participating in civic crowdfunding platforms' (Ibid, p. 28) that 'allow for a more accurate representation of the real-world problem of interest and acquiring a holistic understanding of the phenomenon' under investigation (Ibid, p. 29). As well as making a methodological contribution, Soltani Delgosha et al.'s (2024) study contributes to the development of a holistic citizen participation model that 'show[s] that willingness to participate in civic crowdfunding projects depends on a fuzzy set of citizens' relative preferences for the three selective instrumental motives (collective, social, reward), three identity orientations (collective, prosocial, individualistic) and two emotional appraisals (positive and negative)' (Ibid, p. 29).

5 | LOOKING FORWARD

Despite the excellent contributions and the breadth of topics covered in the papers in this SI, there are several issues that we did not cover. Specifically, we did not address strategies dealing with timing and temporality in QCA, nor did we discuss the choice of solutions among various other issues (cf. Park & Mithas, 2020, p. 103 for an overview of outstanding issues in QCA). We would like to highlight a few IS studies that have grappled with such issues. For example, Denford et al. (2022) deployed time-series QCA (ts-QCA) by adding a temporal element to their assessment of governmental characteristics to address wicked problems, thus creating panels of data in successive time periods. Likewise, Iannacci et al. (2023) argued that the (conjunctural) directional expectations informing the intermediate solution should be derived through theory-driven thought experiments if the phenomenon of interest is a mature IS phenomenon. Despite Ragin's (2009) advice that intermediate solutions should be preferred to both parsimonious and complex/conservative solutions, IS scholars have paid scant attention to this advice. For example, Park and

Mithas (2020, p. 92; footnote 11) claim that, in their paper, they do not make any assumptions about directional relationships or “easy counterfactuals”, thus arriving at complex and parsimonious solutions rather than intermediate solutions. Alas, the studies published in this SI echo Park and Mithas' (2020) claim. For example, Zhang and Ramesh (2023), p. 13; footnote 1, argue that they ‘do not assume a directional expectation,’ but rather they recognise that either the presence or absence of each condition may contribute to their outcome of interest. Likewise, Meier et al. (2024, p. 14) report the difference between core and periphery conditions for the ‘sake of transparency,’ but they do not distinguish between them in their theoretical interpretations. Ultimately, on par with Zhang and Ramesh (2023), Meier et al. (2024) arrive at an intermediate solution that matches the complex solution because they do not formulate (conjunctural) directional expectations a priori (see also Soltani Delgosha et al., 2024, p. 14). We believe there is still room for advancing QCA's methodological knowledge. In his ground-breaking book, Ragin (2009, p. 175), explicitly argued that ‘when limited diversity is substantial, complex solutions can be exceedingly intricate because little or no simplification occurs. Likewise, under the same conditions, parsimonious solutions can be unrealistically simple due to the incorporation of many (easy and difficult) counterfactual combinations. Intermediate solutions strike a balance between parsimony and complexity, based on the substantive and theoretical knowledge of the investigator.’ Accordingly, intermediate solutions should be preferred because they are often the most interpretable solutions (see also Thomann & Maggetti, 2020; pp. 377–378).

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