Appendix A: The fsQCA methodology

To familiarize readers with fsQCA, we provide the following comparison table of fsQCA terminologies considered synonymous with terms used in conventional linear modeling techniques like regression analysis. The table was adapted from Olya and Gavilyan (2017, pp. 894). Interested readers can also refer to the technical note by Pappas and Woodside (2021), which offers detailed conceptual differences between fsQCA and regression-based models as well as the basic steps to conduct fsQCA. Further suggested readings include Roig-Tierno, Gonzalez-Cruz, and Llopis-Martinez (2017), which offers an overview of crisp set- and fuzzy set- qualitative comparative analysis (QCA) and Gabriel et al. (2018), which describes fsQCA for individual/micro-level research in management.

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| --- | --- |
| Symmetric/Linear Modeling | Configurational Modeling |
| Independent variable | Antecedent, indicator, condition, ingredient |
| Dependent variable | Outcome variable |
| Measurement | Calibration |
| Correlation matrix | Truth table |
| Net effect | Causal recipes/paths |
| Coefficient of determination | Coverage |
| ‘Effects of causes’ approach | ‘Causes of effects’ approach |
| Correlation | Consistency |
| Correlational relationships | Necessary and/or sufficient relationships  |
| Unifinality | Equifinality |
| Not applicable | Causal complexity/Complex causality: equifinality, asymmetry, conjunction |
| Not applicable | \* represents ‘and’ |
| Not applicable | ~ represents negation (absence) |

fsQCA is a configurational methodology that treats combinations of interdependent variables as cases that lead to an outcome of interest (Fiss, 2007; Marx, Rihoux, & Ragin, 2013). The result of this methodology produces *all* the possible types of combinations that are observed for an outcome variable in a dataset. In the present research, for example, which includes 6 antecedent variables (i.e., 5 five technostress creators and proactive personality), a total of 64 cases or combinations of factors leading to job crafting are possible. And each combination presents a unique path that leads to the outcome variable. So, fsQCA does not test a specific path relationship. Instead, it identifies the multiple causal paths that lead to an outcome as empirically supported by the dataset. Such a lack of emphasis on one specific path makes fsQCA an exploratory methodology and is a reason for not developing formal hypotheses statements. In this regard, this paper is structured similar to previously published fsQCA research papers from several areas of management including personality research (e.g., Khedhaouria & Cucchi, 2019), strategic management (e.g., Greckhamer et al., 2008), family business/entrepreneurship research (e.g., Kosmidou & Ahuja, 2019). Furthermore, comparing fsQCA and regression analysis, Vis (2012, pp. 11) clarified that unlike fsQCA, “… in regression analysis, it is still much more common to test hypotheses ...”.

A key difference between traditional linear methodologies and fsQCA is that the latter attunes to the concept of causal complexity (Greckhamer et al., 2008), the foundations of which include conjunction, equifinality, and asymmetry (Misangyi et al., 2017). Conjunction assumes that an outcome of interest is rarely the result of a single antecedent variable (Meyer, Tsui, & Hinings, 1993). For the present study, conjunction implies that job crafting is neither the behavior generated from technostress creators alone nor displayed by having a proactive personality by itself. Equifinality assumes that there are multiple paths leading to one outcome (Gresov & Drazin, 1997). This is a stark contrast from conventional linear analyses which assume the existence of only one optimal model that fits the data best (i.e., that are based on unifinality). Hence, results obtained using fsQCA are not supplemented by performing additional conventionally employed predominant linear paradigms because regression-based approaches do not adhere to the complex causality and nonlinear relationships that are ingrained in the configurational approach (Pittino, Visintin, & Lauto, 2016). It is also noted that only one outcome is analyzed at a given time in fsQCA due to equifinality. Lastly, fsQCA asymmetry maintains that factors that combine in a certain way in one configuration/path may be entirely unrelated or even inversely related in a different configuration/path (Meyer et al., 1993). Simply put, while conjunctive causality explains combinations through an “AND” approach, equifinality invokes the “OR” approach, and asymmetric causality assumes the absence of attributes (or “NOT” approach) to aid configurational theorizing (Furnari, Crilly, Misangyi, Greckhamer, Fiss, & Aguilera, 2020).

Contrary to regression analysis or structural equation modelling (SEM) which estimate the net effects and interaction effects of independent variables, fsQCA uses Boolean logic to generate all binary combinations of the independent variables that relate to the dependent variable(Kraus, Ribeiro-Soriano, & Schüssler, 2018). The Boolean algebra logic is operationalized either in set-theoretic terms (e.g., subset, superset, intersection) or in logical terms (e.g., necessary and sufficient conditions) (Vis, 2012). These terms are synonymous and often used interchangeably (Ragin, 2008; Schneider & Wagemann, 2010; Vis, 2012). For crisp sets (sets that involve only binary variables), membership in a set is straightforward as a case is either fully in the set or fully out of the set. For example, for gender, a case can take the value of 1 if it is "fully in" (e.g., female) or the value of 0 "fully out" (male).

For fuzzy sets, however, researchers need to consider the varying degrees of membership of each case into a set and use anchor values to determine full membership or non-membership. Thus, a fuzzy set allows cases to get the “fully out” and “fully in” membership values of 0 and 1, respectively, while also allowing values to range between these two extreme points. For instance, the fuzzy set of workers who possess a proactive personality can include some workers who are “fully in” the set (fuzzy membership = 1), some other workers who are “almost fully in” or “more in than out” of the set (fuzzy membership = 0.90), some who are neither "more in" nor "more out" of the set (fuzzy membership = 0.5, also known as the "crossover point"), some who are "barely more out than in" the set (fuzzy membership = 0.45), and so on down to those who are "fully out" of the set (fuzzy membership = 0). Researchers exercise judgement to determine the exact fuzzy membership values to the cases found in a dataset. The procedures followed to assign fuzzy scores must be transparent and clearly communicated by the study researchers. This process of assigning membership values is called *data calibration* and is conducted to transform ordinary data into fuzzy sets (Misangyi & Acharya, 2014). Although calibration in fsQCA resembles the standardization/normalization procedure, fsQCA could include multiple different initial values that end up taking the same fuzzy membership score, whereas in normalization each initial value takes a unique standardized score. In essence, each row imported to the software is a case, and each column should entail a single fuzzy score ranging from 0 to 1 for each variable measured through survey responses to multiple items (Pappas & Woodside, 2021).

 Lastly, even as an exploratory methodology, fsQCA is considered a theoretically combinable construct approach and researchers should provide a theoretical rationale for why the constructs in the model would combine to form configurations. This methodology was developed for small to medium sample sizes (Kraus et al., 2018). The present study’s sample size adheres to those employed in extant fsQCA literature in management.

Appendix B

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| --- | --- | --- | --- |
| Construct and scale items | Mean | S.D. | Factor Loading |
| **Job crafting****Increasing structural job resources** |  |  |  |
| I try to develop my capabilities. | 3.84 | 0.90 | 0.91 |
| I try to develop myself professionally. | 3.72 | 1.04 | 0.80 |
| I try to learn new things at work. | 3.80 | 1.05 | 0.81 |
| I make sure that I use my capacities to the fullest. | 3.82 | 0.94 | 0.76 |
| I decide on my own how I do things. | 3.64 | 0.88 | 0.80 |
| **Decreasing hindering job demands** |  |  |  |
| I make sure that my work is mentally less intense. | 2.71 | 1.09 | 0.56 |
| I try to ensure that my work is emotionally less intense. | 2.97 | 1.17 | 0.74 |
| I manage my work so that I try to minimize contact with people whose problems affect me emotionally. | 2.80 | 1.28 | 0.70 |
| I organize my work so as to minimize contact with people whose expectations are unrealistic. | 2.89 | 1.29 | 0.80 |
| I try to ensure that I do not have to make many difﬁcult decisions at work. | 2.51 | 1.17 | 0.80 |
| I organize my work in such a way to make sure that I do not have to concentrate for too long a period at once. | 2.53 | 1.19 | 0.81 |
| **Increasing social job resources** |  |  |  |
| I ask my supervisor to coach me. | 2.41 | 1.23 | 0.73 |
| I ask whether my supervisor is satisﬁed with my work. | 2.61 | 1.32 | 0.84 |
| I look to my supervisor for inspiration. | 2.70 | 1.32 | 0.85 |
| I ask others for feedback on my job performance. | 2.62 | 1.27 | 0.77 |
| I ask colleagues for advice. | 3.07 | 1.08 | 0.78 |
| **Increasing challenging job demands** |  |  |  |
| When an interesting project comes along, I offer myself proactively as project co-worker. | 3.22 | 1.15 | 0.65 |
| If there are new developments, I am one of the ﬁrst to learn about them and try them out. | 3.05 | 1.16 | 0.65 |
| When there is not much to do at work, I see it as a chance to start new projects. | 2.92 | 1.25 | 0.67 |
| I regularly take on extra tasks even though I do not receive extra salary for them. | 2.76 | 1.22 | 0.73 |
| I try to make my work more challenging by examining the underlying relationships between aspects of my job. | 2.63 | 1.22 | 0.76 |

Appendix B (cont’d)

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| --- | --- | --- | --- |
| Construct and scale items | Mean | S.D. | Factor Loading |
| **ICT-enabled Technostress creators****Work home conflict** |   |   |   |
| Using ICTs blurs boundaries between my job and my home life. | 2.90 | 1.36 | 0.44 |
| Using ICTs for work-related responsibilities creates conflicts with my home responsibilities. | 2.46 | 1.23 | 0.74 |
| I do not get everything done at home because I find myself completing job-related work due to ICTs. | 2.16 | 1.17 | 0.78 |
| **Privacy invasion**I feel uncomfortable that my use of ICTs can be easily monitored. | 2.89 | 1.35 | 0.76 |
| I feel my privacy can be compromised because my activities using ICTs can be traced. | 3.02 | 1.31 | 0.84 |
| I feel my employer could violate my privacy by tracking my activities using ICTs. | 2.91 | 1.36 | 0.89 |
| I feel that my use of ICTs makes it easier to invade my privacy. | 3.22 | 1.28 | 0.82 |
| **Work overload** |   |   |   |
| ICTs create many more requests, problems, or complaints in my job than I would otherwise experience. | 2.62 | 1.26 | 0.88 |
| I feel busy or rushed due to ICTs. | 2.47 | 1.22 | 0.66 |
| I feel pressured due to ICTs.  | 2.50 | 1.26 | 0.77 |
| **Role ambiguity** |   |   |   |
| I am unsure whether I have to deal with ICT problems or with my work activities. | 2.27 | 1.12 | 0.74 |
| I am unsure what to prioritize: dealing with ICT problems or my work activities. | 2.24 | 1.13 | 0.71 |
| I can NOT allocate time properly for my work activities because my time spent on ICT activities varies. | 2.16 | 1.13 | 0.70 |
| Time spent resolving ICT problems takes time away from fulfilling my work responsibilities. | 2.45 | 1.25 | 0.76 |
| **Job insecurity** |   |   |   |
| ICTs will advance to an extent where my present job can be performed by a less skilled individual. | 2.31 | 1.17 | 0.73 |
| I am worried that new ICTs may pose a threat to my job. | 2.08 | 1.18 | 0.68 |
| I believe that ICTs make it easier for other people to perform my work activities. | 2.68 | 1.26 | 0.65 |
| **Proactive personality** |   |   |   |
| I am constantly on the lookout for new ways to improve my life. | 4.04 | 0.80 | 0.60 |
| I feel driven to make a difference in my community, and maybe the world. | 3.70 | 1.05 | 0.70 |
| I tend to let others take the initiative to start new projects. | 2.82 | 1.14 | 0.62 |
| Wherever I have been, I have been a powerful force for constructive change. | 3.35 | 1.04 | 0.65 |
| Appendix B (cont’d) |  |  |  |
| Construct and scale items | Mean | S.D. | Factor Loading |
| I enjoy facing and overcoming obstacles to my ideas. | 3.69 | 0.94 | 0.76 |
| Nothing is more exciting that seeing my ideas turn into reality. | 4.02 | 0.84 | 0.53 |
| If I see something I don’t like, I fix it. | 4.02 | 0.83 | 0.73 |
| No matter what the odds, if I believe in something, I will make it happen. | 3.60 | 0.98 | 0.56 |
| I love being a champion for my ideas, even against others’ opposition. | 3.65 | 0.97 | 0.57 |
| I excel at identifying opportunities. | 3.58 | 1.03 | 0.54 |
| I am always looking for better ways to do things. | 3.94 | 0.89 | 0.74 |
| If I believe in a idea, no obstacle will prevent me from making it happen. | 3.47 | 1.02 | 0.60 |
| I love to change the status quo. | 3.41 | 1.08 | 0.68 |
| When I have a problem, I tackle it head-on. | 3.78 | 0.96 | 0.67 |
| I am great at turning problems into opportunities. | 3.47 | 1.03 | 0.48 |
| I can spot a good opportunity long before others can. | 3.25 | 1.06 | 0.72 |
| If I see someone in trouble, I help out in any way I can. | 3.99 | 0.91 | 0.76 |