PUBLIC MANAGEMENT REVIEW
https://doi.org/10.1080/14719037.2024.2436614

Turning rejection into adoption: enhancing the uptake of externally developed design proposals through boundary spanning

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ABSTRACT

Public organizations increasingly apply design approaches from the creative disciplines. Generally, they do this in isolation from their daily activities. Consequently, the resulting design proposals are rarely adopted. Using Fuzzy-set Qualitative Comparative Analysis on 14 cases, we investigated whether team boundary spanning activities – i.e. *representation, coordination of task performance, general information search* - enhance adoption. Adoption occurs when representation and coordination of task performance are combined. Vice versa, adoption fails when coordination of task performance is absent. Four specific team boundary spanning activities seem particularly effective: building partnerships, organizing events, branding the project, and jointly reframing the issue at hand.

ARTICLE HISTORY Received 10 January 2024; Accepted 24 November 2024

KEYWORDS Public sector design; boundary spanning; innovation adoption; fuzzy-set qualitative comparative analysis

Introduction

As societal issues continue to escalate in complexity and urgency, there is a growing awareness that traditional, 'old' design approaches are no longer sufficient to effectively address public issues (Harris and Albury 2009). These design approaches are deemed too technocratic, knowledge-driven, reductionist, and linear (Turnbull 2018), thereby not only neglecting the complexity of public issues but also the everyday realities of citizens (Bason 2010). Accordingly, the call for more innovative, open, collaborative, iterative, and participatory design approaches is rising (Geuijen et al. 2017; Osborne 2018; Sørensen and Torfing 2011).

In light of this, design approaches from the creative disciplines, such as design thinking, service design, social design, and systemic design have gained considerable interest in the public sector (Bason 2016; Junginger 2017; van Buuren et al., 2023). Public organizations around the world are increasingly appropriating these 'new' design approaches to address public issues (Ansell and Torfing 2014). On paper, there are good reasons for this. These

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'new' design approaches are generally characterized as human-centred, collaborative, creative, experimental, and iterative (Hermus, van Buuren, and Bekkers 2020). Compared to 'old' design approaches, 'new' design approaches are thus claimed to be better suited to address present day's wicked problems and meet citizen needs, resulting in design proposals that are more innovative, responsive, and effective (Bason 2010; von Thienen, Meinel, and Nicolai 2014). In practice, however, the promise of these approaches is markedly difficult to realize (Blomkamp, 2018; Matthews et al. 2023).

Introducing 'new' design approaches in a public sector context is far from easy (Bason 2017). Established design practices, cultures, and structures in public organizations often obstruct their effective application (Bason and Austin 2021; Lewis, McGann, and Blomkamp 2020). Therefore, these approaches are generally applied in a 'dedicated safe space' detached from the day-to-day activities of public organizations (Carstensen and Bason 2012). Hiring external design agencies (Sangiorgi 2015) or setting up public sector innovation labs (McGann, Blomkamp, and Lewis 2018) are common ways to do so. This enables public organizations to apply these 'new' design approaches unhindered by established 'design legacies' (Lewis 2021). However, this way of applying these 'new' approaches is often criticized. The main concern is that design proposals that are designed within such 'dedicated safe spaces' run the risk of not seeing the light of day (Komatsu et al. 2021; McGann, Blomkamp, and Lewis 2018; Mulgan 2014). Evidence shows that many design proposals indeed end up being neglected or rejected rather than adopted (Lewis 2021; Villa Alvarez, Auricchio, and Mortati 2022).

The crucial role and activities of boundary spanning individuals – e.g. knowledge brokers, change agents, innovation champions, and opinion leaders – in fostering the adoption of innovations is often emphasized (Haas 2015; Neal, Posner, and Brutzman 2023; Rogers 2003). However, given the collaborative nature of 'new' design approaches, boundary spanning activities (BSAs) to promote adoption are often undertaken by teams rather than individuals. Thus far, research that investigates if and how team-level boundary spanning activities (TBSAs) may foster the adoption of innovations is limited. In this study, we thus applied Fuzzy set Qualitative Comparative Analysis (FsQCA) on a set of 14 cases and examined (1) whether TBSAs contribute to the adoption of design proposals, and (2) what combinations of TBSAs lead to adoption. Accordingly, we enhance our understanding of ways to increase the impact of 'new' design approaches on public issues.

In the next section, we delve into why 'new' design approaches are often confined to a 'dedicated safe space' and how this causes adoption issues. In turn, we suggest that these issues may be dealt with by engaging in TBSAs. Next, we elaborate on the research method to fulfil our research aim. We provide further details on the 14 cases and how we applied FsQCA to analyse them. Subsequently, we present our research findings, supported by detailed descriptions of observations from the cases. We will conclude with a reflection on the relevance and limitations of this research, as well as a future research agenda.

Theoretical framework

Issues when applying 'new' design approaches

Many authors have pointed out that 'old' and 'new' design approaches follow a distinct logic. 'old' design approaches are predominantly knowledge-driven and evidence-based and thus often referred to as 'rational-instrumental' or 'informational', whereas 'new' design approaches are primarily creativity-driven and empathy-based and therefore commonly referred to as 'creative-purposive' or 'inspirational' (Clarke and Craft 2018; Hermus, van Buuren, and Bekkers 2020). Both approaches are also said to thrive in a different organizational environment; 'old' design approaches do well in mechanistic – i.e. hierarchical, formal, siloed – organizations, while 'new' design approaches do well in organic – i.e. horizontal, informal, collaborative – organizations (Bason and Austin 2021; Brinkman et al. 2023).

In most public organizations, the 'old' ways of working and organizing are firmly established; they have become 'design legacies' (Junginger 2015). And therein lies the rub. Public organizations are not used to, nor set up for 'new' design approaches and therefore often face difficulties applying them (Bason 2017). Misunderstandings, misappraisals, and misalignments are commonplace (Pirinen et al. 2022). As a result, 'new' design approaches are frequently met with resistance or even rejection (Elsbach and Stigliani 2018). Schaminée (2018) goes as far as to say that public organizations tend to have a 'near-allergic' reaction to these approaches.

Creating adoption problems by preventing application issues

To avoid 'near-allergic' reactions, public organizations often resort to structural separation; they apply 'new' design approaches in a 'dedicated safe space' detached from the day-to-day activities of the organization (Carstensen and Bason 2012). For example, by hiring external design agencies (Sangiorgi 2015), or setting up a public sector innovation lab (McGann, Blomkamp, and Lewis 2018). This, however, comes with significant tradeoffs. The 'dedicated safe spaces' are usually neglected and end up as 'islands of experimentation' (Tõnurist, Kattel, and Lember 2017). Consequently, the resulting design proposals are often not deemed credible by, nor compatible with the rest of the organization (Rauth, Carlgren, and Elmquist 2014). They struggle to gain acceptance and support from the decision-makers (Lewis 2021), who often suffer from a 'not-invented-here syndrome' (Antons & Piller, 2015). As a result, many proposals end up not being used or even rejected (Lewis 2021; Villa Alvarez, Auricchio, and Mortati 2022). Structural separation thus appears to be a poor strategy for applying 'new' design approaches in a context that is not used to, nor set up for this.

Team boundary spanning to support adoption

Because of the high likelihood of 'near-allergic' reactions, it is equally understandable that practitioners resort to the strategy of structural separation. Structural separation, however, should be accompanied with connective efforts (O'Reilly and Tushman 2013; Raisch and Birkinshaw 2008; Turner et al., 2013). Connective efforts may reduce the risk of marginalization and increase the likelihood of the adoption of innovation (Aarons, Hurlburt, and Horwitz 2011; Greenhalgh et al. 2004). Literature on innovation adoption – i.e. the decision to make use of an innovation (Tornatzky and Klein 1982) – suggests that BSAs can be of great help in this regard (Krogh 2024; Qu and Liu 2021; van Osch, Steinfield, and Zhao 2016). Specifically, the crucial role and activities of boundary spanning individuals – e.g. knowledge brokers, change agents, innovation champions, and opinion leaders – in fostering the adoption of innovations is often emphasized (Haas 2015; Neal, Posner, and Brutzman 2023; Rogers 2003). However, in practice, we see that the actors involved in design projects usually work closely together to secure the uptake of their design proposals. These observations reflect the more general notion that public sector innovation is becoming increasingly collaborative (Torfing 2019), and so is boundary spanning (van der Voet and Steijn 2021). Accordingly, it is suggested to study the adoption of innovations from the perspective of *team boundary spanning* (van Knippenberg 2017).

Team boundary spanning refers to a team's efforts to establish productive interactions with actors external to the team itself (Ancona and Caldwell 1992). Three types of TBSAs are generally distinguished: *representation*, *coordination of task performance*, and *general information search* (Carbonell and Rodriguez Escudero 2023; Marrone 2010; van Osch, Steinfield, and Zhao 2016). *Representation* activities revolve around establishing a good reputation in order to enhance legitimacy, obtain support for decisions, and gain additional resources (van Osch, Steinfield, and Zhao 2016). Typically, these activities are aimed at decision-makers (Ancona and Caldwell 1992). *Coordination of task performance* activities include efforts aimed at synchronizing work with other actors within or outside the organization and thereby increase compatibility and acceptance, enhance mutual effectiveness, and improve innovation (Mohrman, Cohen, and Morhman 1995). These activities are generally aimed at actors working on the same or a related issue (van Osch, Steinfield, and Zhao 2016). *General information search* involves seeking information relevant to the project in order to gain problem- or solution-specific knowledge as well as a better understanding of the general environment within which the team is operating (Marrone 2010). These activities are aimed at actors with relevant knowledge and expertise (Ancona and Caldwell 1992).

As can be seen, each type of TBSA targets specific actors and serves a distinct purpose in fostering productive interactions. These activities thus affect the adoption of design proposals differently. Leadership support is widely recognized as crucial for adoption (Aarons, Hurlburt, and Horwitz 2011; Greenhalgh et al. 2004; Wisdom et al. 2014), especially in the public sector where political priorities determine the activities of public organizations to a large extent (Rhodes and Wanna 2009). Political support is essential for securing resources and overcoming resistance from other external actors (Torfing and Ansell 2017). Thus, we expect that representation activities are vital for securing the uptake of design proposals. However, we do not expect that representation activities alone will lead to adoption; actors involved in the proposal's implementation must be sufficiently prepared (Aarons, Hurlburt, and Horwitz 2011), requiring coordination and general information search activities as well. Conversely, we expect that absence of representation activities can be fatal for adoption, regardless of whether coordination and general information search activities are undertaken. Accordingly, we hypothesize that:

(1) Representation activities are necessary for the adoption of design proposals;
(2) All three TBSAs are sufficient for the adoption of design proposals;
(3) Absence of representation activities is both necessary and sufficient for the non-adoption of design proposals.

As such, we expect that the relationship between TBSAs and adoption is characterized by *conjunctural causation* (i.e. adoption results from a combination of all three TBSAs) and *asymmetry* (i.e. the combination of causal conditions driving non-adoption is not the same as the inverse of the combination of causal conditions driving adoption). In addition, while this would contradict our hypotheses we do recognize the possibility of *equifinality* (i.e. (non-)adoption may result from different combinations of TBSAs). In other words, we assume that the relationship between TBSAs and adoption is causally complex.

Method

This study aims to investigate whether *representation*, *coordination of task performance*, and *general information search* activities are important for the adoption of design proposals and which combinations of activities lead to adoption. To this end, we applied FsQCA to a selection of 14 cases.

Fuzzy-set qualitative comparative analysis

FsQCA is a research method in which a Qualitative Comparative Analysis (QCA) is applied to a fuzzy set. It was designed by Charles Ragin to enable an in-depth analysis of causally complex relationships (Ragin 1987, 2000). It systematically compares cases based on the degree to which they exhibit certain causal conditions and an associated outcome (Ragin 2000). Accordingly, it reveals which conditions are consistently present when the outcome occurs (i.e. *necessary* conditions) and which combinations of conditions lead to the outcome (i.e. *sufficient* conditions) (Ragin 1987). By identifying these patterns, FsQCA essentially unravels causal complexity in terms of conjunctural causation, equifinality, and asymmetry (Schneider and Wagemann 2012). As such, it is particularly well-suited for the purpose of this study, in which we consider the three TBSAs as causal conditions and the adoption of a design proposal as the associated outcome.

Case selection

In total, we selected 14 cases for this study (see Table 1 below for an overview). This sample size enabled us to conduct the FsQCA with sufficient analytical power, while also allowing for an in-depth examination of each case to ensure qualitative richness. To investigate the relationship between TBSAs and the adoption of design proposals using FsQCA, we selected cases according to the following criteria:

(1) It involved the planning and execution of a design project to come up with a design proposal (i.e. a strategy, service, policy, or product) to address a public issue;
(2) To come up with a design proposal, 'new' design approaches were applied;
(3) The project was planned and executed by an externally hired design team that was structurally separated from the commissioning organization;
(4) The project was recently completed and well-documented;
(5) Throughout the project, different TBSAs were undertaken;
(6) The different projects resulted in different degrees of adoption.

Fuzzy set membership categorization

A fuzzy set depicts the degree to which causal conditions and their associated outcome are present in each case. This is done by assigning fuzzy set membership scores to each case, allowing for a systematic comparison of cases using QCA. To assign fuzzy set membership scores to each case, we first defined membership categories. In this study, we used a four-value categorization. This means that we defined the presence of the three TBSAs as well as the adoption of design proposals according to four degrees, depicted by the scores 0, 0.33, 0.66, 1 (see Table 2 below).

Table 1. Case study overview.

Case Title	Country	Government Level	Domain	Year	Description	Number of participants interviewed
Citizen's House	Denmark	Local	Culture	2015–2016	Design of concepts for a citizen-centred community centre.	4
Future Mobility in Rural Areas	Denmark	Local	Mobility	2018–2019	Design of concepts to enhance mobility in rural areas.	4
Smart Greater Copenhagen	Denmark	Regional	Technology	2017–2018	Design of a strategy to support technological innovations.	3
Innovation Strategy for the Capital Region	Denmark	Regional	Healthcare	2016–2017	Design of a strategy to enhance innovation capabilities.	4
From Projects to Platforms	International	International	Innovation	2018	Design of a toolkit for a platform-based approach.	3
Buurbouw	The Netherlands	Local	Infrastructure	2014–2015	Design of a neighbourhood initiative platform.	7
Extreem Weer	The Netherlands	Regional	Climate	2017–2019	Design of concepts for climate adaptation.	6
Aardgasvrije Wijken	The Netherlands	National	Energy	2018–2020	Design of concepts for the energy transition.	5
Landbouw Innovatie Campus	The Netherlands	Regional	Agriculture	2016–2017	Design of an agriculture innovation campus.	4
Bewonersinitiatief Kreekrugpad	The Netherlands	Local	Urban planning	2017–2019	Design a citizen-initiated plan for a local park.	4
Verbinding Tussen Landbouw en Natuur	The Netherlands	National	Agriculture	2020	Design of frames to reconnect agriculture and nature.	6
Fit to Serve	International	International	Energy	2016–2021	Design of a strategy to support the transition towards service-driven business models.	3
Doortrappen	The Netherlands	National	Mobility	2015–2019	Design of a programme to support safe cycling behaviour of elderly people.	4
Veilig Blijven Rijden	The Netherlands	National	Mobility	2016–2017	Design of a programme to support safe driving behaviour of elderly people.	6

Table 2. A four-value fuzzy set.

Fuzzy score	Meaning
0	The condition/outcome is fully absent.
0.33	The condition/outcome is largely absent.
0.66	The condition/outcome is largely present.
1	The condition/outcome is fully present.

It is important to note here that we defined the fuzzy set membership categories of the three TBSAs according to their observable *results*, not *actions*. The main reason for this is that each type of TBSA encompasses various possible actions that can combine in different ways. For example, representation activities include actions such as presenting at meetings, attending networking events, branding the proposal, lobbying for resources, and setting up an exhibition. Defining four fuzzy set membership categories based on actions would thus require a suitable approach to aggregate them. While several aggregation approaches could be considered – such as additive, weighted, or configurational aggregation – there is limited knowledge about the wide range of possible actions and their complex interplay, which is necessary to determine the most suitable approach. Accordingly, we decided to focus on the results of TBSAs. This enabled us to define membership categories – and later on assign case membership scores – in a straightforward and theoretically grounded manner. However, this approach bears the risk of obscuring how the different TBSAs interactively contribute to adoption and thereby misattributing causal conditions to outcomes. To mitigate this, we rigorously examined our data both before and after our analysis, ensuring that the results were supported by case evidence.

Condition 1: representation activities

To reiterate, representation activities are focused on the decision-makers, with the goal of obtaining their support and commitment (Marrone 2010). However, this goal may not always be achieved. Sometimes representation activities merely result in enhanced awareness among decision-makers (van Osch, Steinfield, and Zhao 2016), or even lead to their disapproval (Kislov, Hyde, and McDonald 2017). Other times, representation activities may not lead to any visibility; because they are not effective, or because the aim is to stay under the radar of decision-makers (Brinkman et al. 2023). Accordingly, we defined the fuzzy set membership categories for this condition as follows: 0 = disapproval, 0.33 = limited visibility, 0.66 = awareness, and 1 = support.

Condition 2: coordination of task performance activities

As described earlier, coordination of task performance activities target external actors that work on the same or a related issue and aim at synchronizing work with these actors (van Osch, Steinfield, and Zhao 2016). Synchronization is often defined along a continuum between fragmentation and integration (Keast, Brown, and Mandell 2007; McNamara 2012). At the fragmented end, coordination of task performance activities are ineffective or absent. The design team and external actors are unaware of each other's activities, and may therefore compete with or counteract one another. Further along the continuum, there is compatibility. The team and external actors are aware of one another's plans and activities so that conflict can be prevented. Next, there is alignment; plans and activities are mutually adjusted in order to better realize common goals. Finally, at the integrated end, boundaries blur as the team and external actors work closely together to achieve shared goals. Based on this, we defined the membership categories for coordination of task performance as follows: 0 = detachment, 0.33 = compatibility, 0.66 = alignment, 1 = integration.

Condition 3: general information search activities

As explained, general information search activities target actors with relevant knowledge and expertise to acquire knowledge about the problem or solution at hand (Marrone 2010). Contrary to what the term 'general information search activities' suggests, this type of TBSAs involves more than knowledge gathering. Effective knowledge acquisition hinges on mutual understanding between knowledge recipients and sources (Cummings and Teng 2003; Tortoriello, Reagans, and McEvily 2012). This often involves joint sensemaking and mutual learning (Gasson 2005). As knowledge is shared, interpreted, translated, and combined, perspectives on the issue at hand change; the recipients and sources may not only come to understand each other better, they may come to align their perspectives, or develop a new integrated perspective (Johri 2008; Meyer 2010; Mitchell and Nicholas 2006). Correspondingly, we established fuzzy set membership categories for general information search activities as follows: 0 = no mutual understanding, 0.33 = mutual understanding, 0.66 = perspective alignment, 1 = perspective synthesis.

Outcome: adoption of the design proposal

Adoption – in this study the decision to make use of a design proposal – is often presented as a matter of acceptance or rejection (Frambach and Schillewaert 2002; Rogers 2003). There is, however, also a middle way: partial adoption (Wisdom et al. 2014). For example, the design proposal may be partially changed, or only elements of the proposal are adopted. Moreover, rather than the proposal itself, the insights, learnings, and ideas behind the proposal may be used as the basis for further work. Accordingly, we defined the following membership categories for adoption: 0 = no adoption, 0.33 = indirect adoption, 0.66 = partial adoption, 1 = full adoption.

Table 3 below gives an overview of the fuzzy set categories that we defined for the conditions and outcome in this study.

Data collection

Based on Galletta (2013), we conducted semi-structured interviews with the key actors involved in the design projects. This included designers, civil servants, politicians, and employees from stakeholder organizations. At least three actors per case were interviewed, totalling 57 respondents. In the semi-structured interviews we asked questions to better understand the project (background, context, process, timelines, etc.), as well as the phenomenon we wanted to study (i.e. the different TBSAs undertaken, their effectiveness, and the extent to which the designed proposals had been adopted).

In each case, documentation of the design project was provided as well. This included contracts, plans, presentations, and intermediary and final reports, which were used to inform the interviews and the assignment of scores for each case.

Table 3. Overview of fuzzy set membership categories of the conditions and outcome.

	Condition 1: Representation	Condition 2: Coordination of task performance	Condition 3: General information search	Outcome: Adoption
1 = fully in the set	The project team attracted support from decision-makers.	The project team and external actors integrated their work.	The project team and external actors created a new joint perspective.	The design proposal was fully adopted.
0.66 = mostly in the set	The project team raised awareness among decision-makers.	The project team and external actors aligned their respective plans and activities.	The project team and external actors aligned their perspectives.	The design proposal was partially adopted.
0.33 = almost out of the set	The project team gained limited visibility among decision-makers.	The project team and external actors ensured compatibility between each other's plans and activities.	The project team and external actors established mutual understanding.	The design proposal was indirectly used in other work.
0 = fully out of the set	The project team faced disapproval from decision-makers.	The project team remained detached from external actors.	The project team and external actors exchanged information but did not establish mutual understanding.	The design proposal was not used in any way.

Fuzzy set calibration

The interviews were fully transcribed, and a thematic analysis was conducted, following the steps described by Braun and Clarke (2006). In two rounds, we coded the data deductively, using the different fuzzy set membership categories, and assigned scores to cases. In our thematic analysis, we looked for indicators related to the different membership categories that we defined (regarding representation activities, participants mentioned, for example, *'gaining support'*, *'generating enthusiasm'*, *'getting approval'*, '*creating visibility'*). In turn, we matched the responses of the participants with these categories. Based on this, we compared responses and determined the scores for the different conditions and outcomes in each case. The thematic analysis was conducted by the first author. To prevent misinterpretation and enhance reliability, the assignment of scores was done in dialogue between all authors.

The raw data matrix that resulted from the first round of calibration can be found in Table A1 in Appendix A. In this first round, we encountered two problems:

(1) Our initially defined fuzzy set membership categories did not sufficiently cover the range of possible results of TBSAs. For example, in the initial categorization, we regarded limited visibility as the lowest level of representation activities, whereas some of the participants mentioned that they gained disapproval as well. Accordingly, we refined our fuzzy set membership categories.

(2) We observed that over the course of the design projects, different TBSAs were undertaken with different results and lastingness. Some of these results lasted until the end of the project (for example, a new perspective that was jointly created), some of these did not last (for example, collaborations that were

initially set up but phased out later on), and some of these seemed to accumulate throughout the project (for example, the support that was attracted by repeatedly showcasing the project). We thus had to agree on an appropriate moment in the project to base our scores on. To investigate the relationship between TBSAs and adoption, we agreed that this was the moment of adoption itself, by the end of the project.

With the refined membership categorization, and clear anchor point for assigning scores, we did a second round of thematic analysis and scoring. In this round, the categorization proved to be a better fit with the empirics. In addition, the chosen anchor point enabled us to assign scores consistently across the different cases. This resulted in the raw data matrix that we used for our FsQCA, as shown in Table 4 below.

Data analysis

To conduct the FsQCA, we used FsQCA version 4.1[1] developed by Charles Ragin and Sean Davey. We analysed necessary conditions first, followed by an analysis of sufficient conditions. This is good practice, as it ensures that no wrong conclusions are made based on the analysis of sufficient conditions (Schneider and Wagemann 2012).

To be able to conduct our sufficiency analysis, we first constructed a truth table. A truth table shows how many cases belong to the different possible combinations of conditions. Each row in the table represents a different combination, which is depicted by 0s and 1s – i.e. the absence or presence of the condition, respectively. Based on the fuzzy set scores it can be determined to which combination each case belongs. To illustrate, we scored *Citizen's House* 0.66 on representation, 0.33 on coordination of task performance, and 0.66 on general information search. This case best fits the combination 1 for representation, 0 for coordination of task performance, and 1 for

Table 4. Raw data matrix for our FsQCA.

Case	Representation	Coordination of task performance	General information search	Adoption of the design proposal
Citizen's House	0.66	0.33	0.66	0.33
Future Mobility in Rural Areas	1	0.66	0.66	0.66
Smart Greater Copenhagen	0.66	0	0.66	0.33
Innovation Strategy for the Capital Region	0.33	0	0.33	0
From Projects to Platforms	0.33	0	1	0.33
Buurbouw	1	0.66	0.66	1
Extreem Weer	0.66	0	1	0.33
Aardgasvrije Wijken	1	1	1	0.66
Landbouw Innovatie Campus	0.66	0.33	0.66	0.33
Bewonersinitiatief Kreekrugpad	0	0	0	0
Verbinding Tussen Landbouw en Natuur	1	1	0.66	0.66
Fit to Serve	0.66	0	0	0.33
Doortrappen	1	0.66	1	1
Veilig Blijven Rijden	0.66	0.66	0.33	0.66

general information search. Accordingly, it is assigned to that row. The truth table formed the basis for subsequent analysis of sufficient conditions.

To assess the impact of our assumptions, we ran the sufficiency analysis with and without the directional expectations as per our hypotheses. Given the relatively small sample size, we set the frequency threshold to 1, meaning that we included combinations of conditions that were observed in at least one case.

Two parameters were important in evaluating the outcomes of our analyses: *consistency* and *coverage*. Consistency signifies the extent to which a (combination of) condition(s) consistently leads to a certain outcome. Coverage indicates the extent to which an observed (combination of) condition(s) is empirically relevant – i.e. 'how much' of the outcome is explained by the (combination of) condition(s). In this study, we set a consistency threshold for necessity of 0.9, as recommended by Schneider and Wagemann (2012). This means that we only considered conditions that score 0.9 or higher on consistency as necessary. Regarding sufficiency, we set a consistency threshold of 0.85. We started off with the minimum consistency threshold of 0.75 that is recommended by Schneider and Wagemann (2012) and conducted our analysis by increasing the consistency threshold with incremental steps of 0.1 to come to this consistency threshold (see Appendix B, Table B1 and Table B2 for the results of these analyses). The idea of this was to eliminate inconsistencies, check for sensitivity, enhance robustness, and strike a balance between high consistency and sufficient coverage. Higher consistency generally means lower coverage and thus the possibility of excluding interesting cases. We did not encounter model ambiguity or contradictions in this process.

In the next section, we will present the outcomes of the analyses, accompanied by detailed descriptions of the case evidence that underpins our analyses.

Findings

This section is divided into two parts. First, we will investigate the necessary and sufficient conditions for adoption. Next, we will examine the necessary and sufficient conditions for non-adoption. There are two reasons for analysing both outcomes: (1) to explore potential asymmetry, as the necessary and sufficient conditions for non-adoption may not be the inverse of those for adoption, and (2) to gain distinctive lessons from observed patterns for both adoption and non-adoption. Regarding the outcomes of the sufficiency analyses, we will present the intermediate solutions – i.e. the solutions that came out of the analysis in which plausible logical remainders were included. This is generally preferred as this balances parsimony and complexity (Schneider and Wagemann 2012).

Necessary and sufficient conditions for adoption

Necessary conditions

In the analysis of necessary conditions, we examined which of the three TBSAs were consistently present or absent when the design proposal was adopted. Table 5 below shows the outcome of this analysis.

As explained, we only consider conditions with 0.9 or higher on consistency necessary. This is the case for representation activities (consistency of 1), meaning that when a design proposal is adopted, representation activities are consistently present. This is in line with our first hypothesis. The high consistency value of this condition suggests a very strong link

Table 5. Necessity analysis for adoption.

	Adoption	
	Consistency	Coverage
Representation	**1.00**	0.69
~Representation	0.35	0.53
Coordination	0.70	0.87
~Coordination	0.50	0.38
Information	0.85	0.65
~Information	0.45	0.56

between representation activities and adoption. In Table 4 above, it can indeed be seen that all cases that score high on adoption also score high on representation activities. At the same time, there are cases that score high on representation activities but lower on adoption (e.g *Citizen's House, Smart Greater Copenhagen, Extreem Weer*). Apparently, representation activities are core in explaining adoption, however representation activities alone are not enough.

Sufficient conditions

After conducting the analysis for necessary conditions, we conducted an analysis of sufficient conditions. We first constructed the truth table, which is shown in Table 6 below.

As mentioned, we applied a consistency threshold of 0.85 to identify sufficient conditions, meaning that we only included the upper two truth table rows in the analysis. The analysis illuminated one path towards adoption, namely: the presence of representation and coordination of task performance activities. Diagram 1 below depicts this path. According to our analysis, the second hypothesis was too conservative. It stated that all three TBSAs were needed for adoption, but we found that representation and coordination of task performance activities are sufficient, regardless of whether general information search activities are present.

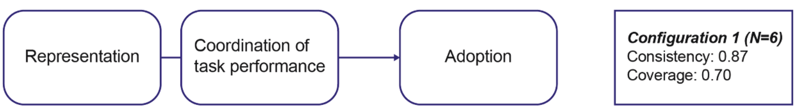

Diagram 1. Sufficient conditions for adoption

When we looked into the specific TBSAs that were undertaken in the cases in which this path was observed, we found that certain TBSAs can serve multiple boundary spanning purposes at the same time. Specifically, we identified four distinct TBSAs that contribute to both representation and coordination of task performance, namely building partnerships, organizing events, branding the project, and reframing the issue at hand. These specific TBSAs may thus be particularly helpful in fostering adoption. In many cases, these TBSAs were combined. Each specific TBSA will be discussed below.

In all cases local partners and civil servants from different parts of the organization were brought together to set up local partnerships and make plans for implementing the design proposals. In *Verbinding Tussen Landbouw en Natuur*, the project team remained in place after the project to coordinate the local partnerships in their efforts to implement the design proposal. In *Doortrappen, Aardgasvrije Wijken, Future Mobility in Rural Areas, Buurbouw*, and *Veilig*

Table 6. Truth table for the adoption of design proposals.

Representation	Coordination	Information	Adoption	# of cases	Cases	Raw Consistency	PRI Consistency
1	1	0	1	1	Veilig Blijven Rijden	1	1
1	1	1	1	5	Future Moblity in Rural Areas, Buurbouw, Aardgasvrije Wijken, Verbinding Tussen Landbouw en Natuur, Doortrappen	0.93	0.87
1	0	0	0	1	Fit to Serve	0.77	0.33
0	0	1	0	1	From Projects to Platforms	0.74	0
1	0	1	0	4	Citizen’s House, Smart Greater Copenhagen, Extreem Weer, Landbouw Innovatie Campus	0.65	0.29
0	0	0	0	2	Innovation Strategy in the Capital Region, Bewonersinitiatief Kreekrugpad	0.49	0
0	1	1	Logical remainder	0	-	-	-
0	1	0	Logical remainder	0	-	-	-

Blijven Rijden the project teams were not involved in the implementation phase anymore. In these cases, the project teams smartly leveraged locally available capabilities, networks, resources, and traction to establish partnerships between actors that were already active in the community and that were both willing and able to jointly implement the design proposal according to the way they saw fit. Building partnerships also helped gain access to a much larger network, generate visibility, and obtain support, thereby not only serving coordination of task performance purposes but representation purposes as well.

In *Future Mobility in Rural Areas, Buurbouw, Aardgasvrije Wijken, Verbinding Tussen Landbouw en Natuur*, and *Doortrappen* all kinds of events were organized to generate visibility for the project. This included both public and more exclusive kick-offs, launches, congresses, design days, festivals, and award shows. For example, *Doortrappen* organized the 'golden pedal' awards for the oldest cyclist in The Netherlands. Because of these events, *Doortrappen* and *Buurbouw* even gained media attention. These events were often used to put the decision-makers in the spotlight as well, offering them the opportunity to gain credits for the innovative work that was done in the project. In turn, this helped obtain their commitment. Moreover, these events provided platforms to connect with others, set up collaborations, and engage in joint sensemaking. Accordingly, organizing events has the potential to serve all three boundary spanning purposes.

In *Doortrappen, Aardgasvrije Wijken*, and *Buurbouw*, elements of branding were used. In each case, a name, logo, visual style, and website were designed for the project. As such, the visibility and recognizability of these projects was enhanced. Moreover, it helped '*organize a kind of approachability*', and helped external actors to '*identify themselves*' with the project, thereby serving as an invitation for others to connect or even collaborate. Branding, as such, provides the design projects with a metaphorical business card, serving both representation and coordination of task performance purposes.

In *Doortrappen* and *Aardgasvrije Wijken*, the project team, together with external actors, reframed the issue at hand. The new perspective that was jointly developed served as an invitation for other actors to join the project, which also helped to gain support. To illustrate, in *Doortrappen*, an issue that was initially framed as a matter of traffic safety – thus belonging to the departments of infrastructure and traffic safety – was reframed as a matter of health and wellbeing, which enabled the project team to connect with the departments of sports and well being, as well as external organizations working in these fields. Jointly reframing issues may thus contribute to all three boundary spanning purposes as well.

On a final note, while these boundary spanning activities were undertaken collectively by the project team, we did observe that the different project team members took on different roles in this, suited to their capabilities and capacities. The designers, for example, often took the lead in branding the design project (using their graphic and formgiving skills) and played a facilitating role in jointly reframing the issue at hand (being the experts in design methods that enable reframing). The civil servants, in turn, played a bigger role in organizing events and setting up partnerships (mobilizing their internal and external networks).

Necessary and sufficient conditions for non-adoption

Necessary conditions

Table 7 below shows the outcome of our analysis of necessary conditions for non-adoption.

Table 7. Necessity analysis for non-adoption.

	Non-adoption	
	Consistency	Coverage
Representation	0.72	0.55
~Representation	0.59	1
Coordination	0.27	0.38
~Coordination	**0.91**	0.77
Information	0.68	0.58
~Information	0.59	0.81

As can be seen, absence of coordination of task performance activities has a consistency of 0.91 and can thus be considered a necessary condition for non-adoption. Our third hypothesis – which stated that absence of representation activities is both necessary and sufficient for non-adoption – thus proves to be wrong. We overestimated the fatality of absence of representation activities. Apparently, absence of coordination of task performance activities is more fatal. In fact, Table 4 not only shows that all cases that score low on adoption also score low on coordination of task performance, it also shows that there are no cases that score low on coordination of task performance activities but high on adoption. This may indicate that absence of coordination of task performance is sufficient for adoption as well, which we checked for next.

Sufficient conditions

The truth table for the non-adoption of design proposals is shown in Table 8 below.

As can be seen, the upper four truth table rows fall within the consistency threshold of 0.85. Accordingly, these were included in the sufficiency analysis. In addition, the bottom two rows (the logical remainders that we expected to result in non-adoption) were included. This revealed one path towards non-adoption, namely: the absence of coordination of task performance activities. Diagram 2 below depicts this path. As explained above, we suspected this when looking at Table 4 .

Diagram 2. Sufficient conditions for non-adoption

A closer look at the different cases offers several interesting explanations for why the project teams were unable to coordinate work with external actors, thus resulting in non-adoption.

Often, this was due to factors that were not in the hands of the project team itself. For example, following a well-intended call for initiatives by the municipality that ended up in a turf war between citizens, *Bewonersinitiatief Kreekrugpad* was initiated to diffuse the situation and explore alternatives. The project team was thus thrown into a '*hornets-nest-like-situation*' and, despite its efforts, unable to establish common ground, let alone coordinate tasks. In *Innovation Strategy for the Capital Region*, key leadership changes by the end of the project disrupted the team's coordination efforts. In *From Projects to Platforms*, several design projects were going on at the same time

Table 8. Truth table for the non-adoption of design proposals.

Representation	Coordination	Information	Non-adoption	# of cases	Cases	Raw Consistency	PRI Consistency
0	0	0	1	2	Innovation Strategy in the Capital Region, Bewonersinitiatief Kreekrugpad	1	1
0	0	1	1	1	From Projects to Platforms	1	1
1	0	0	1	1	Fit to Serve	0.89	0.67
1	0	1	1	4	Citizen's House, Smart Greater Copenhagen, Extreem Weer, Landbouw Innovatie Campus	0.85	0.71
1	1	0	0	1	Veilig Blijven Rijden	0.71	0
1	1	1	0	5	Future Mobility in Rural Areas, Buurbouw, Aardgasvrije Wijken, Verbinding Tussen Landbouw en Natuur, Doortrappen	0.43	0
0	1	1	Logical remainder	0	-	-	-
0	1	0	Logical remainder	0	-	-	-

that were competing for resources and attention. Rather than coordination between these projects, this led to '*a constant power struggle*'. In *Smart Greater Copenhagen*, a national policy decision to centralize tasks and responsibilities rendered the coordination of task performance activities that the team had undertaken with local and regional actors futile. Similarly, in *Landbouw Innovatie Campus* national policy changes demanded an immediate response. As a result, the project was no longer a priority and '*slowly became detached*'. The best the team could do was connect with another project team to integrate some of the team's learnings, ideas, and experiences in the other team's project. These examples show that coordination of task performance activities can be considerably impacted by (changing) environmental conditions that are beyond a team's control.

In some cases, however, the project teams could have done things differently as well. Reflecting on *Bewonersinitiatief Kreekrugpad*, members of the project team felt like they should have paid more attention to resolving conflicts and rebuilding trust; '*maybe this should have been preceded with mediation*'. Similarly, in hindsight some of the members of the project team of *Citizen's House* realized that they had not involved the right people. In light of this, one of the designers in the team explained that '*I have not been trained to do that as a designer. It's actually something I'm becoming more and more aware of*'. Effective coordination of task performance activities requires the right approach and the right competences.

Conclusion and discussion

Given that design proposals often fail to be adopted (Lewis 2021; Villa Alvarez, Auricchio, and Mortati 2022), we aimed to enhance our understanding of ways to increase the likelihood of adoption. Literature on innovation adoption highlights the crucial role and activities of boundary spanning individuals (Haas 2015; Neal, Posner, and Brutzman 2023; Rogers 2003). However, in practice, actors involved in design projects usually work closely together to secure the uptake of their design proposals. In this study we therefore investigated whether and how TBSAs – i.e. *representation, coordination of task performance*, and *general information search* activities (Ancona and Caldwell 1992; Marrone 2010) – contribute to adoption. We found that representation activities are necessary, and both representation and coordination of task performance activities are sufficient for adoption. For non-adoption, absence of coordination of task performance activities is both necessary and sufficient. Additionally, we identified four specific TBSAs that contribute to both representation and coordination of task performance: building partnerships, organizing events, branding the project, and jointly reframing the issue at hand. These TBSAs are particularly helpful in fostering adoption.

However, effectively undertaking these TBSAs is by no means easy. Literature on boundary spanning individuals highlights that competence is critical to their effectiveness (van Meerkerk and Edelenbos 2021; Williams 2002). Our findings demonstrate that this also applies to boundary spanning teams, underscoring the need to form project teams that are well-equipped to design as well as span boundaries. In addition, our findings reflect the notion that (changing) environmental conditions can significantly impact TBSAs (Joshi, Pandey, and Han 2009; Marrone 2010). Specifically, we have seen how conflicts between external actors, competing projects, leadership turnovers, political disruptions, and changing organizational priorities can thwart TBSAs.

Ensuring facilitative conditions for TBSAs is thus of crucial importance (Van Meerkerk and Edelenbos 2018). For example, project teams may first need to resolve conflicts before they can focus on the adoption of their design proposal. Incorporating TBSAs into project briefs may also help establish facilitative conditions. Moreover, enhancing the robustness of TBSAs is vital. When TBSAs concentrate on few external linkages, they are easily disrupted by environmental changes. To enhance robustness and sustain the cumulative effects of TBSAs, project teams should thus broaden and reinforce their external linkages.

Adoption is generally seen as a process, rather than an instantaneous act (Damanpour and Schneider 2006; Pichlak 2016). We also observed this in our cases. Over the course of the design projects all kinds of TBSAs were undertaken to foster adoption. Although our calibration focused only on the adoption stage, we would like to emphasize that what is done in the pre-adoption stage matters too. As explained, the effects of TBSAs often accumulate; the more external actors are reminded of or involved in design projects, the more they gain a sense of ownership and commitment, aiding both TBSAs and adoption. Hence, project teams should not wait with representation and coordination of task performance activities until the end of the project.

While adoption depends on other factors besides team boundary spanning – e.g. the absorptive capacity of the organization, the readiness of adopting actors, the conduciveness of the wider project environment (Aarons, Hurlburt, and Horwitz 2011; Greenhalgh et al. 2004; Wisdom et al. 2014) – we did not include these in our analysis as we wanted to focus on 'embedding strategies' (Aarons, Hurlburt, and Horwitz 2011) that practitioners can use to enhance the likelihood of adoption. TBSAs were deemed most useful and relevant in this regard. Although literature distinguishes other types of TBSAs as well – e.g. negotiation and mediation (van Meerkerk and Edelenbos 2021) – we did not include a fourth type of TBSA either as this would increase the likelihood of identifying patterns due to random chance (Marx 2010). Moreover, we did not find indications of other types of boundary spanning activities in our cases. By maintaining a proper ratio between cases and conditions (Maggetti and Levi-Faur 2013) and using high consistency thresholds (Schneider and Wagemann 2012), we are confident in the validity of our results.

A key limitation of this study has to do with the fact that we only included design projects conducted by external design agencies and consultants. The insights presented in this study may thus be particularly valuable for project teams involved in 'externalized' design projects, but less so for project teams involved in 'labified' design projects. The position of labs in relation to the rest of the organization – e.g. mandate, proximity, continuity, and funding (McGann, Blomkamp, and Lewis 2018) – but also in relation to other external actors is usually different, thus possibly requiring other combinations of boundary spanning activities or different kinds of boundary spanning activities. Furthermore, we did not account for the political, structural, and cultural fit of the design proposals with the adopting organization(s). Adoption literature emphasizes that better-fitting design proposals are more easily adopted (Aarons, Hurlburt, and Horwitz 2011; Greenhalgh et al. 2004; Wisdom et al. 2014), thus requiring less extensive TBSAs. While the design proposals in this study were designed externally using 'new' design approaches, we cannot automatically assume that their political, structural, and cultural fit was moderate to low. Therefore, we should be cautious about generalizing our findings across varying levels of design proposal 'fitness'.

This study shows that there is still much to unpack regarding the relationship between TBSAs and the adoption of design proposals. First, we suggest corroborating our findings by examining design projects that involve various forms of structural separation and design proposals with differing levels of compatibility with the adopting organization. Additionally, we recommend delving into the timing, combining, and sequencing of TBSAs, as well as their cumulative effects across the different stages of adoption. Moreover, we suggest investigating the required team capabilities, compositions, and roles to effectively engage in TBSAs. Additional research is also needed to enhance our understanding of the essential starting conditions that should be present prior to design projects and how these can be realized to increase the chances of success. Finally, we recommend investigating how context factors affect TBSAs and adoption, and how these can be effectively responded to and anticipated for.

Note

1. https://sites.socsci.uci.edu/~cragin/fsQCA/software.shtml.

Acknowledgments

We would like to sincerely thank all participants for their valuable contributions to this study.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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APPENDICES

Appendix A – Raw data matrix after the first round of calibration

Table A1. Raw data matrix after the first round of calibration.

Case	Representa-tion	Coordination of task performance	General information search	Adoption of the design proposal
Citizen's House	0.66	0.66	0.66	0.33
Future Mobility in Rural Areas	0	1	0.66	0.33
Smart Greater Copenhagen	0	0.33	0.66	0.33
Innovation Strategy for the Capital Region	0	0.33	0.33	0
From Projects to Platforms	0.33	0.66	1	0.33
Buurbouw	1	1	0.66	1
Extreem Weer	0.66	0.66	1	0.33
Aardgasvrije Wijken	1	1	1	0.66
Landbouw Innovatie Campus	0.66	0	0.66	0.33
Bewonersinitiatief Kreekrugpad	0	0	0	0
Verbinding Tussen Landbouw en Natuur	0.33	0.33	0.66	0.66
Fit to Serve	1	0	0.33	0.66
Doortrappen	1	1	1	1
Veilig Blijven Rijden	0.66	0.33	0.33	0

Appendix B – Sufficiency analyses with increasing consistency thresholds

Table B1. Sufficiency analyses with increasing consistency thresholds for adoption.

Consistency threshold range	Solution	Configuration(s)	Consistency	Raw coverage	Unique coverag
0.75–0.77	Parsimonious	Coordination	0.87	0.70	0.34
		Representation*~Information	0.81	0.45	0.09
	Intermediate	Representation*~Information	0.81	0.45	0.09
		Representation*Coordination	0.87	0.70	0.34
	Complex	Representation*~Information	0.81	0.45	0.09
		Representation*Coordination	0.87	0.70	0.34
0.78–0.92	Parsimonious	Coordination	0.87	0.70	0.70
	Intermediate	Representation*Coordination	0.87	0.70	0.70
	Complex	Representation*Coordination	0.87	0.70	0.70
>0.93	Parsimonious	Coordination*~Information	1	0.35	0.35
	Intermediate	Representation*Coordination*~Information	1	0.35	0.35
	Complex	Representation*Coordination*~Information	1	0.35	0.35

Table B2. Sufficiency analyses with increasing consistency thresholds for non-adoption.

Consistency threshold range	Solution	Configuration(s)	Consistency	Raw coverage	Unique coverage
0.75–0.85	Parsimonious	~Coordination	0.77	0.91	0.91
	Intermediate	~Coordination	0.77	0.91	0.91
	Complex	~Coordination	0.77	0.91	0.91
>0.86	Parsimonious	~Representation	1	0.59	0.14
		~Coordination*~Information	0.86	0.55	0.09
	Intermediate	~Coordination*~Information	0.86	0.55	0.09
		~Representation*~Coordination	1	0.59	0.14
	Complex	~Coordination*~Information	0.86	0.55	0.09
		~Representation*~Coordination	1	0.59	0.14