

The FADE measurement instrument: Assessing cultural values for process exploration in European institutions

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Abstract

Public sector organizations face an important, dual imperative: sustaining reliable and efficient processes while simultaneously exploring new ways of working. Business process management (BPM) research has established that cultural values help shape this BPM success, but existing frameworks (such as CERT) capture values supporting process exploitation, leaving the cultural conditions for process exploration rather underspecified. This study therefore develops and validates FADE, a measurement instrument for exploration-oriented cultural values comprising Failure Acceptance, Agility, Disruptiveness, and Ecosystem Thinking. Grounded in organizational ambidexterity theory, FADE is positioned as the complementary counterpart to CERT, together spanning the cultural foundations of BPM ambidexterity. Instrument development followed a sequential mixed-methods design: embedded case studies across five European Union institutions, two-stage expert validation with 28 specialists, and field survey validation (N = 214). PLS-SEM analysis supports a hierarchical four-dimension structure with satisfactory reliability and validity. The FADE construct correlates positively with perceived process exploration and exploitation outcomes, which themselves correlate positively, indicating that exploration-oriented culture supports rather than displaces exploitation. The resulting 35-item instrument offers researchers and practitioners a diagnostic tool for assessing exploration-oriented process culture.

1 Introduction

The digital transformation of governments refers to the fundamental organizational change that is required to implement digital technologies in public service delivery (Scupola & Mergel, 2022). While substantial investments in digital technologies continue across public sectors globally, evidence suggests that many digital transformation initiatives fail to achieve their intended outcomes (Tangi et al., 2021). Increasingly, scholars and practitioners recognize that these failures do not stem from technological limitations, but from cultural barriers within public organizations (Weerakkody et al., 2011; Zhang & Feeney, 2020). This diagnosis is also present in Business Process Management (BPM) research, which has long recognized organizational culture as one of the core elements of BPM (vom Brocke et al., 2014; vom Brocke & Rosemann, 2015). In this context, citizens not only expect government services to be reliable and efficient, but also increasingly demand innovative responses to complex societal problems (Mergel et al., 2021).

The growing recognition of culture as a core enabler (or barrier) to process innovation highlights a pressing research challenge. Despite rich literature on organizational culture and process innovation, most measurement instruments have been developed in private sector contexts or primarily emphasize values supporting operational efficiency (Distel et al., 2023; Schmiedel et al., 2014). While these values ensure reliable service delivery, they are less focused on the exploration capabilities required in digital transformations (Tangi et al., 2021). Furthermore, dominant paradigms in public management, such as New Public Management (NPM), have historically shaped risk-averse, siloed cultures that are poorly aligned with the demands of digital governance (Wynen & Verhoest, 2015). Thus, the literature lacks validated measurement instruments for cultural values enabling public sector process exploration alongside process exploitation. Addressing this gap underscores the research question guiding this study: **How can cultural values supporting process exploration in public sector organizations be validly and reliably measured?**

In response, this study develops and validates a multidimensional measure of exploration-oriented organizational culture tailored to the public sector process innovation context. In doing so, we distinguish between the model (i.e., the conceptual structure specifying the dimensions of exploration-oriented culture) and the instrument (i.e., with the validated measurement items that operationalize that model). The model is grounded in organizational ambidexterity theory, and the instrument operationalizes it for empirical assessment. We employ a sequential mixed-methods

design to construct and validate the measure. First, qualitative case studies in five EU institutions identified candidate cultural dimensions. Second, expert panels refined the construct definitions and item pool. Third, a quantitative survey of EU institution staff (spanning policy, operational, and technical roles) established the instrument's psychometric properties and criterion validity.

This study intends to make three contributions. First, we develop and validate a measurement instrument for exploration-oriented cultural values, complementing the exploitation-oriented CERT model and thereby extending the cultural foundations of ambidextrous process management (Grisold et al., 2019). Second, we provide empirical evidence that exploration-oriented culture complements rather than displaces process exploitation, challenging the trade-off assumption that has been present in some process management theory (Benner & Tushman, 2003). Third, by grounding the instrument in the public sector, we address a critical gap in understanding how public organizations cultivate exploration capability alongside reliable service delivery (Helbin & Van Looy, 2022). Practically, we provide public sector leaders with an actionable diagnostic tool for assessing organizational culture and cultivating innovation capability.

The remainder of this paper is structured as follows: Section 2 positions our study in the literature, Section 3 presents the methodology, Section 4 reports the results, and Sections 5 and 6 discuss the findings and conclude.

2 Literature background

The literature background positions the role of organizational culture in process innovation and public value delivery, by tracing its conceptual foundations in BPM and organizational ambidexterity research, while assessing existing measurement instruments, and identifying the gaps that motivate the development of a new measurement instrument for exploration-oriented process culture.

2.1 Process innovation in a public value creation context

Within the context of digital governance, process innovation encompasses both incremental enhancements to established service delivery mechanisms and deeper reconfiguration of public value creation (de Vries et al., 2016). This distinction is especially salient in digital transformation initiatives, where the digitization of existing administrative procedures can fall short of realizing the transformative potential of comprehensive process redesign (Weerakkody et al., 2011). Research confirms that administrative process innovation has emerged as the most prevalent form of innovation in the public sector (de Vries et al., 2016; Forlano et al., 2020).

Organizational ambidexterity theory provides a crucial lens for understanding process innovation requirements in digital governance. Originally, March (1991) distinguished between exploitation (refining existing capabilities) and exploration (developing new capabilities), arguing that long-term organizational success requires balancing both. This relates to a tension that is increasingly researched within the BPM discipline itself (Binci et al., 2019; Rialti et al., 2018). Within BPM, this debate has centered on calls for "explorative BPM" to complement the discipline's traditional focus on incremental improvement and control (Grisold et al., 2019; Kohlborn et al., 2014), combined with growing evidence that BPM capabilities can increasingly support exploration in view of digitalization (Kerpedzhiev et al., 2020).

Framed through this lens, process innovation in public organizations constitutes the exploration side of ambidexterity, while the reliable, efficient delivery of established services constitutes exploitation (Cannaerts et al., 2020). Exploitation ensures that citizens receive reliable, high-quality services that uphold democratic values, while exploration capability enables organizations to respond to emerging citizen needs and technological opportunities (Piening, 2013). However, some researchers argued that exploitation and exploration require contradictory

organizational capabilities and cultural values (Benner & Tushman, 2003). Exploitation thrives on stability, standardization and risk minimization, which are values traditionally associated with public administration. Exploration requires flexibility, experimentation, and risk tolerance, which are values often perceived as antithetical to a government culture (Boukamel & Emery, 2017). This tension intensifies in digital transformation contexts, where the pace of technological change needs rapid exploration as taxpayers expect reliable, consistent services.

Public sector organizations operate under fundamentally different value creation logics than their private counterparts: rather than creating value through market transactions with voluntary customers, they create "public value", a complex amalgamation of service outcomes, democratic processes, trust maintenance, and societal wellbeing that cannot be reduced to simple efficiency metrics (Bozeman, 2007). This multidimensional mandate explains why public organizations cannot simply adopt private sector cultural models without substantial adaptation.

While public organizations are constitutionally designed to prioritize operational excellence for legitimate democratic reasons (Bozeman, 2007), an exclusive focus on efficiency increasingly fails to deliver public value – digital technologies create citizen expectations that rigid processes cannot meet (Mergel et al., 2021), and fiscal constraints demand innovative delivery models (Osborne & Brown, 2011).

2.2 Organizational culture

Multiple studies demonstrate that an organizational culture affects organizational performance (Boyce et al., 2015; O'Reilly et al., 2014), as well as technology adoption. The importance of culture has been reinforced in the seminal work of Schein (2010, p. 2), who stated that managing culture is *"the only thing of real importance that leaders do"*.

Over the last decade, the framework of Schein (2010) has progressively received wider acceptance by conceptualizing organizational culture in three layers (Mikušová et al., 2023): (1) underlying assumptions and beliefs, (2) values about appropriate behaviors, and (3) visible artefacts reflecting the values (e.g., symbols and language, but also incentives, structures, and business processes). In our research, we will focus on the layer of values to facilitate process exploration (Grover et al., 2022; Hogan & Coote, 2014), because values represent the most actionable and measurable level for organizational intervention (Hogan & Coote, 2014), making them the optimal level of analysis for understanding how organizational culture enables or constrains process innovation capabilities.

Organizational culture within the public sector is often referred to as administrative culture (Zhang & Feeney, 2020) and exhibits distinct characteristics that differentiate it from the cultural dynamics in private sector organizations (Criado et al., 2023). Public sector entities are generally characterized by a lower propensity for risk, limited openness to change, and reduced support for innovation (Syed et al., 2018). Furthermore, these organizations tend to prioritize compliance and adherence to established protocols over external client engagement (Wynen et al., 2014). Values such as innovativeness (which are integral to fostering transformative business processes) remain largely absent in public organizations (Demircioglu & Audretsch, 2017; Van Der Wal et al., 2008).

2.3 Measuring process-relevant cultural values

Within BPM research, organizational culture is recognized as one of the six core elements of the discipline (Rosemann & vom Brocke, 2015). Also, "cultural fit" features are among the ten principles of good BPM (vom Brocke et al., 2014). Existing approaches to measuring organizational culture differ widely. For instance, the Competing Values Framework (CVF) (Quinn & Rohrbaugh, 1983) remains the most applied in information systems (IS) research, categorizing cultures along flexibility-control and internal-external dimensions. While studies demonstrate associations between flexible cultures (e.g., clan, adhocracy) and innovation outcomes (Naranjo-Valencia et al., 2011), the framework's

generic nature limits insights into specific cultural mechanisms supporting process innovation, as all CVF quadrants are associated with some capabilities underpinning and supporting BPM.

Alternatively, the Denison Organizational Culture Survey (Denison & Mishra, 1995) offers more specificity through four dimensions (i.e., mission, involvement, consistency, and adaptability). For instance, Saravia-Vergara et al. (2020) have used this model to demonstrate that organizational culture positively influences business process implementations. However, its private sector origins may not fully capture public sector dynamics, and it misses guidance on which specific values enable process innovation.

Recognizing limitations in the above-mentioned generic frameworks, BPM scholars have developed process-specific cultural models. Building on a global Delphi study of the cultural values that matter to BPM (Schmiedel, vom Brocke, et al., 2013), the CERT model (Customer orientation, Excellence, Responsibility, Teamwork) represents the most comprehensive effort to identify process-supporting values (Schmiedel et al., 2014). Empirical validation in public sector contexts confirms CERT's relevance while revealing important limitations (Kregel et al., 2021). While CERT predominantly captures exploitation-oriented values, only external customer orientation and innovation (among its eight sub-dimensions) explicitly support exploration. This imbalance becomes problematic in digital governance contexts requiring both exploitation and exploration. Recent evidence from German municipalities suggests that certain CERT values (external customer orientation, teamwork) may even negatively correlate with digital innovation capabilities (Distel et al., 2023), highlighting the need for complementary models.

To bridge this gap, we will develop a measurement instrument using the lens of organizational ambidexterity theory (March, 1991; O'Reilly & Tushman, 2013). Our measurement instrument emerges from studying European Union institutions, i.e., organizations that exemplify digital governance implementation challenges through their need to integrate diverse national systems while pursuing digital transformation (Mihai et al., 2023). Unlike national governments, EU institutions navigate and reconcile varying national cultures (Van 't Hul et al., 2023), while striving for institutional coherence and innovation. This unique context, where multiple governance levels and cultural traditions intersect, provides an ideal setting for identifying the values that enable both process exploitation and process exploration.

In the remainder, we combine the theoretical foundations of Section 2 with empirical insights from European institutions to develop our intended instrument that measures cultural values essential for digital governance implementation and process exploration.

3 Methodology

This study employed a sequential mixed-methods design grounded in pragmatist philosophy, combining qualitative exploration to identify cultural values beyond current frameworks with quantitative validation to confirm these values are distinct, measurable, and predictive of innovation outcomes (Creswell & Plano Clark, 2017). Instrument development followed DeVellis's (2021) scale development guidelines and Hinkin's (1998) recommendations for organizational survey research. The research approach is summarized in Table 1.

Table 1
Summary of all stages and their objectives

Research phase	Research focus	Research Methods and Techniques	Participants and Data Sources	NuNumber of items
Conceptualization	1/ Theoretical Foundation	• Literature review • Case study analysis • Case document review	• Academic literature • Organizational documents (18) • Interviews (15)	• -
Item generation	2/ Item Generation	• Deductive item development • Behavioral indicator identification	• Literature synthesis • Case study insights and quotes (17)	• 80
Expert validation	3/ Expert Ranking Exercise	• Online ranking protocol • Expert evaluation	• 7 academics (PhD + at least 2 relevant publications) • 7 practitioners (7 years' experience, 3 years in EU public sector)	• 80
	4/ Expert Q-Sort Sorting Exercise	• Item categorization task • Inter-rater agreement analysis	• 7 academics • 7 practitioners (same criteria as above)	• 59
Field validation	5/ Pre-test	• Pilot survey • Feedback collection	• 10 practitioners or PhD students	• 42
	6/ Field Survey	• Cross-sectional survey • Online data collection	• 294 EU staff (214 valid responses for analysis) • Various departments • Various positions	• 42
	7/ Statistical Analysis	• Exploratory Factor Analysis • Structural Equation Modeling • Correlation analysis • Regression analysis	• Survey data, with profile information, measurement items, process outcome measures	• 35

3.1 Phase 1: construct conceptualization

The construct conceptualization phase started with the analysis of multiple, embedded case studies across five European Union (EU) institutions (Helbin & Van Looy, 2022) based in Brussels, aiming to explore practices associated with business process ambidexterity in the EU public sector. EU institutions represent 'extreme cases' (Eisenhardt &

Graebner, 2007) of digital governance complexity, operating across 27 member states with different administrative traditions, making them ideal for identifying innovation-enabling values.

For this study, five institutions were selected to ensure a balanced representation of organizational size and institutional function, encompassing legislative, consultative, and executive bodies. The sample included organizations with diverse levels of process innovation capabilities (Osborne & Brown, 2011). Notably, unit 4 and unit 5 were characterized by comparatively low process innovation capabilities, whereas unit 1A and unit 1E exhibited higher levels. This strategic selection facilitated robust comparative analysis within a theory-building framework.

We adopted a rigorous, sequential data collection strategy. Initially, a pilot study was conducted utilizing a single embedded case study design (Recker, 2021) within one EU institution, with six departments serving as the units of analysis. Subsequently, a multiple holistic case study design was implemented across four additional EU institutions, where each institution constituted a distinct unit of analysis. This two-stage approach allowed for both the validation and systematic extension of findings from the pilot phase. The case study included semi-structured interviews, covering all capability areas of process exploration and process exploitation (Van Looy et al., 2014), triangulated with field research covering documents, wikis and training materials. Data were collected across 10 units of analysis spanning five EU institutions, comprising 15 interviews with 21 interviewees and 18 organizational documents (see Table 2).

Table 2

Overview of organizations and departments in the case study. Organization and department names are anonymized.

Unit number	Project	Institution/department IDs	Number of interviews (interviewees)	Case documents
Unit 1A	Pilot case (unit of analysis = departments)	Organization 1 - Department A (fund management)	2 (2)	13
Unit 1B		Organization 1 - Department B (internal functions)	2 (6)	
Unit 1C		Organization 1 - Department C (internal functions)	1 (1)	
Unit 1D		Organization 1 - Department D (international relations)	1 (1)	
Unit 1E		Organization 1 - Department E (fund management)	1 (2)	
Unit 1F		Organization 1 - Department F (fund management)	1 (1)	
Unit 2	Extended case	Organization 2 (legislative)	2 (3)	2
Unit 3	(unit of analysis = institutions)	Organization 3 (legislative)	2 (2)	2
Unit 4		Organization 4 (consultation)	1 (1)	0
Unit 5		Organization 5 (consultation)	2 (2)	1

A sample of experienced practitioners was selected as respondents, comprising representatives from both Information Technology and business domains, and with expertise in BPM and digital innovation. This sampling strategy reflected the interdisciplinary scope of the research. Interviewees included members of BPM competence centers, process owners, IT personnel engaged in BPM initiatives, and innovation managers.

This empirical inquiry was complemented by a systematic literature review on business process ambidexterity (Helbin & Van Looy, 2021), and a literature review on process innovation in public sector context. The literature review's scope included the terms ["process innovation" OR "process management" OR "process transformation"] AND "public sector", with the analysis confined to works published between 2010 and 2025. The results of the review are available in Table 3. The objective of this phase was to define the context of process innovation and to list the cultural values (constructs) that constitute the proposed model.

Table 3
Overview of sampled articles.

Article	Main findings
(Lidman, 2024)	The findings highlight challenges in defining and implementing innovation goals in the public sector.
(Wamba et al., 2024)	Exploring how blockchain indicators in public sector projects have driven major changes in public services.
(Gullmark, 2021)	Public sector organizations develop either low- or high-routinized innovation capability in a path-dependent way.
(Kregel et al., 2021)	The BPM Culture Assessment instrument is applicable in most parts to the public sector. Determinants of BPM culture are employees experience, responsibility and municipality size.
(Demircioglu & Audretsch, 2020)	Employees' innovative behavior, cooperation, collaboration with key external sources, and capability to operate in complex environments are correlated with complex innovations within the public sector.
(Cinar et al., 2018)	Barriers to process innovation are complex, and broader than organizational barriers
(Syed et al., 2018)	There are 14 success factors for BPM implementations in the public sector, as derived from literature
(de Vries et al., 2016)	Administrative process innovation is the most common form of innovation in the public sector
(Demircioglu & Audretsch, 2017)	Experimentation and motivation to improve are critical for achieving innovation in the public sector
(Manfreda et al., 2015)	Participative, incremental and continuous methods are suitable for improving knowledge-intensive processes.
(Niehaves, 2011)	Open process innovation in the public sector is impacted by political variables
(Weerakkody et al., 2011)	Business Process Reengineering can support transformational change in the public sector
(Niehaves & Plattfaut, 2010)	Ineffective organizational learning leads to failures in process innovation

The translation of case study data into construct concepts followed a theory-driven approach, in which dimensions derived from the organizational culture and ambidexterity literature were confirmed and contextualized against empirical evidence (Hsieh & Shannon, 2005). First, we coded the interview transcripts and organizational documents using open coding (Eisenhardt, 1989), identifying initial codes related to cultural manifestations supporting process innovation (e.g., "safe experimentation spaces," "slowness in delivery," "creativity," "collaboration and dependence "). These first-order codes were then clustered through axial coding into second-order themes based on conceptual similarity (Yin, 2017). Through comparison between these emergent themes and existing organizational culture literature, we identified aggregate dimensions that represented cultural values distinct from existing models, such as

CERT. This deductive approach ensured that the measured values were both grounded in organizational reality and conceptually robust.

3.2 Phase 2: item generation

The initial item generation phase adhered to systematic deductive procedures to ensure a robust foundation for the intended measurement instrument. This phase began with the extraction of behavioral indicators from the case study transcripts and case documents, supporting the values selected in phase 1. This approach yielded behavioral statements reflecting cultural values pertinent to the measurement instrument. Additional statements were identified based on the literature review (see phase 1). Subsequently, these statements underwent theoretical mapping to align with their sub-constructs (2–3 per value). This mapping ensured that the extracted indicators were conceptually grounded, providing a coherent basis for item generation.

Following (Hinkin, 1998), items were crafted using simple language, behavioral focus (e.g., *'We organize events to reflect on our failures and share lessons learnt'* rather than *'We value learning'*), neutral wording to minimize social desirability bias, and consistent reference points balancing individual and organizational levels (DeVellis & Thorpe, 2021; Podsakoff et al., 2003). Negatively worded items were deliberately excluded to prevent response pattern bias (Weijters & Baumgartner, 2012). This systematic approach to item construction provided a solid foundation for validation through expert panels and psychometric testing.

3.3 Phase 3: expert panel validation

As the next step, we followed a two-stage expert panel approach, helping us establish content and construct validity (MacKenzie et al., 2011). Both expert panels consisted of practitioners and academics, leveraging the complementary perspectives for enhancing theoretical rigor and practical relevance. Each of the two expert panels comprised 14 different participants (i.e., 7 academics and 7 practitioners), selected based on stringent expertise criteria. The average expert interview was about 30 minutes.

The first panel focused on a ranking exercise, where experts evaluated the conceptual definitions given per sub-construct, providing suggestions for improvement, and then systematically assessed the content validity of candidate items. Experts ranked items according to their representativeness of the intended sub-constructs and identified potential gaps in construct coverage. This expert ranking exercise resulted in the refinement of the initial item pool by retaining at least five highest-ranked items per sub-construct (DeVellis & Thorpe, 2021).

The second expert panel participated in a Q-sort exercise to assess convergent and discriminant validity at the item level. The correct classification rates provided empirical evidence for construct validity. Items demonstrating systematic misclassification underwent revision or elimination. To be retained, items had to be sorted in the intended sub-constructs in at least 75% of the cases (DeVellis & Thorpe, 2021).

3.4 Phase 4: field survey validation

Field survey validation empirically tested the measurement model's reliability, validity, and predictive power. The survey consisted of three sections: (1) control variables (i.e., a respondent's role, tenure, department type), (2) the remaining 42 measurement items with a 5-point Likert scale, and (3) six process outcomes, covering exploration (three items: innovation, customer focus, adaptation) and exploitation (three items: efficiency, timeliness, quality).

The field validation consisted of two steps: a pre-test and field survey. A pre-test with 10 participants (practitioners and doctoral students) confirmed item clarity and face validity. Next, the field survey targeted staff members across

diverse departments within EU institutions. This ensured heterogeneity across contexts, hierarchical levels, and functional domains, enhancing generalizability.

We started the analysis with Exploratory Factor Analysis (EFA) to confirm the instrument's theoretical structure and identify problematic items with cross loadings. EFA was appropriate given the novel measurement instrument where the factor structure had not been previously established. Following this, we analyzed the survey data by Confirmatory Factor Analysis (CFA) within Structural Equation Modeling (SEM) (Hair et al., 2014). This allowed for the assessment of measurement model properties (i.e., reliability, convergent validity, discriminant validity) and structural relationships (i.e., criterion validity, nomological network).

The hierarchical structure of the measurement model, comprising reflective first-order constructs (10 value sub-dimensions), formative second-order constructs (4 value dimensions), and a formative third-order construct (overall FADE culture), necessitated a sophisticated analytical approach using Partial Least Squares Structural Equation Modeling (PLS-SEM). This hierarchical component model (HCM) was analyzed following the repeated indicators approach (Becker et al., 2012), where first-order construct indicators were assigned to their respective second-order constructs, which subsequently formed the third-order FADE construct. The hierarchical component model was analyzed using the cSEM package (Chuah et al., 2021) in R version 4.3.0.

The statistical SEM analysis proceeded in stages. For reflective first-order constructs, we assessed internal consistency (Cronbach's α , composite reliability), convergent validity ($AVE > 0.50$), and discriminant validity (Fornell-Larcker criterion, HTMT ratios). For formative second- and third-order constructs, we examined collinearity ($VIF < 5.0$), significance of weights, and relative contributions per component for establishing the measurement model, using bootstrapping procedures. We employed bootstrapping with 2,000 resamples in our SEM analysis to obtain robust standard errors. Model evaluation followed contemporary best practices, employing multiple fit indices (RMSEA, SRMR, CFI).

Finally, we established criterion validity by demonstrating the statistical relationship between our measurement instrument values, and theoretically relevant process outcomes. This was measured by statements associated with process exploration and process exploitation in Table 4 (Gibson & Birkinshaw, 2004). The survey incorporated three measures of perceived process exploitation and three measures of perceived process exploration, representing ambidextrous organizational capabilities (Junni et al., 2013), aligned with established public management theory.

Table 4
Items associated with process outcomes.

Capability	#	Theme	Item	Source
Process exploration	01	Novelty	In the past year, our department has consistently delivered new and innovative outcomes.	(de Vries et al., 2016)
	02	Customer-centricity	In the past year, our department has delivered outcomes that were focused around our customers (stakeholders).	(Osborne et al., 2013)
	03	Adaptation	In the past year, our department has flexibly adapted its work practices to meet changing external requirements.	(Boyne and Meier, 2009)
Process exploitation	04	Efficiency	In the past year, our department has achieved results with an efficient use of resources.	(Boyne, 2003)
	05	Timeliness	In the past year, our department has consistently delivered its work outputs on time.	(Van Dooren et al., 2015)
	06	Quality	In the past year, our department has consistently delivered work outputs of high quality.	(Pimentel and Major, 2016)

4 Results

We subsequently report on each research phase, starting with phase 1.

4.1 Phase 1: construct conceptualization

Our analysis identified four cultural values that support exploration-oriented capabilities (called FADE) distinct from existing frameworks such as CERT. FADE represented four values as dimensions: failure acceptance, agility, disruptiveness, and ecosystem thinking.

First, in several cases, **Failure acceptance** emerged as a cultural value encompassing psychological safety (Edmondson & Lei, 2014), experimental learning orientation (Garvin, Edmondson, et al., 2008), and tolerance for productive failure. For instance, a respondent mentioned that it is *“good to have an entity where disruption is safe to do, and so they can try without punishment”* (case 1C). Moreover, one case organization had an active framework for supporting experimentation in a safe-to-fail context (case 1). We recognize that advocating for Failure acceptance in public organizations may seem counterintuitive given citizens' expectations of reliability. However, we distinguish between operational failures (unacceptable) and innovation experiments (necessary for learning).

Secondly, **Agility** emerged as a cultural value encompassing rapid adaptation capability (Mergel et al., 2021), iterative value delivery (Soe & Drechsler, 2018), and organizational flexibility in response to changing citizen needs. Practically, we observed that the lack of agility was perceived as a source of failure for past business process implementations in several case organizations (*“They were slower than the new process created”* – case 1F; *“Most of their recommendations had either been implemented in a different manner or had become obsolete because of the evolution of the business”* – case 2, *“they have been annoying all users, but they never got back to the users with some added value”* – case 1D). Therefore, several of the investigated units invested in growing capabilities supporting agility. This was also reflected by documents such as Agility manifestos (case 1D).

Thirdly, **Disruptiveness** emerged as a cultural value encompassing visionary leadership for radical change (Osborne & Brown, 2011), and willingness to fundamentally reimagine public service delivery. Almost all units of analysis had

recently been faced with disruptions in their ways of working: this was either following the COVID pandemic or a disruptive technological change (*“people in different hubs or cross points of the organization come out with really creative solutions to make things happen”*- 1C). Several new product launches were also accompanied with new ways of working, often leading to disruptive organizational change (*“It was the biggest technology disruption project that we have ever had in the department”*- case 2, *“all of a sudden, all every-day tools to see their work coming in are going to disappear”*- case 2). These initiatives were often initiated through design thinking workshops (case 2).

Finally, **Ecosystem thinking** emerged as a cultural value encompassing collaborative governance orientation (Ansell & Gash, 2008), boundary-spanning capability (Williams, 2002), and co-production with external stakeholders in service design and delivery. The case organizations were increasingly relying on Ecosystem thinking to not only run their daily business processes, but also to transform them digitally and to innovate (*“we are in the center of this European government ecosystem [...] and if you change something, it goes to a much bigger system”* – 1C). For instance, this was reinforced through several systems supporting cross-organizational processes in the domain of fund management (1E), as well as collaboration with Member States (1D).

4.2 Phase 2: item generation

Item generation followed the three-stage approach outlined in Section 3.2. Behavioral indicators extracted from the case studies (Section 4.1) yielded context-specific manifestations of the four FADE values; this pool was expanded through a comprehensive literature review targeting each dimension (see Annex 1); and all candidate items were reviewed against established psychometric guidelines for scale construction (DeVellis & Thorpe, 2021; Hinkin, 1998). This yielded an initial pool of 80 items (20 per value), categorized into 10 sub-constructs (2–3 per value), with deliberate oversampling ensuring comprehensive domain coverage and sufficient candidates for empirical reduction in phases 3 and 4.

4.3 Phase 3: expert panel validation

Expert feedback in the ranking exercise led to substantive refinements in language, terminology, and reference-level consistency, establishing a refined pool of 59 items with enhanced content validity.

The following Q-sort sorting exercise with the second expert panel helped us uncover and remediate some construct validity issues. In total, 37 items passed the foreseen threshold of agreement. However, items intended for “Visionary thinking” were frequently miscategorized with “Experimentation” items, indicating insufficient discriminant validity between these constructs. Hence, we reached out to all experts to further refine 5 items and make them better aligned with the sub-construct definitions. These targeted revisions enhanced the discriminant validity of the measurement instrument. In total, we retained 42 items, which passed to the next validation phase. Following the revisions of the experts, the final list of constructs and sub-constructs is available in Table 5. Construct definitions were synthesized from the source literature underpinning each dimension (Section 3.2).

Table 5
Final list of FADE constructs and sub-constructs with definitions revised by the experts

1. Failure acceptance	
1.1 Experimentation	Trying out new ideas, methods or activities, in a low stakes situation.
1.2 Learning from mistakes	Improvement based on the experienced failures, leading to new knowledge.
1.3 Psychological safety	An individual's perceptions as to whether he or she is comfortable to show and express his(her)self without fear of negative consequences to self-image, status, or career.
2. Agility	
2.1 Early value delivery	Seeking to fulfill customer needs by fast, incremental and continuous improvements.
2.2 Empowerment	Providing individuals and teams the tools to act autonomously.
2.3 Transparency	The practice of openly sharing information and knowledge within an organization, and with external stakeholders.
3. Disruptiveness	
3.1 Visionary thinking	Leadership providing a strategic outlook for organizational change, fostering creativity and spurring innovative action.
3.2 Radical innovation	Fundamentally rethinking and redesigning core business processes.
4. Ecosystem thinking	
4.1 Co-production	Putting the emphasis on the contribution made by the service beneficiary in the service delivery process
4.2 Partnerships	Formal and informal structures supporting public sector ecosystems.

4.4 Phase 4: field survey validation

4.4.1 Sample characteristics and data quality

After the pretest phase, the field survey was administered within the three largest European Union institutions. A total of 294 responses were collected; 214 participants completed all FADE items, of whom 205 also completed the process outcome items. The sample was sufficient for conducting PLS-SEM analysis of the hierarchical FADE instrument based on multiple sample size criteria (Hair et al., 2014).

Most respondents (55%) reported more than ten years of service, with only 5% having less than one year, ensuring substantial familiarity with organizational culture dynamics. Departmental affiliation was most frequently associated with internal services (40%), while knowledge management, external relations and policy making each accounted for 10% of participants.

4.4.2 Measurement model evaluation

As an initial statistical step, Exploratory Factor Analysis was conducted to identify items exhibiting significant cross-loadings. Consequently, four items were excluded from the dataset, bringing the total of items to 38. Next, the analysis progressed to Structural Equation Modeling (SEM).

The initial assessment of loadings revealed three problematic items with loadings below 0.70. Following Hair et al.'s (2014) guidelines, we removed these items and re-estimated FADE on the final list of 35 items. Factor loadings for the retained items ranged from 0.7 to 0.89, with the majority exceeding 0.80, indicating strong indicator reliability. The final list of items is available in Table 6.

Table 6
Final retained items of FADE (N = 214)

Value	Factor	Item	Description	Loading	p-value
Failure acceptance	Experimentation	E1	Experimentation with new ideas, new tools and new ways of working is encouraged.	0.82	< 0.001***
		E2	I am encouraged at work to run experiments and create prototypes.	0.84	< 0.001***
		E3	We have a dedicated space where experimentation is encouraged, allowing individuals to freely explore new ideas and approaches.	0.80	< 0.001***
	Learning	L1	We organize events to reflect on our failures and share lessons learnt.	0.80	< 0.001***
		L2	We prioritize learning from mistakes, and openly share these insights.	0.88	< 0.001***
		L3	Failure at work is seen as an opportunity for growth.	0.83	< 0.001***
		L4	We focus on extracting valuable insights from past mistakes and we share those lessons widely.	0.77	< 0.001***
		L5	We view failure as a chance for both personal and professional development.	0.79	< 0.001***
	Psychological Safety	P1	Team members feel safe sharing their thoughts and ideas openly.	0.81	< 0.001***
		P2	Individuals can express their ideas, ask questions, voice concerns, or admit mistakes without negative consequences.	0.86	< 0.001***
		P3	Differing viewpoints are respected and valued at my workplace.	0.83	< 0.001***
		P4	When mistakes occur, we focus on creating a safe environment rather than assigning blame.	0.82	< 0.001***
Agility	Early Value	EV1	We prioritize fast delivery and continuous improvement of services to our end-users.	0.76	< 0.001***
		EV2	For new projects, we deliver in small, valuable increments and improve them iteratively.	0.80	< 0.001***
		EV3	We approach new initiatives by starting small and making iterative improvements.	0.86	< 0.001***
	Empowerment	EM1	Employees are empowered to make decisions and take ownership of their work.	0.87	< 0.001***
		EM2	Teams are empowered to act autonomously and deliver value to end-users.	0.89	< 0.001***

Value	Factor	Item	Description	Loading	p-value
	Transparency	EM3	Teams have the authority to operate independently to deliver value to end-users.	0.88	< 0.001***
		T1	Managers are transparent about their work and the decision-making process.	0.81	< 0.001***
		T3	Open communication and collaboration are encouraged.	0.84	< 0.001***
		T5	Our workplace maintains clear lines of communication, ensuring access to relevant information that impacts employees and the organization.	0.76	< 0.001***
Disruptiveness	Radical innovation	R1	We aim for dramatic improvements by rethinking and reorganizing how work is done.	0.77	< 0.001***
		R2	We radically simplify some complex processes, to make them more efficient.	0.79	< 0.001***
		R3	Top management is open to radical changes in work practices.	0.71	< 0.001***
	Visionary thinking	V1	Leaders encourage us to seek outside inspiration to support the organization's strategic development.	0.81	< 0.001***
		V2	Management provides us with a clear vision for change.	0.83	< 0.001***
		V3	Leaders adapt strategies in response to the changing environment.	0.73	< 0.001***
		V4	Leaders encourage us to proactively scout the market to identify emerging trends that could shape our organization's future direction.	0.73	< 0.001***
Ecosystem thinking	Co-production	C1	The services we deliver are designed collaboratively with end-users.	0.85	< 0.001***
		C2	End-users help us evaluate and improve our services.	0.76	< 0.001***
		C3	Our services are developed in partnership with the end-users.	0.85	< 0.001***
		C4	End-users are involved in the planning and prioritization of our services.	0.78	< 0.001***
	Partnerships	PR1	We build and manage inter-organizational networks of actors relevant to our field of operation.	0.70	< 0.001***
		PR4	We improve the provision of public service through the interaction with multiple actors.	0.84	< 0.001***
		PR5	There are governance structures supporting our intensive collaboration with third parties.	0.70	< 0.001***

The first-order measurement model demonstrated a good fit to the data (RMSEA = 0.053; SRMR = 0.053; CFI = 0.930). All constructs exhibited strong reliability, with Cronbach's alpha values ranging from 0.789 to 0.911, and composite reliability (CR) values from 0.792 to 0.911, thus exceeding the recommended threshold of 0.70 (Hair et al., 2014). Convergent validity was established with average variance extracted (AVE) values ranging from 0.561 to 0.774, surpassing the 0.50 criterion (Fornell & Larcker, 1981). A full overview of reliability and convergent validity scores is available in **Error! Reference source not found..**

Table 7
Reliability, convergent validity results, weights and multicollinearity scores for FADE subconstructs (N = 214). ***p < 0.001

Value	Sub-construct	Reliability		Convergent validity	Construct weights		Multi-collinearity
		α	CR	AVE	Weight	Relative Contribution (%)	VIF
Failure acceptance	Experimentation	0.863	0.864	0.678	0.464***	41%	2.011
	Learning	0.907	0.907	0.662	0.351***	31%	1.696
	Psychological Safety	0.895	0.895	0.739	0.339***	29.9%	1.832
Agility	Early Value	0.846	0.847	0.649	0.619***	51.5%	1.743
	Empowerment	0.911	0.911	0.774	0.331***	27.6%	1.451
	Transparency	0.843	0.844	0.644	0.237***	19.8%	1.83
Disruptiveness	Visionary Thinking	0.86	0.861	0.673	0.761***	69.8%	1.429
	Radical Innovation	0.794	0.795	0.566	0.329***	30.2%	1.429
Ecosystem thinking	Co-production	0.885	0.886	0.66	0.703***	62.1%	1.522
	Partnerships	0.789	0.792	0.561	0.429***	37.9%	1.522

Discriminant validity was confirmed through both the Fornell-Larcker criterion and the heterotrait-monotrait (HTMT) ratio of correlations. The Fornell-Larcker criterion confirmed discriminant validity, with all square roots of AVE exceeding inter-construct correlations. All HTMT values fell below the conservative 0.85 threshold, with the highest inter-construct correlation observed between Psychological Safety and Transparency ($r = 0.756$).

4.4.3 Hierarchical Component Model

The formative second-order constructs demonstrated no multicollinearity concerns, with variance inflation factor (VIF) values ranging from 1.43 to 2.01, thus well below the threshold of 5.0 (Hair et al., 2014). The hierarchical model maintained an acceptable fit (SRMR = 0.040; CFI = 0.956), even though RMSEA (0.104) was elevated due to low degrees of freedom, being a known limitation in complex hierarchical models. The bootstrap analysis ($n = 2,000$) confirmed that all formative weights and reflective loadings were statistically significant ($p < 0.001$) (see **Error! Reference source not found.**).

The survey data therefore statistically confirmed that the hierarchical structure successfully captured the multidimensional nature of organizational culture through the four FADE values. The hierarchical component model

demonstrated a satisfactory fit, reliability, and validity.

4.4.4 Criterion Validity: Process Outcomes

All FADE dimensions showed statistically significant positive correlations with the monitored process outcomes ($r = .16-.55$, $p < .05$), demonstrating strong criterion validity (see Table 8. Correlation coefficients between individual FADE values and process outcomes. $***p < 0.001$, $**p < 0.01$, $*p < 0.05$, and linear regression of the FADE construct and process outcomes. ($N = 205$)). Among all evaluated outcomes, only the timeliness item (*"In the past year, our department has consistently delivered its work outputs on time"*) showed comparatively lower correlation coefficients, ranging from $r = .16$ to $.28$. All four FADE values showed a moderate positive correlation (with r -values between $.521$ and $.642$) with the process outcome composite, as visualized in Fig. 1. Process outcome composite and FADE values plot ($N = 205$). The FADE construct showed stronger associations with exploration outcomes ($r = .49$) than with exploitation outcomes ($r = .37$), a difference that was statistically significant (Williams' $t(202) = 2.02$, $p = .044$).

Table 8

Correlation coefficients between individual FADE values and process outcomes. $***p < 0.001$, $**p < 0.01$, $*p < 0.05$, and linear regression of the FADE construct and process outcomes. ($N = 205$)

			Correlation				Linear regression	
			Failure acceptance	Disruptiveness	Agility	Ecosystem thinking	β	R^2
Process exploration	01	Novelty	0.44***	0.52***	0.51***	0.48***	0.8556***	0.2968
	02	Customer-centricity	0.39***	0.50***	0.51***	0.55***	0.7234***	0.2961
	03	Adaptation	0.48***	0.55***	0.52***	0.37***	0.8504***	0.2868
Process exploitation	04	Efficiency	0.44***	0.45***	0.48***	0.36***	0.7719***	0.2359
	05	Timeliness	0.28***	0.27***	0.27***	0.16*	0.4125***	0.0761
	06	Quality	0.44***	0.47***	0.50***	0.36***	0.6894***	0.2455

Correlation analysis between the two groups of process outcomes (exploitation and exploration) revealed a significant positive relationship between these dimensions ($r = .53$, 95% CI $[.43, .63]$, $p < .001$), with the two constructs sharing 28.1% of their variance. This moderate-to-strong correlation suggested that both dimensions were mutually reinforcing. The 28.4% shared variance between these dimensions was substantial enough to indicate meaningful overlap, while also confirming that these were distinct constructs (71.9% unique variance).

Finally, linear regression analyses were conducted to examine the relationship between the FADE score and six process outcomes. All six regression models revealed statistically significant positive relationships between the FADE score and process outcomes (all $p < .001$), with a weaker relationship with the timeliness outcome ($R^2 = .076$) suggesting that this process outcome could be influenced by additional factors beyond FADE implementation. Nevertheless, this relationship was statistically significant, reinforcing the broad relevance of the FADE instrument (see Table 8).

As FADE and process outcomes shared a common respondent source, we tested for common method bias (Podsakoff et al., 2003) using Harman's single-factor test. The first unrotated factor accounted for 37.7% of total variance (below the 50% threshold), suggesting the bias was unlikely to drive the reported relationships.

5 Discussion

We now discuss the theoretical contributions, practical implications, limitations and future avenues.

5.1 Theoretical contributions

This study adds several theoretical contributions to the literature on organizational culture, and public sector innovation. First, we have addressed a gap in BPM culture research by developing and validating the FADE measurement instrument for digital transformation contexts in public organizations, introducing four exploration-oriented cultural values (Failure Acceptance, Agility, Disruptiveness, and Ecosystem thinking). The hierarchical structure of FADE reveals how cultural values cluster into higher-order capabilities that support process exploration. Existing BPM culture frameworks, such as CERT (Schmiedel et al., 2014), primarily capture exploitation-oriented values aligned with stability and operational excellence. In contrast, FADE operationalizes the cultural dimensions that enable process exploration, thus offering a complementary lens for understanding organizational ambidexterity and BPM culture in the public sector. Where prior BPM culture research has linked culture broadly to process performance (Hautala-Kankaanpaa, 2022; Moormann & Grau, 2017), FADE translates the exploration side of that relationship into a theoretically grounded construct and measurement instrument.

Second, we have applied and refined ambidexterity theory (O'Reilly & Tushman, 2013) in public administration (Cannaerts et al., 2020) by empirically demonstrating that both exploration and exploitation are culturally grounded, and that these cultural dimensions are measurable and predictive of process outcomes. Our findings suggest that the relationship between process exploitation and exploration capability in public organizations may be more complementary than the trade-off perspective traditionally assumes (Benner & Tushman, 2003; Moreno Luzon et al., 2014). The significant positive correlation ($r = .53$) between process exploration and process exploitation outcomes reveals that these capabilities are mutually reinforcing rather than contradictory, consistent with the contextual ambidexterity perspective in which a supportive organizational context benefits both capabilities (Gibson & Birkinshaw, 2004; Junni et al., 2013). The stronger correlation of FADE values with exploration outcomes ($r = .49$ versus $r = .37$ for exploitation outcomes) provides empirical support for FADE's conceptualization as addressing the exploration side of organizational ambidexterity, while still contributing positively to process exploitation. This differential relationship underscores that while FADE values support both capability sets, consistent with ambidexterity theory's recent emphasis on complementarity (Ng et al., 2015), they are particularly instrumental in fostering the exploration capabilities that have historically been underdeveloped in public sector contexts (Wynen et al., 2014).

In sum, our FADE model complements and extends Schmiedel et al.'s (2014) CERT values to provide a comprehensive cultural foundation for organizational ambidexterity in digital governance contexts. Together, CERT and FADE span the cultural infrastructure for BPM ambidexterity, resolving the tension between reliable service delivery (CERT) and transformative innovation (FADE) – as visualized in Fig. 2. The complementarity is particularly evident in how CERT's Excellence pairs with FADE's Failure Acceptance to balance quality standards with experimentation, while CERT's Teamwork combines with FADE's Ecosystem thinking to enable both internal collaboration and external co-creation. For digital governance to succeed, public organizations must cultivate both value sets, using CERT to ensure operational stability and FADE to drive process exploration.

5.2 Practical implications

The validated FADE measurement instrument provides public managers with an evidence-based diagnostic tool for assessing their organizational readiness for digital transformation. Unlike generic cultural assessments, FADE targets values critical for navigating the opportunities of digitalization with respect to business processes. Organizations can

use the instrument to establish current cultural strengths and gaps across the four FADE dimensions, to benchmark by comparing scores across departments or against other public organizations, to track a cultural evolution through repeated measurements, and to brainstorm by designing specific action-based initiatives to strengthen weak dimensions.

Practitioners can conduct a comprehensive organizational assessment using the 35-item measurement instrument and then visualize results through multi-layered spider diagrams that reveal cultural patterns – see Fig. 3.

Targeted interventions include establishing 'safe-to-fail' innovation spaces for Failure Acceptance (McGann et al., 2021), adopting iterative development methodologies with empowered cross-functional teams for Agility (Mergel et al., 2021), leadership programs emphasizing visionary thinking and radical process simplification for Disruptiveness, and formal co-design methodologies with boundary-spanning governance structures for Ecosystem thinking (Ansell & Gash, 2008).

Moreover, the FADE model and measurement instrument has important implications for digital governance policy design and implementation. Traditional policy approaches often focus on technological infrastructure and digital skills while overlooking cultural dimensions (Andersen & Henriksen, 2006). Our findings suggest that cultural values may be equally critical for successful digital transformation. They also challenge efficiency-focused paradigms by demonstrating that modern public organizations need dual cultural foundations: values for process exploitation and for process exploration. This implies that they are complementary rather than conflicting objectives.

5.3 Research limitations and future research

While this study provides a robust validation of the FADE model and related measurement instrument, we acknowledge some limitations that point toward future research avenues. First, our validation focuses on EU institutions for ensuring depth and relevance, without claiming generalizability to other public sectors. European institutions operate within specific regulatory, political, and cultural contexts that may differ from national or local governments. Future research should test the FADE instrument across different public sector contexts (e.g., healthcare, education, local government) and national administrative traditions to assess its generalizability and identify context-specific adaptations.

While our validation is comprehensive across different phases, several measurement challenges merit future attention, such as: (1) the reliance on self-reported perceptions which may introduce social desirability bias, and (2) the focus on individual perceptions which may miss organizational-level cultural dynamics. Future research can employ mixed methods, combining surveys with behavioral observations, document analysis, and objective performance metrics. We acknowledge that our approach (starting from theory and case-derived FADE dimensions) may have influenced our findings. While our psychometric analysis confirms the four-value structure, alternative cultural models might reveal alternative dimensions. Future studies could identify emergent cultural values that are not captured by FADE. We also acknowledge that our conceptualization may reflect Western democratic assumptions about digital transformation, though multi-stakeholder panels, document triangulation, and iterative refinement helped mitigate these potential biases.

Additionally, we encourage future research on several theoretical avenues to deepen our understanding of the FADE values and implications. Future research is needed to better understand how organizations balance and integrate CERT and FADE values in practice, including potential tensions and synergies between exploitation and exploration orientations. Lastly, while this study focuses on positive outcomes, future research can address potentially negative consequences of strong FADE values, including excessive risk-taking or innovation fatigue to ensure a more balanced understanding of innovation culture dynamics.

6 Conclusion

This study has developed and validated the FADE measurement instrument as a novel, empirically grounded artefact that captures four cultural values essential for process exploration in public sector organizations. By complementing the exploitation-oriented CERT framework (Schmiedel et al., 2014), FADE addresses a theoretical and practical gap in navigating the dual imperatives of digital governance: sustaining efficiency while enabling innovation. Through rigorous multi-phase validation within EU institutions, we have demonstrated that Failure acceptance, Agility, Disruptiveness, and Ecosystem thinking are not only measurable, but also positively associated with process outcomes, most strongly with process exploration, in line with FADE's conceptualization. In doing so, this research provides public managers with a validated 35-item diagnostic instrument and scholars with a new conceptual tool to advance BPM culture theory and explorative BPM research in public sector contexts.

Declarations

Ethics declaration

All study phases involving human participants were approved by the research ethics committee of the authors' institution (approval number and date withheld for anonymous publication and available upon request). Informed consent was obtained from all participants.

Funding declaration

This research did not receive funding.

Author Contribution

TH designed the study, collected and analysed the case study, expert panel and survey data, performed the statistical analysis, and wrote the manuscript. AVL provided the overarching research vision, contributed to the conceptual design of the study, supervised all phases of the research, and critically reviewed and revised the manuscript. Both authors read and approved the final version.

Data Availability

The datasets generated and analysed during the current study are not publicly available, as they contain information that could compromise the privacy of individual participants and the anonymity of the participating institutions, and because the informed consent obtained does not cover public data release. The correlation and covariance matrices underlying all reported PLS-SEM results are available upon request.

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89. Annex 1 Systematic Literature Review Protocol for FADE Values 1. Search Strategy Overview
90. Databases to search
91. Web of Science (Core Collection)
92. Scopus
93. Time frame 2010–2025
94. Language English only 2. Search Strings per FADE Value
95. Failure, Acceptance
96. (failure acceptance OR learning from failure OR psychological safety OR safe to fail OR experimentation culture OR fail fast OR error management OR failure tolerance OR mistake tolerance)
97. AND
98. (public sector OR government OR public administration OR public organization* OR civil service)
99. AND
100. (innovation OR digital transformation OR organizational culture OR process innovation)
101. Agility

102. (agility OR agile OR organizational agility OR adaptive capacity OR flexibility OR responsiveness OR iterative OR rapid adaptation)
103. AND
104. (public sector OR government OR public administration OR public organization* OR civil service)
105. AND
106. (innovation OR digital transformation OR organizational culture OR process innovation)
107. Disruptiveness
108. (disruptive innovation OR radical innovation OR transformational change OR breakthrough innovation OR discontinuous innovation OR paradigm shift)
109. AND
110. (public sector OR government OR public administration OR public organization* OR civil service)
111. AND
112. (organizational culture OR innovation culture OR process innovation)
113. Ecosystem thinking
114. (ecosystem* OR collaborative governance OR co-production OR co-creation OR boundary spanning OR network governance OR partnership* OR stakeholder engagement)
115. AND
116. (public sector OR government OR public administration OR public organization* OR civil service)
117. AND
118. (innovation OR digital transformation OR organizational culture OR process innovation) 3. Filtering Criteria
119. Inclusion Criteria 1. Peer-reviewed journal articles 2. Published in English 3. Focus on public sector/government organizations 4. Address cultural, organizational, or behavioral aspects 5. Discuss innovation, transformation, or process change 6. Empirical studies (qualitative, quantitative, or mixed methods) or conceptual papers with clear theoretical contributions
120. Exclusion Criteria 1. Conference papers (unless highly cited > 50 citations) 2. Book reviews, editorials, opinion pieces 3. Studies focusing exclusively on private sector 4. Technical/IT-focused papers without organizational culture component 5. Papers about policy innovation without organizational focus 6. Duplicate publications 4. Quality Assessment Criteria
121. Journal impact factor (SSCI indexed preferred)
122. Citation count (normalized by year)
123. Methodological rigor
124. Theoretical contribution
125. Relevance to FADE dimension 5. Key Papers Identified
126. Failure, Acceptance
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155. This protocol ensures systematic, reproducible coverage of each FADE dimension while maintaining focus on public sector organizational culture and innovation contexts

Figures

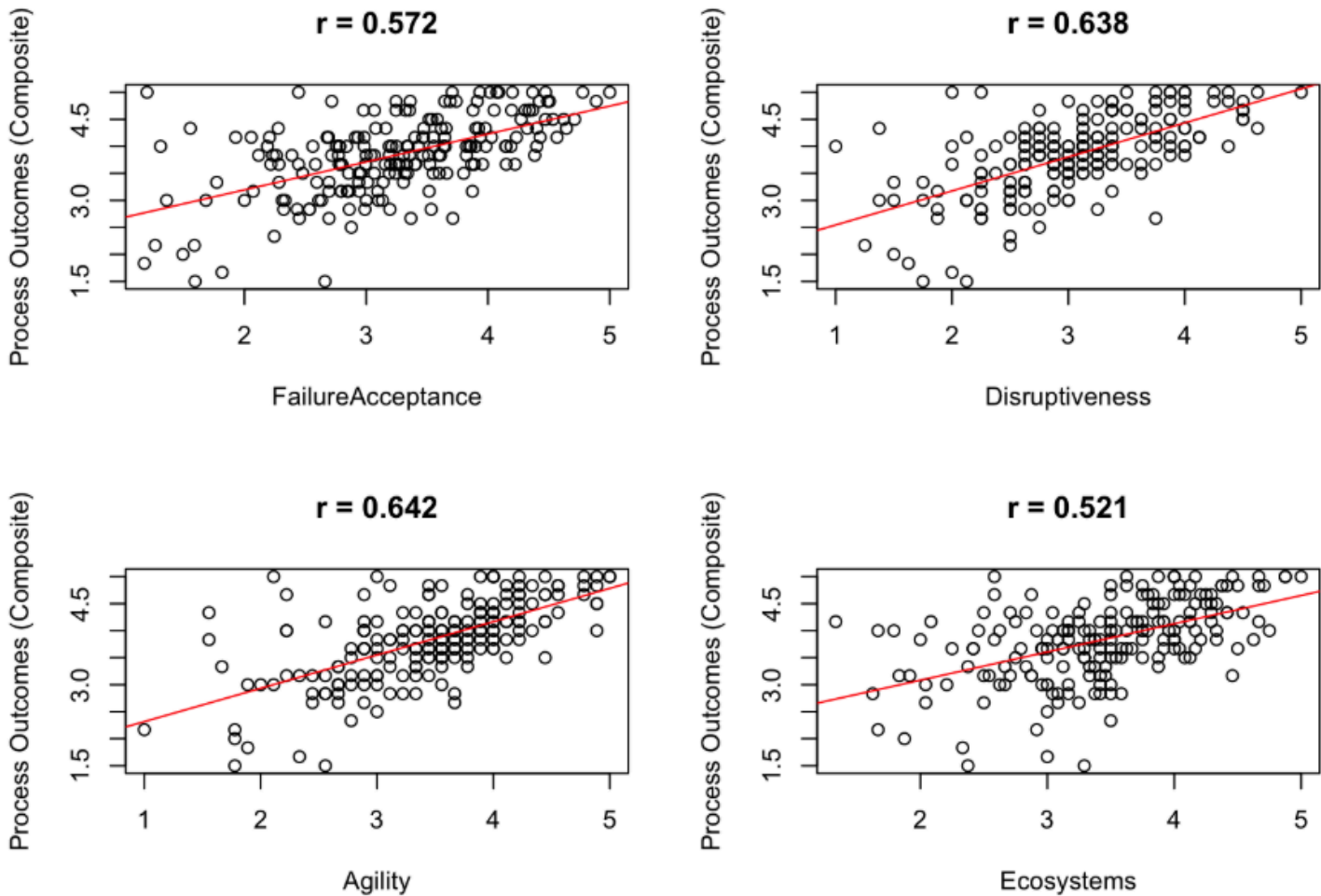


Figure 1

Process outcome composite and FADE values plot (N = 205)

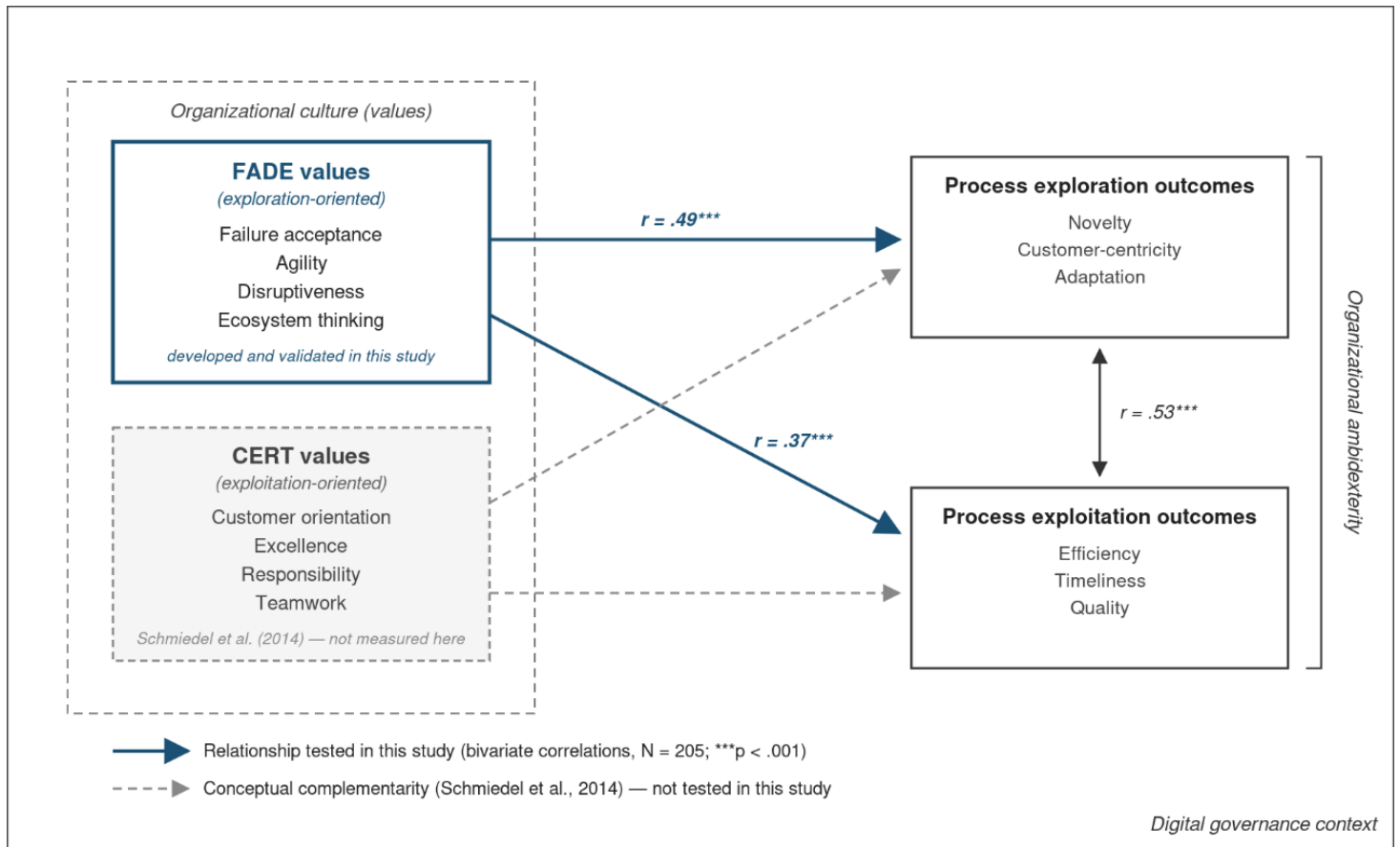


Figure 2

Research model. Arrows indicate theorized direction. Coefficients are correlation with the process outcome composites. CERT values were not measured in this study.

FADE values in Organization A

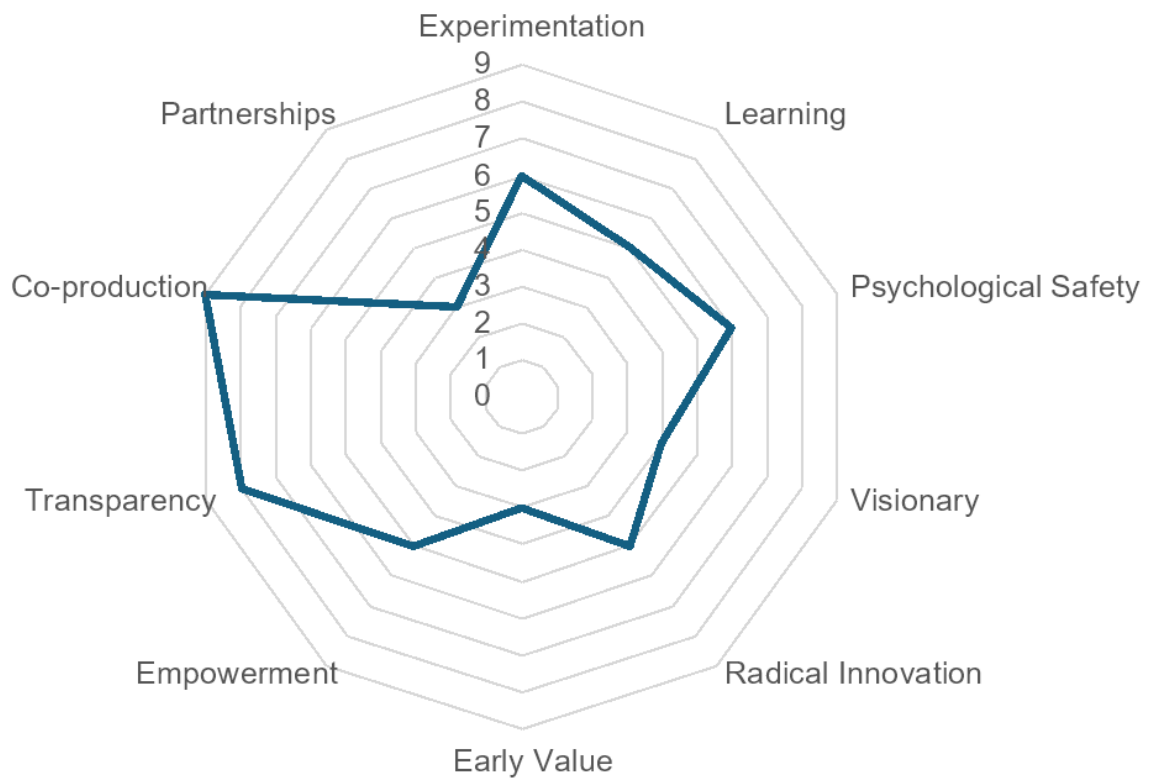


Figure 3

An example of a FADE values assessment - breakdown per sub-constructs