

Head in the clouds, feet on the ground: navigating paradoxes in the twin transitions

Federico Ceschel and Lucia Marchegiani

*Department of Business Studies, Roma Tre University, Rome, Italy, and
Chiara Bartoli, Maria Lorenza Gerardi and Paolo Boccardelli
Department of Business and Management, LUISS Guido Carli, Roma, Italy*

361

Received 19 January 2025
Revised 24 February 2025
18 June 2025
24 September 2025
2 January 2026
Accepted 18 January 2026

Abstract

Purpose – In this study, we developed a competency-based framework for strategic adaptability in the context of the digital and green twin transitions. Building on paradox and dynamic capabilities theories, we clarified how paradoxical cognition translates into actionable competencies that connect individual adaptability with organisational adaptive capacity and agility.

Design/methodology/approach – We adopted a qualitative methodology grounded in constructivist grounded theory and drew empirical insights from six industries (hospitality, life sciences, agrifood, energy, information technology and financial services) through focus groups and executive interviews with human resources managers, innovation leaders and chief executives. Iterative coding and analysis allowed us to capture how organisations configure competencies to manage paradoxical demands.

Findings – We identified three interdependent competency domains – technical and achievement, innovation and relational – that enable organisations to manage and rebalance the four recurring paradoxes: learning, organising, belonging and performing (e.g. exploration/exploitation, short-term efficiency/long-term sustainability, digital scaling/green stewardship and autonomy/coordinating). Organisations that dynamically recombine and rebalance these domains sustain adaptability while addressing competing demands.

Research limitations/implications – We drew evidence from a single national context and six industries. Future researchers should test the framework longitudinally and cross-nationally to assess performance outcomes and boundary conditions.

Practical implications – Organisations should align recruitment, learning, and leadership development to navigate paradoxes and foster cross-boundary collaboration. Jointly cultivating technical expertise, innovation practices and relational skills can build the adaptive capacity and agility needed to meet simultaneous digital and green demands.

Originality/value – The study advances paradox theory by offering empirically grounded insights into paradoxical competencies as the microfoundations of dynamic capabilities. It shows how ongoing tensions due to the twin transitions become catalysts for competency development and organisational responsiveness, reframing adaptability as a systemic outcome of paradox navigation through interdependent configurations of technical, innovation and relational competencies.

Keywords Dynamic capabilities, Organisational paradoxes, Competency-based framework, Constructivist grounding theory, Twin transitions

Paper type Research article

1. Introduction

The convergence of digital and green transformations—commonly referred to as the twin transitions—is a defining feature of contemporary business organisations [1]. These intertwined transitions are reshaping industries, imposing simultaneous pressures on firms to innovate technologically while responding to mounting sustainability imperatives (European Commission, 2022; Perri and Rocha, 2024). Digital transitions promise



© Federico Ceschel, Lucia Marchegiani, Chiara Bartoli, Maria Lorenza Gerardi and Paolo Boccardelli. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at [Link to the terms of the CC BY 4.0 licence](#).

Management Decision
Vol. 64 No. 13, 2026
pp. 361-383
Emerald Publishing Limited
e-ISSN: 1758-6070
p-ISSN: 0025-1747
DOI 10.1108/MD-01-2025-0157

enhanced agility, connectivity, and productivity (Nambisan *et al.*, 2019), while green transitions require long-term commitments to environmental and social goals (Adiguzel and Sonmez Cakir, 2025; Ma *et al.*, 2023). Managing both transitions concurrently is an increasing paradoxical challenge since opposing but interdependent logics must be addressed in parallel over time (Schad *et al.*, 2016; Smith and Lewis, 2011).

These paradoxes include the exploration/exploitation paradox (i.e. the need to balance the pursuit of digital innovation with sustainable efficiency; Lavie *et al.*, 2010; Singh *et al.*, 2024); the global standardisation/local responsiveness paradox (i.e. the need to reconcile scalable digital solutions with place-based environmental and regulatory demands; Ashraf *et al.*, 2025) and the short-term/long-term paradox (i.e. whereby immediate performance metrics do not reflect extended sustainability investments; Cichosz *et al.*, 2025). An additional tension arises from the artificial/human paradox, as automation and digitalisation challenge organisations to maintain human-centred values (Huang and Rust, 2018). These paradoxes are not episodic dilemmas but ongoing tensions that require integrative, paradoxical thinking across multiple organisational levels, from the individual to the whole organisation (Lewis, 2000; Schad *et al.*, 2016; Zhang *et al.*, 2015). They present strategic and organisational challenges and necessitate new individual and collective competencies to navigate ambiguity, interdependence, and conflicting logics simultaneously. This duality reflects the metaphor in our title: organisations must have their “heads in the clouds” to envision long-term transformation while keeping their “feet on the ground” to cope with the daily complexities and paradoxes of organisational life.

The complexity of the twin transitions requires that technical skills and dynamic capabilities support strategic agility, learning, and recombination under paradoxical pressures (George *et al.*, 2016; Gottfredson and Crane, 2025). However, existing competency models often treat green and digital skills in parallel or incorporate normative taxonomies that insufficiently reflect the tensions managers and employees must reconcile in practice (Keegan *et al.*, 2019; Nayeypour and Sehhat, 2024; Spencer and Spencer, 1993). Moreover, they rarely account for how such tensions give rise to integrated skill sets that cut across functional or thematic boundaries.

Although some researchers have explored the role of strategic leadership capabilities in navigating uncertainty (Ashraf *et al.*, 2025), the literature remains limited in explaining how paradoxical cognition translates into coherent configurations of individual and organisational competencies. Previous research provides a solid foundation for analysing how organisations respond to the twin transitions and underscores the importance of paradoxical cognition in recognising and embracing organisational tensions. Yet empirical studies remain scarce on how paradoxical cognition translates into actionable competencies that foster adaptability.

To address this gap, we asked the following research question (RQ): How do organisations operationalise paradoxical cognition into actionable competencies to foster adaptability while navigating the twin transitions? Rather than juxtaposing green and digital pressures, we treated them as mutually constitutive, recognising that the challenges they pose often intersect and reinforce one another.

To empirically explore this phenomenon, we developed a paradox-oriented competency framework for strategic adaptability based on qualitative data drawn from interviews and focus groups with decision-makers, middle managers, and functional specialists across six industrial sectors in Italy. We identified a set of interrelated competencies that enable organisational actors to manage complexity, reconcile conflicting imperatives, and adapt strategically under digital and green pressures. Although certain tensions may appear more salient during a digital or green transition, depending on the organisational context, the competencies identified operate through cross-cutting, integrated configurations. By articulating how paradoxical cognition translates into actionable competencies, we contribute to paradox theory by framing paradoxical competencies as the microfoundations of adaptability and offering actionable insights into competency development in transformation contexts.

2. Theoretical background

2.1 *Rethinking competencies in the context of the twin transitions*

Although driven by different logics, the twin transitions converge in presenting challenges to traditional organisational practices that require the necessary skills and competencies to be reconfigured across industries (Ancillai *et al.*, 2023; Hofmann Trevisan *et al.*, 2024). Competencies can be broadly defined as integrated knowledge, skills, and behavioural attributes that facilitate effective performance in specific roles or environments (Spencer and Spencer, 1993). In contemporary organisational research, competencies are increasingly conceptualised as dynamic and relational constructs shaped by interaction across levels and evolving contextual demands. Research streams focusing separately on digital transformation and the green economy have yielded important but fragmented insights. Some studies on information systems, strategic management, and human resources management (HRM) have highlighted the importance of reskilling and mindset shifts to support digital innovation (Marchegiani, 2021; McAfee and Brynjolfsson, 2018; Nambisan *et al.*, 2019), while others on green HRM and sustainable leadership have highlighted the organisational need for ethical decision-making, environmental awareness, and stakeholder engagement (Boiral, 2009; Kaur *et al.*, 2025). Despite their richness, these studies have rarely been cross-fertilised. Consequently, the literature lacks a coherent framework to explain how individuals and organisations simultaneously respond to the competing demands of digitalisation and green transitions (Felin *et al.*, 2012; Strauss *et al.*, 2017).

Studies focused on settings characterised by multiple concurrent demands have emphasised that competencies facilitate organisational adaptability and strategic responsiveness (Nayebpour and Sehhat, 2024). However, traditional competency models often fall short of addressing this strategic complexity. Their static structure and narrow focus on individual roles or predefined outputs limit their applicability in addressing organisations' need to balance innovation with operational efficiency or combine long-term vision with short-term execution (Adiguzel and Sonmez Cakir, 2025; Lepak and Snell, 2002).

Thus, the focus has shifted progressively from technical and soft skills towards integrated and dynamic competencies that enable individuals and organisations to adapt, innovate, and lead in uncertain and complex environments. Technical skills, often acquired through formal education or on-the-job training, are specialised skills required to perform specific tasks within work contexts. Soft skills, in contrast, include interpersonal abilities, emotional intelligence, adaptability, and other personal traits that facilitate collaboration and influence within teams (Spencer and Spencer, 1993). However, these classifications no longer suffice. In contexts marked by competing institutional and operational demands, competencies must be understood as evolving configurations that integrate technical, behavioural, and strategic dimensions. Instead of separating green and digital competencies, we conceptualised them as interconnected responses to systemic tensions that require integrative competencies to transcend traditional distinctions between roles, domains, and performance criteria (Teece, 2007; Warner and Wäger, 2019; Zhang-Zhang and Rohlfer, 2024).

2.2 *A paradox-oriented view of dynamic capabilities*

The literature on dynamic capabilities, understood as firms' abilities to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments (Teece, 2007), offers a valuable lens for investigating how adaptive capacity emerges from the interplay between individual competencies, collective routines, and organisational processes (Eisenhardt and Martin, 2000; Pavlou and El Sawy, 2011). Rather than being confined to structural or procedural elements, dynamic capabilities are rooted in multilevel interactions that enable firms to respond coherently to change. Thus, the concept of strategic adaptability has gained prominence as a higher-order capacity to realign priorities and practices in the face of persistent tensions, ambiguity, and transformation (Agostini *et al.*, 2025; Lengnick-Hall and Beck, 2005).

This perspective invites a deeper consideration of how organisations adjust and reconfigure themselves over time. In this context, adaptability reflects the behavioural and cognitive flexibility of individuals and teams as they respond to shifting conditions; adaptive capacity refers to an organisation's systemic ability to recombine competencies, relationships, and routines to manage ongoing complexity; and agility highlights the responsiveness and speed with which such changes are recognised and enacted (Doz and Kosonen, 2010; Teece *et al.*, 2016). These constructs are not isolated; they form an interdependent triad that connects moment-to-moment adjustments with broader organisational learning and strategic coherence.

Rather than treating these as competing constructs, we viewed them as interdependent components of a dynamic system of responsiveness. Their interplay reflects how individuals and organisations navigate shifting conditions and persistent tensions, pointing to the need for integrative competencies that operate across organisational levels and domains. Although strategic adaptability is a relevant construct for studies on transformation and resilience, its microfoundations remain undertheorised (Felin and Foss, 2005; Palmié *et al.*, 2023). In particular, there is a need to clarify how specific configurations of competencies enable organisations to recognise, interpret, and act upon paradoxical demands at scale (Fallon-Byrne and Harney, 2017; Miron-Spektor *et al.*, 2018).

A renewed interest in paradox theory has advanced our understanding of paradox management as a leadership capability—one underpinned by ambidexterity, cognitive flexibility, and strategic foresight (Rego *et al.*, 2024; Smith and Lewis, 2011). This has shed light on the cognitive and emotional capabilities required to recognise, engage with, and navigate competing tensions (Smith and Tushman, 2005; Tabesh and Vera, 2020). However, empirical insights into how paradoxical cognition translates into tangible, actionable competencies within organisational contexts remain limited. This conceptual gap is particularly salient in the context of increasing paradoxical tensions in contemporary workplaces. Since digital technologies foster rapid change, and sustainability demands long-term restraint and responsibility, organisations must reconcile opposing imperatives. Addressing such tensions requires a broader set of competencies and a theoretical understanding of how such competencies operate across multiple levels, ranging from individual cognition to organisational routines (Ashraf *et al.*, 2025; Cichosz *et al.*, 2025), and lead to strategic adaptations. Thus, empirical research is needed to theorise how paradoxical cognition informs the development of individual competencies and to clarify the mechanisms by which cognitive frames are activated in response to the tensions posed by the twin transitions (Knight and Harvey, 2015; Smith *et al.*, 2022).

Answering the aforementioned RQ required us to develop a multilevel competency-based framework for strategic adaptability to address the paradoxical demands posed by the twin transitions. We conceptualised competencies as enablers of organisational adaptation and as microfoundations of decision-making processes under tense and ambiguous conditions. Although digital and green transitions may impose distinct pressures across different industries, we conceptualised the required competencies as interdependent and cross-cutting configurations shaped by context but unified by their paradox-navigation function. By tracing how competencies support decision-making at individual and collective levels, especially in the face of conflicting logics and strategic uncertainty, we aimed to illuminate how individuals and organisations navigate uncertainty, laying the theoretical foundation for the empirical exploration that followed. We then identified the emerging skill sets and organisational practices that are most conducive to navigating paradoxes and achieving long-term strategic responsiveness in the evolving work and value-creation landscape.

3. Research design and methodology

Consistent with our research aims, we adopted a qualitative approach to data analysis based on constructivist grounded theory (CGT; George *et al.*, 2016; Gottfredson and Crane, 2025). We considered this approach appropriate for designing a competency-based framework for

strategic adaptability because CGT provides theoretical insights based on participants' lived experiences, particularly in contexts involving paradoxical demands and evolving strategic challenges (Mills *et al.*, 2006; O'Connor *et al.*, 2018), thus increasing the richness and depth of theory generation. We followed the CGT protocol and conducted successive phases of subject analysis, data collection, coding, and theory building, as explained in the following paragraphs.

3.1 Subject analysis and data collection

Firstly, we defined the study context and identified data that would provide applicable theoretical "sensitising concepts" (Charmaz and Thornberg, 2021), forming the basis for designing the interview schedule. We incorporated various theoretical perspectives, including the evolution of Industry 4.0 skills, competencies in the green economy, and paradox and new working theories. We also collected grey literature reports on the twin transitions, with a particular focus on the European Union strategic report that initially defined the concept of the twin transitions.

3.2 Theoretical sampling

The initial research phase allowed us to identify appropriate industry sectors in Italy for collecting field data—hospitality, life sciences, agrifood, energy, information technology (IT), and financial services. The decision to consider various sectors aligned with the CGT sampling approach and ensured the coherence and diversity of the analysis (Thornberg and Charmaz, 2014). We considered that these sectors exemplified the increased skills required by the digital and green transitions, as reflected in *The Future of Jobs* (World Economic Forum, 2025) and the report *Towards a Green and Digital Future* (European Commission, 2022). Within each sector, we targeted individuals who could provide meaningful insights on the topic: human resources (HR) managers, innovation managers, heads of corporate academies, sustainability managers, chief executive officers (CEOs) of small- and medium-sized enterprises, and industry association representatives.

We organised a focus group for each of the six sectors between July and September 2023, involving 43 senior executives (C-level informants; Table 1).

We used the projective technique (Gram *et al.*, 2023) to stimulate discussion on emerging challenges and related competencies. Two senior researchers shared a set of slides presenting the twin transition scenario. Then, they invited the informants to imagine their sector and industry being transformed by digital and green technologies, the skills needed to address these changes, and the actions needed to close the associated skill gaps. To elicit the informants' experiences and prompt their active collaboration, the researchers used collaborative Mural whiteboard software. To complement the focus groups, the researchers conducted interviews (averaging one hour each) with the senior managers (at the CEO and president levels) of global companies in the investigated sectors, either in person or online, via Microsoft Teams (Table 2). The informants were invited to participate via LinkedIn's social network, and the interviews followed an interview schedule with unstructured questions (see Appendix). The researchers conducted interviews until theoretical saturation was reached and no more novel data emerged from the conversations with the senior managers regarding the topics identified (Guest *et al.*, 2006; Guest *et al.*, 2020). All interviews were recorded with the written consent of the interviewees and transcribed verbatim. We then triangulated the data drawn from the 52 key informants in the focus groups and the 9 interviewees.

3.3 Coding process and theory building

We subjected the interview transcripts to iterative coding (Saldaña, 2021) using MAXQDA software. To align with CGT and increase the reliability of the coding process, two researchers coded the data independently across three coding phases, constantly taking notes and making

Table 1. List of participants to focus groups per sector

Industry	Role	Number of participants
Energy	HR director	4
	Director Corporate Academy	1
	Head Operational Excellence	1
	Industry Association Representative	1
Finance	Employer Branding Manager	1
	HR Director	2
	Head Learning	1
	Director of finance education Foundation	1
	Industry Association Representative	1
	Head Operational Assistance Support	1
Hospitality	HR Director Worldwide	1
	Hotel Industry Association Representative	1
	Tourism Industry Association Representative	1
	External relation officer	1
Life Sciences	HR Director	2
	General Director Hospital	2
	Past Director Hospital and Professor	1
	Industry Association Representative	3
	HR Director	1
Agrifood	CEO	2
	Administrative Director	1
	CEO	2
	President Consortium	1
	Secretary General Cooperative	1
	Head of International Development	1
IT	Industry Association Representative	2
	HR Manager	2
	Industry Association Representative	1
	Sustainability Director	1
	CEO	1
	Head Partnerships	1
<i>Total number of Participant</i>		43

Table 2. List of top managers interviewed

Role	Sector	Company's global revenues
CEO	Agrifood	over 150 million euros
Vice president	Agrifood	over 2 billion euros
CEO	Energy	over 100 billion
CEO	Energy	over 100 billion euros
Vice President	Finance	over 20 billion euros
President	Hospitality	over 30 million euros
Country head	IT	over 50 billion
Country head	IT	over 100 billion euros
CEO	Life Sciences	over 40 billion euros

memos to capture the informants' voices and meanings (Charmaz and Thornberg, 2021; Mills et al., 2006). They initially coded the informants' narratives according to the main concepts using focused coding, then assigned salient codes to the relevant categories, and finally, analysed the codes and coding categories to identify significant patterns and gain insight into

the phenomenon under investigation to underpin theory building (Saldaña, 2021). Thereafter, they compared their respective coding structures for consistency and agreed on a final coding book (Macqueen *et al.*, 2008). The subsequent theory-building process (Figure 1) facilitated critical reflection on the data, leading to a more comprehensive understanding and interpretation of the informants' experiences (Morley, 2013). To mitigate researcher bias, the coding process involved independent rounds by two authors and an iterative comparison of interpretations.

According to CGT, the findings presented in the next section reflect the informants' experiences (Charmaz and Mitchell, 2001).

4. Findings

Two major themes emerged from the data: the acceleration of technological innovation and the increasing salience of sustainability imperatives. These forces act simultaneously and interdependently, frequently giving rise to conflicting demands that organisations must navigate.

Building on our CGT approach and the iterative analytic procedure described above, we used focused coding to consolidate salient informant-centred codes into recurrent competency clusters and then applied theoretical coding to integrate these clusters into higher-order domains (Charmaz and Thornberg, 2021; Saldaña, 2021). Accordingly, the collected evidence revealed three interrelated competency domains: (1) *technical and achievement*, (2) *innovation*, and (3) *relational*. These domains provided the empirical grounding for our competency-based framework for strategic adaptability, which describes how integrated

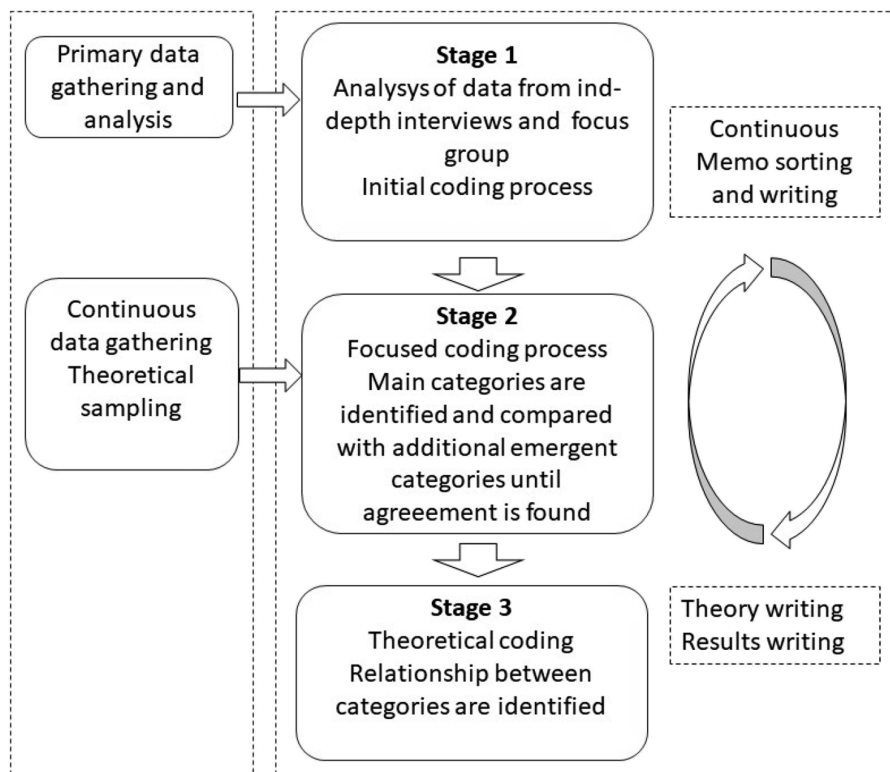


Figure 1. Constructivist grounded theory diagram. Source: Authors' own work

configurations of competencies support organisational responses to the persistent tensions posed by the twin transitions. Each domain comprised distinct but interconnected clusters of skills and behaviours that the informants deemed essential for managing transformation under uncertain and paradoxical conditions.

We begin this section by outlining the external pressures for change, focusing on how the informants framed the disruptive implications of technological and environmental trends. We then present each of the three competency domains in turn, highlighting how specific capabilities are constructed, enacted, and perceived as critical across roles and industry sectors. Throughout the section, we integrate illustrative quotes to emphasise the informants' lived experiences, conceptualise the key themes, and refer to [Figure 2](#) to summarise the progression from focused codes to competency clusters and, through theoretical coding, to the three domains.

4.1 Pressures for change

Organisations across sectors are navigating the converging pressures of two global megatrends: digital transformation and environmental sustainability ([European Commission, 2022](#); [Loorbach et al., 2010](#)). Consistent with our focused coding, informants repeatedly framed these external forces as non-negotiable drivers of organisational change rather than optional initiatives. As the informants stressed, these imperatives are no longer peripheral concerns but core elements of business strategies, necessitating major organisational restructuring, capability renewal, and cross-sector collaboration.

Digital transformation is being driven by the accelerating adoption of disruptive technologies, particularly artificial intelligence (AI), digital platforms, and advanced data analytics ([McAfee and Brynjolfsson, 2018](#); [Nambisan et al., 2019](#)). However, the challenge is not limited to acquiring technological tools. As one interviewee observed, "AI is a great opportunity, but it needs to be managed well" (country head, IT). The informants stressed the need to integrate new technologies into existing systems to augment human capital rather than displace it, emphasising the importance of organisational culture, managerial alignment, and workforce readiness ([Huang and Rust, 2018](#); [Warner and Wäger, 2019](#)).

Simultaneously, the push for green transformation emerged as an equally powerful driver of change ([Koistinen et al., 2023](#); [Loorbach et al., 2017](#)). Environmental sustainability is no longer viewed as a reputational or compliance issue but as a critical business imperative. The informants explained that climate-related risks are disrupting traditional strategic and risk management strategies: "Adverse environmental events are more frequent and harder to predict" (CEO, energy). In response, companies are taking diverse actions, from enhancing energy efficiency and reducing plastic use to integrating circular economy principles into product and process designs. Notably, much of this momentum is driven by external stakeholders, including regulators, investors, and, increasingly, sustainability-conscious consumers ([European Commission, 2022](#); [George et al., 2016](#)).

Rather than treating these pressures as discrete or sequential, our respondents highlighted that digital and green transformations are increasingly interdependent ([Uhrenholt et al., 2022](#)). Digital technologies can support environmental goals, while sustainability constraints can direct and accelerate technological innovation ([Ma et al., 2023](#)). Thus, the twin transitions represent not just two parallel trends but overlapping and mutually reinforcing logics of change, resulting in strategic and operational tensions that organisations must learn to navigate simultaneously ([Lewis, 2000](#); [Schad et al., 2016](#); [Smith and Lewis, 2011](#)). From a constructivist grounded theory perspective, this paradox emerged through theoretical coding that connected informants' accounts of reskilling, unlearning, and experimentation into a higher-order tension between knowledge exploitation and exploration ([Charmaz and Thornberg, 2021](#)).

4.2 Technical and achievement dimension

The *technical and achievement dimension* captures the dual organisational imperatives prompted by the twin transitions—to acquire advanced digital capabilities while maintaining

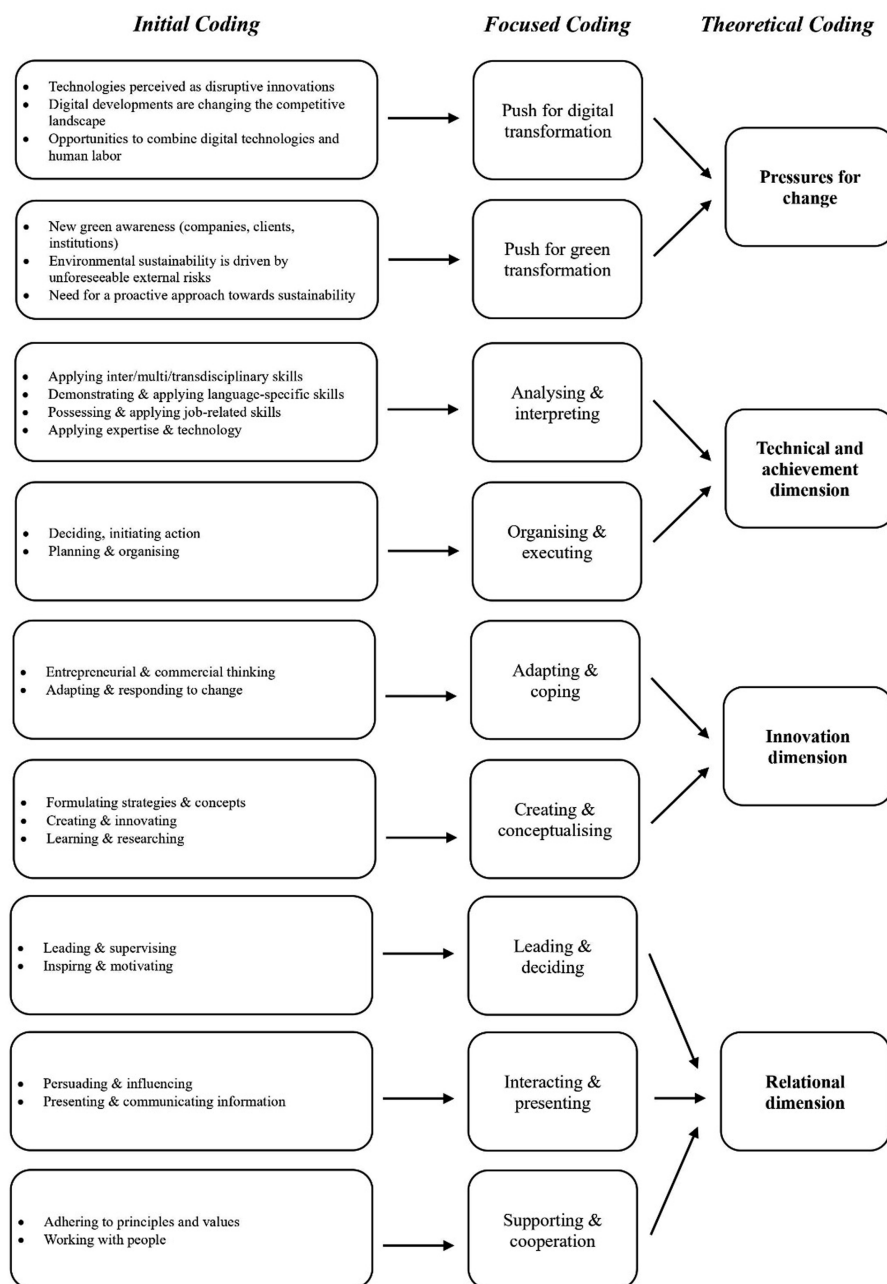


Figure 2. Overview of codes. Source: Authors' own work

sector-specific expertise and executional discipline. Our informants emphasised, regarding the acceleration of digital transformation, the importance of two interconnected skill sets as foundational to future competitiveness: (1) *analysing and interpreting* and (2) *organising and executing*.

In terms of *analysing and interpreting*, professionals are increasingly expected to extract value from large volumes of data, manage algorithmic systems, and interact fluently with technologies, including AI, the internet of things (IoT), and cybersecurity frameworks. This emphasis reflects broader accounts of digital innovation that foreground data- and technology-enabled work as a strategic capability (McAfee and Brynjolfsson, 2018; Nambisan *et al.*, 2019). These tools are reshaping how organisations operate and how work itself is conceived. Several informants emphasised that although these technologies are still evolving, they are already integrated into daily practices, prompting concerns not about their presence but about people's reluctance to engage with them constructively. One energy CEO noted, "Quantum computing, AI, and IoT are already here; the real challenge is fear and preparing people to use them well" (CEO, energy). The message was clear: technological disruption is inevitable, but its impacts depend on how organisations manage integration processes.

Interviewees frequently framed automation as an opportunity to free workers from repetitive tasks and redirect human capital towards higher-value work. This resonates with work suggesting that AI can reshape task allocation and elevate the relevance of human judgment and oversight (Huang and Rust, 2018). However, this requires active management. Organisations must develop clear strategies that incorporate workforce planning, effective communication, and targeted training to ensure that technology adoption aligns with organisational goals and employee development. In this respect, informants' focus on preparedness and upskilling aligns with recent discussions of reskilling as a central organisational challenge in digital transformation (Hofmann Trevisan *et al.*, 2024).

Organising and executing emerged as an equally critical set of capabilities. Despite advances in automation, our informants emphasised that success still depends on individuals' abilities to manage time effectively, prioritise tasks, and deliver consistent results, which, in increasingly dynamic digitised environments, must be supplemented by autonomy, initiative, and an entrepreneurial spirit. This paradox was identified through constant comparison across sectors and roles, as informants repeatedly described tensions between empowerment and accountability in digitally and sustainability-oriented organising structures. A finance HR director highlighted this shift, stating that "being able to work independently and even set up one's own business will become increasingly important" (Ashraf *et al.*, 2025; Teece *et al.*, 2016).

The emphasis on self-management is not an excuse for reduced organisational support; rather, it reflects the need to build enabling environments that empower individuals to take ownership of their performance. The informants explained that innovation often emerges from individuals who can link analytical insight with operational improvement. For instance, a vice president in the agrifood sector oversaw the development of a tool to map production processes, using research and development as the basis for rapid and targeted organisational enhancements (Felin and Foss, 2005; Teece, 2007; Warner and Wäger, 2019).

The *technical and achievement* dimension highlights the need to fuse digital fluency with disciplined execution to navigate the twin transitions. Employees must combine analytical insights with operational reliability, while organisations must foster the right conditions for these capabilities to thrive (Eisenhardt and Martin, 2000; Teece *et al.*, 2016).

4.3 Innovation dimension

Innovation emerged across the interviews as a foundational domain of competence for navigating the twin transitions. The pace of change, more than technical knowledge, demands that professionals embrace ambiguity, drive transformation, and engage in continuous learning. This dimension comprises two closely related clusters, which together describe the cognitive and behavioural flexibility needed to remain relevant in volatile environments: (1) *adapting and coping* and (2) *creating and conceptualising*.

Adapting and coping capture the growing importance of agility, understood not merely as responsiveness but as a proactive stance regarding transformation. The informants emphasised that adaptability requires mental openness, lateral thinking, and the ability to discern subtle

cues in complex situations. As one country IT head explained, current approaches to talent are “too narrow and specialised”, neglecting the broader need for individuals to remain open to change and capable of evolving in tandem with organisational needs (Doz and Kosonen, 2010; Lengnick-Hall and Beck, 2005).

This attitude involves entrepreneurial courage and curiosity. Rather than avoiding risk, successful professionals are those who are willing to experiment, learn from failure, and step outside their comfort zones. A life sciences executive observed that managing change means engaging with people, addressing resistance, and guiding transitions, highlighting the interpersonal side of adaptability and its strategic relevance (Knight and Harvey, 2015; Lavie et al., 2010).

Several informants also emphasised the importance of business acumen as a key manifestation of adaptive thinking: the ability to understand shifting societal needs, anticipate customer expectations, and transform insights into opportunities. This commercial sensitivity is not merely technical; it reflects a mindset oriented towards relevance, responsibility, and renewal. Taken together, these accounts depict adaptability not only as coping with change, but also as creating room for purposeful reorientation—thereby setting the ground for the more forward-looking work captured in the creating and conceptualising cluster (Doz and Kosonen, 2010; Teece et al., 2016).

Creating and conceptualising complements this adaptive posture with a future-oriented capacity to envision change. The informants consistently emphasised the need for strategic thinking, especially as organisations navigate overlapping transformations. For one life sciences CEO, this meant developing the “strategic thinking of employees to identify necessary changes and define action plans”.

Creativity and curiosity were repeatedly cited as essential traits that enable professionals to identify opportunities, reframe problems, and generate original solutions. A hospitality CEO made this point vividly by expressing a distaste for “we have always done it this way” thinking, highlighting that innovation depends on disrupting routine assumptions and fostering a questioning culture. Across interviews, informants linked both clusters to continuous learning as the mechanism that sustains experimentation, reframing, and timely adjustment over time (Knight and Harvey, 2015; Lengnick-Hall and Beck, 2005).

Underpinning this innovative capacity is a strong orientation towards continuous learning. The interviewees explained that learning agility—the willingness and ability to acquire new competencies quickly—has become a key predictor of long-term employability. As a finance learning director put it, “The ability to study reality, past and future, allows us to re-actualise any technical competence”. Individual development can no longer be outsourced solely to organisations but must be a collaborative effort between individuals and organisations. In an environment characterised by short skill life cycles, professionals must actively take responsibility for their own unlearning and relearning cycles.

In summary, the innovation dimension is less concerned with isolated creativity than with a systemic orientation towards change, encompassing understanding, envisioning, and adaptation. These capabilities—adaptive, conceptual, and developmental—increasingly contribute to future-ready organisations.

4.4 Relational dimension

Although less frequently mentioned than technical or innovative capacities, relational competencies emerged as critical facilitators of organisational adaptability. As transformations unfold across sectors, the informants highlighted the growing importance of emotional intelligence, ethical awareness, and collaborative capacity as both interpersonal assets and strategic levers for driving change. This dimension is structured around three integrated clusters: (1) *leading and deciding*, (2) *interacting and presenting*, and (3) *support and cooperation*.

Leading and deciding reflect the shifting expectations placed on leaders in contexts shaped by volatility and distributed work. To manage digital and green transformations, leaders must inspire trust, promote distributed decision-making, and guide teams through complexity.

The informants emphasised that leadership no longer depends on formal authority but on inspirational presence, often demonstrated through mentoring, role modelling, and the ability to frame change in meaningful terms. As one IT executive noted, “Leadership today means setting an example through coaching and support, regardless of hierarchy” (Ashraf *et al.*, 2025; Tabesh and Vera, 2020; Zhang *et al.*, 2015).

This form of leadership must be dialogic, aligning a top-down vision with bottom-up engagement. Successful transformation, according to multiple informants, depends on co-creating a shared purpose, empowering team members, and building ownership across organisational levels. This challenge is both strategic and emotional; leaders must manage uncertainty while maintaining cohesive and clear direction (Keegan *et al.*, 2019; Zhang *et al.*, 2015).

Interacting and presenting encompasses the relational intelligence needed to influence, persuade, and connect in organisational settings. The informants described these skills as pivotal for translating ideas into action, particularly in cross-functional stakeholder-rich environments. They viewed the ability to communicate effectively, read social cues, and adjust one’s message to different audiences as a distinguishing feature of high-potential talent: “You can master all the technologies in the world”, one country manager observed, “but if you cannot explain them clearly, your impact is limited” (Clegg *et al.*, 2002; De Vaujany *et al.*, 2021).

Crucially, these communicative competencies extend beyond formal presentation skills, encompassing empathy, adaptability, and rhetorical agility. The relational catalyst role, as described by informants, is less about dominating conversations and more about facilitating understanding, fostering alignment, and building bridges between diverging perspectives.

Support and cooperation anchor this dimension in shared values and ethical conduct. Collaboration, according to the informants, is sustained by skills, a common purpose, and mutual respect. The informants highlighted that ethical awareness, framed as both personal value and professional competence, is vital for facilitating trust and accountability in collective settings. A senior finance executive explained, “Ethics is not just a value; it is a skill. Without it, organisations will face legitimacy crises” (Boiral, 2009; Kaur *et al.*, 2025; Strauss *et al.*, 2017).

This ethical foundation also underpins effective teamwork. In increasingly horizontal digital organisations, success depends on employees who can foster inclusive environments, support their peers, and establish positive relational ecosystems. These relational ecosystems require strong listening skills, emotional literacy, and the capacity to manage interpersonal dynamics constructively. The informants emphasised that these qualities are even more critical in remote and hybrid contexts, where maintaining informal signals and team cohesion is more complex (De Vaujany *et al.*, 2021).

In summary, the relational dimension emphasises the role of interpersonal and ethical capabilities in enhancing organisational resilience. By fostering inclusive leadership, persuasive communication, and value-driven collaboration, these competencies form the connective tissue for navigating paradoxical demands due to the twin transitions.

5. Discussion

This study contributes to the literature on organisational adaptability and paradox theory by showing how organisations can navigate persistent tensions while addressing the twin transitions of digitalisation and green transformation. We identified four core paradoxes that shape the development of individual competencies and structure how organisations engage with the complex imperatives of the twin transitions: (1) learning, (2) organising, (3) belonging, and (4) performing. These are not abstract constructs imposed *a priori* but are recurrent patterns of tension that emerge from the lived experiences of professionals tasked with integrating digital innovation and green responsibility. Methodologically, the four paradoxes discussed below did not originate from a predefined typology but emerged inductively through constructivist grounded theory. Following focused and theoretical coding, recurrent tensions described by informants were abstracted into four analytically distinct yet

interrelated paradoxes that structure how competencies are enacted and recombined under twin transition pressures.

These findings serve as empirical starting points for articulating how strategic adaptability is constructed through paradox navigation. The four paradoxes intersect with the three competency domains identified in our study—technical and achievement, innovation, and relational—thus operationalising the logic of our competency-based framework for strategic adaptability.

The *learning paradox* emerges as organisations struggle to reconcile the exploitation of established competencies with the exploration of new knowledge domains. Several interviewees reported efforts to develop and implement new digital tools or green practices while simultaneously relying on legacy systems, traditional expertise, and ingrained routines. This paradox reveals a fundamental dichotomy between the security of existing knowledge and the need for continuous reinvention. Navigating it requires more than technical upskilling; it demands cognitive agility, reflective learning, and adaptive reasoning—competencies that enable individuals to reinterpret past experiences, move across knowledge domains, and tolerate uncertainty (Hofmann Trevisan *et al.*, 2024; Schad *et al.*, 2019; Smith and Lewis, 2011). These competencies, situated within the *adapting and coping* and *creating and conceptualising* categories, contribute to an organisation's broader adaptive capacity, understood as the ability to reconfigure mental models, behavioural responses, and learning strategies in dynamic contexts. This capacity complements individual adaptability and sets the conditions for agility at scale. It reflects a form of adaptability that is both cognitive and behavioural, enabling individuals to deal with novel situations and uncertainty while drawing on existing knowledge. Importantly, this adaptive capacity is not merely individual but is shaped by relational factors, such as psychological safety, peer support, and inclusive leadership, which the participants often cited as enablers of experimentation.

The *organising paradox* emerges as firms attempt to foster autonomy and agility without losing oversight and control. Especially in contexts involving cross-functional teams or temporary digital and sustainability units, the informants reported friction between the need for empowerment and the requirement for accountability. Addressing this friction requires competencies such as coordinated execution, multilevel planning, and problem structuring, conceptualised as *organising and executing* and *analysing and interpreting* (Ashraf *et al.*, 2025; Clegg *et al.*, 2002; Nayeypour and Sehhat, 2024). These competencies facilitate structural ambidexterity and role fluidity while contributing to organisational agility—a dynamic outcome of adaptive capacity that reflects an organisation's ability to mobilise resources and align efforts effectively in response to shifting priorities. While adaptability refers to the behavioural and cognitive readiness of individuals, agility reflects how this adaptability is enacted at scale through coordinated action. Notably, technical and organisational capabilities often co-evolve with innovation and relational skills, supporting collaborative rule-setting and facilitating alignment among distributed actors.

The *belonging paradox* reflects how identity, meaning, and professional purpose are questioned during transition processes. Analytically, this paradox surfaced through focused coding of identity-related narratives and was elevated to a theoretical category during axial/theoretical coding as informants connected value misalignment, role ambiguity, and meaning-making under transformation. Several informants described tensions between personal values and perceived organisational priorities or between their role identities and how others in their organisations interpreted them. This paradox highlights the often underestimated emotional and cultural friction inherent in transitions. Inclusive leadership, empathy, and alignment-building competencies, emerging from *supporting and cooperating* and *leading and deciding*, enable individuals and teams to maintain cohesion, build shared meaning, and navigate value conflicts constructively (De Vaujany *et al.*, 2021; Zhang *et al.*, 2015). Importantly, these relational capabilities also support sensemaking in ambiguous contexts and reinforce organising efforts and adaptive learning processes.

The *performing paradox* cuts across all organisational levels, manifesting in the need to balance short-term deliverables with long-term transformation goals. Organisations are often pressured to justify digital or green investments with immediate returns, although the real value often lies in delayed or indirect impacts. Unlike the previous paradoxes, the performing paradox cut across all competency domains and organisational levels, a pattern that became visible only through integrative theoretical coding across interviews and focus groups. The informants expressed concerns about reconciling innovation with operational key performance indicators or aligning internal financial logic with external sustainability expectations. Addressing this paradox requires strategic foresight, stakeholder reasoning, and ethical deliberation—competencies embedded across *organising and executing* and *leading and deciding* clusters (Cichosz *et al.*, 2025; George *et al.*, 2016; Rego *et al.*, 2024). Moreover, innovation-related competencies, such as conceptual reframing and long-range thinking, are often vital for reconciling short-term constraints with future-oriented visions, emphasising the need for an integrative orientation to strategic responsiveness.

Our findings suggest that navigating these paradoxes requires a structured but flexible competency architecture articulated across the three interconnected domains (technical and achievement, innovation, and relational), as shown in Figure 3. Crucially, these domains are not aligned one-to-one with specific paradoxes. Instead, they operate in a mutually reinforcing manner, enabling individuals and organisations to negotiate tensions and scale learning and coordination efforts systemically. In line with paradox theory, we found that these domains collectively underpin the formation of paradoxical competencies (Smith and Lewis, 2011; Miron-Spektor *et al.*, 2018).

The technical and achievement dimension (*analysing and interpreting* and *organising and executing*) captures tools, performance expectations, and the ability to operate effectively within systems. It is especially relevant for addressing the performing and organising paradoxes, since the informants emphasised the need for precision, reliability, and operational integration. These competencies reflect collective organisational capabilities and are vital for the implementation and scaling of new practices and solutions (Ancillai *et al.*, 2023; Teece, 2007). They also anchor innovation efforts, ensuring that experimentation is translated into tangible, routinised outputs, and provide the procedural stability needed to support inclusive value-driven change and stabilise adaptive responses over time.

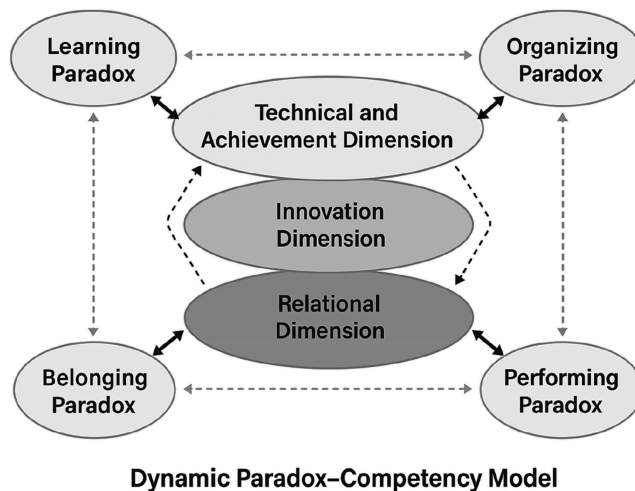


Figure 3. The competency-based framework for strategic adaptability. Source: Authors' own work

The innovation dimension (*adapting and coping* and *creating and conceptualising*) supports paradox navigation through flexibility, creativity, and learning. It is most closely associated with the learning paradox but also interacts with organising and performing demands. This dimension bridges the gap between exploration and exploitation, facilitating both adaptive experimentation and the recontextualisation of routines (Kaur *et al.*, 2025; McAfee and Brynjolfsson, 2018; Zhang-Zhang and Rohlfer, 2024). It constitutes the microfoundation of adaptive capacity by helping individuals and teams reframe tensions, navigate complexity, and imagine alternative futures.

The relational dimension (*leading and deciding*, *interacting and presenting*, and *supporting and cooperating*) encompasses the emotional and interpersonal capacity to deal with the paradoxes of belonging and performing. Trust building, inclusive governance, and empathetic coordination are not merely HR concerns but strategic competencies essential to paradox navigation (Boiral, 2009; Spencer and Spencer, 1993; Strauss *et al.*, 2017). These competencies also underpin organisational resilience and adaptability by fostering cross-functional alignment and shared commitment in the face of evolving priorities.

Connecting these three dimensions to the four paradox types enabled us to move beyond static competency catalogues and offer a dynamic lens for understanding how individuals and organisations can build strategic adaptability. Together, the three dimensions constitute the core of our competency-based framework for strategic adaptability, specifying how integrated configurations of competencies support coherent responses to paradoxical pressures.

Figure 3 illustrates the framework, with the three competency dimensions placed at the core of a dynamic system of interactions. Around them, the four paradox types are positioned to reflect their continuous and often overlapping influence on organisational life during the twin transitions. Rather than suggesting linear or exclusive associations, the arrows connecting paradoxes and competencies illustrate a mutually reinforcing and interdependent network through which competencies and paradoxical tensions shape adaptive responses over time. The visual logic of the figure thus reinforces a key insight of our study: effective paradox navigation emerges not from isolated skills but from interdependent and co-evolving competencies. Within this framework, adaptability, adaptive capacity, and agility do not function as separate traits but as mutually reinforcing responses: adaptability underpins individual behavioural flexibility, adaptive capacity connects this flexibility to broader learning and transformation processes, and agility facilitates collective, timely action across organisational boundaries.

5.1 Theoretical contribution

Our study shows that paradoxical competencies should be understood as the microfoundations of strategic adaptability, translating paradoxical cognition into concrete practices that sustain organisations during the twin transitions. Although earlier researchers framed paradoxical cognition largely as a cognitive capacity at the individual or team level, our study shows that it becomes embedded in organisational practices through interdependent competency domains. This shifts the focus from paradoxical cognition as an abstract theoretical construct to paradoxical competencies as concrete and actionable mechanisms that enable organisations to sustain adaptability in the face of twin transitions. Innovation-related competencies, for example, reflect how paradoxical cognition enables managers to balance the tension between exploration and stability through real-time improvisation—aligning with Tabesh and Vera's (2020) work on reconciling planning and spontaneity.

Rather than relying on a static typology, our framework emphasises the interdependence of competencies across tasks and levels, showing that interdependent competencies are microfoundations for dynamic capabilities that facilitate strategic responsiveness in uncertain and contradictory environments (Hofmann Trevisan *et al.*, 2024; Lepak and Snell, 2002; Teece, 2007; Zhang-Zhang and Rohlfer, 2024).

Our conceptualisation repositions paradoxical tensions as drivers of competency evolution. It shows that navigating contradictions, such as stability/novelty, autonomy/alignment, or short-term performance/long-term vision, requires the synergistic integration of relational, technical, and innovation-oriented competencies as layered expressions of strategic adaptability. This perspective highlights the multifaceted nature of paradoxical competencies, connecting individual agency with organisational learning and strategic alignment.

Our competency-based framework extends paradox theory by grounding it in concrete behaviour and development. Thus, we respond to recent calls to operationalise paradox navigation at multiple organisational levels (Nayebpour and Sehhat, 2024; Rego *et al.*, 2024), offering an approach that bridges the microfoundations of dynamic capabilities with systemic responsiveness (Lepak and Snell, 2002; Teece, 2007). By explicitly linking paradoxical competencies to paradoxical cognition, our study extends current theoretical models (e.g. Tabesh and Vera, 2020), concretely illustrating how paradox theory can be operationalised within organisational practices.

Moreover, the framework links the fragmented literature on digital transformation and green transitions. Although research on information systems and strategy has emphasised reskilling and digital mindsets (Ancillai *et al.*, 2023; Nambisan *et al.*, 2019), and sustainable HRM has focused on ethical reasoning and long-term stakeholder value (Boiral, 2009; Kaur *et al.*, 2025), our framework integrates these through the lens of paradoxical competencies. We demonstrate that workforce preparedness for the twin transitions requires the possession of individual skills and their adaptive recombination in response to persistent, contradictory demands. Thus, the framework operationalises paradox theory in the concrete domain of workforce development.

Our framework can help scholars study how paradoxes drive skill formation and adaptive behaviour, and it provides practitioners with an actionable tool for assessing and developing competencies to support ambidextrous, sustainable strategies. By explicating the interdependencies among competency dimensions and paradoxical tensions, we provide a competency-based framework for strategic adaptability to guide leaders in assessing readiness and shaping capability development under complex conditions. We propose a new way to conceptualise organisational agility, not as a trait or outcome but as a capability system dynamically constructed through paradox navigation within this framework.

5.2 Managerial implications

This study has some managerial implications. The proposed framework provides a practical tool to guide strategic adaptability initiatives and capability development, enabling businesses to adapt their models to the dynamic changes driven by the twin transitions. Firstly, leaders should focus on creating knowledge management practices that go beyond upgrading technical skills to achieve hybridisation with soft skills. The cultivation of an innovative and social mindset, along with fostering leadership aptitude in employees, will be essential for navigating rapidly changing external contexts. This can be achieved through activities that extend beyond traditional learning opportunities, including mentorship, community engagement, and role model initiatives. Middle managers should be strategic targets for these initiatives because they often act as key facilitators for translating strategic visions into operational behaviours across an organisation and creating a corporate culture that fosters individual innovation and initiative.

Secondly, the framework emphasises the need for leaders to recognise the value of continuous training to address the rapid obsolescence of skills caused by digitalisation. This can be achieved through collaborations with external institutions, such as research and training centres and higher education institutes, to create permanent platforms for employees' continuous upskilling and reskilling and to develop flexible training programmes that align with individual learning goals and evolving business needs.

This research also has implications for talent attraction practices. Internal empowerment practices should link new recruitment approaches with candidates' innovation and relational

attitudes to identify skilled individuals who can adapt to the dynamic contexts of the twin transitions. In parallel, organisations should enhance the overall employee experience by fostering inclusive, purpose-driven work environments to attract and retain talent and align with the values of innovation and sustainability.

In summary, our findings highlight the importance of cultivating paradoxical cognition through targeted training and development programmes. Organisations could benefit from training modules designed to enhance managers' cognitive flexibility, enabling them to better handle the contradictory but interrelated demands of digital and green transformations. Developing such cognitive skills would enhance managers' effectiveness and build the organisational capabilities essential for long-term resilience and adaptability.

5.3 Limitations and directions for future research

This study has several limitations that offer opportunities for further investigation.

Firstly, it comprised a limited number of industries and a single country, which may restrict the generalisability of the proposed framework. Contextual factors, such as national labour market dynamics, regulatory environments, and cultural characteristics, may have influenced both the emergence and interpretation of key competencies. Future researchers should validate the proposed framework across countries, industries, and institutional environments to assess its broader applicability.

Secondly, the qualitative approach we adopted, although appropriate for building theory, did not permit statistical generalisation. Future researchers could adopt mixed-methods or quantitative designs to evaluate the robustness of the relationships among competency domains, paradox types, and performance outcomes more systematically.

Ultimately, future empirical researchers should investigate how organisations operationalise paradoxical competencies in practice, particularly in terms of HR strategies, leadership development programmes, and learning systems, and how these competencies contribute to adaptability, resilience, and long-term organisational performance. Such investigations would refine our understanding of the microfoundations of strategic adaptability and offer a richer view of how competencies contribute to long-term transformation capacity under contradictory pressures.

6. Conclusion

We explored how organisations can navigate the paradoxical tensions of the twin digital and green transitions by developing a paradoxical competency framework. The framework systematises emerging competencies through the lens of paradox theory, provides a structured basis for strategic adaptability, and supports understanding of how organisations can navigate the complex and persistent tensions generated by the twin transitions. Drawing on paradox theory and dynamic capabilities, we analysed insights from focus groups and executive interviews across six industries. Our findings revealed three interdependent competency domains—technical and achievement, innovation, and relational—that enable organisations to address the recurring paradoxes of learning, organising, belonging, and performing.

From a theoretical standpoint, we position paradoxical competencies as the microfoundations of adaptability, showing how paradoxical cognition is operationalised into concrete organisational practices. This bridges paradox theory with dynamic capabilities in the context of the twin transitions. Furthermore, the framework provides an integrative lens for assessing and cultivating the strategic, interpersonal, and cognitive skills required to operate effectively in environments shaped by technological acceleration and sustainability imperatives. Rather than treating digital and green capabilities in isolation, the proposed framework emphasises their dynamic interplay in response to evolving organisational needs.

Ultimately, as a contribution to practice, the framework provides actionable guidance for aligning talent development strategies with long-term transformation objectives. By

foregrounding paradox navigation as a capability embedded in daily work, it reframes workforce development as a strategic lever for facilitating sustainable and adaptive change. Thus, our study gives concrete meaning to the metaphor in our title: successful transformation demands that organisations have their “heads in the clouds” to envision and embrace long-term possibilities while keeping their “feet on the ground” to manage the operational constraints, emotional frictions, and paradoxical tensions that shape everyday organisational life.

Ethics approval

The research presented in this article involved human participants and was rigorously reviewed by an independent ethics committee. Following a thorough evaluation, the committee formally approved all aspects of the research, which was conducted according to ethical standards.

Acknowledgments

The authors gratefully acknowledge the support of the Strategic Change Research Center “Franco Fontana” at LUISS Guido Carli University (Rome) and its Observatory Look4ward, in collaboration with the Intesa Sanpaolo Group.

Appendix

Interview protocol

The interview was conducted by two expert researchers, accompanied by an observing researcher.

(a) Preparatory phase

Before the discussion begins, researchers introduce themselves to interviewees. Participants are thanked and reminded that their session will be recorded and transcribed using the Amberscript software, and the recordings will be destroyed thereafter. Participants are also reminded that their data will be treated confidentially, that their participation is voluntary, and they can choose to withdraw from the discussion at any time. Respondents are asked to complete and sign the audio and video recording permission form. In the case of online interviews, participants are also invited to turn on their microphones and video, and to be in a quiet place. On-site interviews are held on the University premises to ensure confidentiality.

(b) Introduction phase

The objective of the interview is recalled: to understand how organisations react to the transformation brought about by the twin transitions, namely, digital and ecological transitions, with particular regard to the changes they create and the evolution of skills to deal with these transformations. Every participant was selected because they were recognised as key informants showing significant expertise in the field; therefore, the contribution of every participant is relevant to the understanding of the research topic.

Next, participants are asked to recall their company, role and years in the role.

(c) Stimulus Phase (to allow the respondent to project into the research topic)

Projected Scenario: Global economies are experiencing profound changes driven by the green transition and the digital revolution. These are phenomena that we think of as interconnected; they are the so-called “twin transitions”, i.e. simultaneous and interconnected advancement of both digital and environmental transitions, which pose new adaptive and evolutionary challenges for businesses. Enacting effective competitive strategies requires new knowledge, skills, abilities, and new roles and professionalism, which must integrate with existing ones in more complex organisational systems capable of governing the interaction between human and non-human intelligences.

During the initial stimulus, a set of slides is projected containing only images recalling technological development and the green transition.

After that, the two researchers start to involve participants in the conversation by posing a set of guiding questions, ensuring that all participants can express their viewpoints and are engaged in the conversation.

List of Guiding Questions:

- (1) Scenario foresight. Objective: To have the respondent reconstruct the scenario and delve into their perceptions of the drivers of change.
Q: “We ask you to imagine your industry 10 years from now, transformed by the forces of digital and green. What will be the main drivers of innovation?”
Q: “What will be the contrasting forces deriving from the twin transition for companies in the sector?”
- (2) Skills need. Objective: to explore whether it envisions a new way of thinking about competencies and how it will impact the necessary collaboration between human and artificial resources in defining competency models. In this phase, the Mural collaborative board is used to visualise the competencies that participants recall.
Q: “What skills and knowledge do you think will need to be enhanced in the company to manage this transformation process?”
Q: “What new skills will need to be created?”
- (3) Approach to learning and needs. Aim: To explore tools and approaches to challenges, also in terms of training activities
Q: “How do you address the future skills needs arising from the twin transition?”
Q: “Do you think it is necessary to plan training activities and how?”

Note

1. In this paper, we use the term *green transition* to refer to the ecological and sustainability-related transformations addressed in combination with digitalisation under the label of the twin transitions. Although the academic literature often refers to these systemic shifts as sustainability transitions (Koistinen et al., 2023; Loorbach et al., 2017), we adopted the expression “green” to align with the terminology used in European Union policy documents (e.g. the European Green Deal), which commonly use green transition as shorthand for broad ecological, environmental, and sustainability imperatives.

References

- Adiguzel, Z. and Sonmez Cakir, F. (2025), “Empowering sustainability: green entrepreneurial orientation, innovative strategies, culture and operational performance”, *Management Decision*, Vol. 63 No. 11, pp. 3934-3966, doi: [10.1108/MD-07-2024-1700](https://doi.org/10.1108/MD-07-2024-1700).
- Agostini, L., Nosella, A., Sarala, R. and Nkeng, C. (2025), “Emerging trends around strategic flexibility: a systematic review supported by bibliometric techniques”, *Management Decision*, Vol. 63 No. 6, pp. 1835-1881, doi: [10.1108/MD-02-2023-0135](https://doi.org/10.1108/MD-02-2023-0135).
- Ancillai, C., Sabatini, A., Gatti, M. and Perna, A. (2023), “Digital technology and business model innovation: a systematic literature review and future research agenda”, *Technological Forecasting and Social Change*, Vol. 188, 122307, doi: [10.1016/j.techfore.2022.122307](https://doi.org/10.1016/j.techfore.2022.122307).
- Ashraf, M.H., Triki, A. and Yalcin, M.G. (2025), “Logistics digitalization and the third-party logistics blue-collar employees performance: the role of paradoxical leader behavior”, *International Journal of Logistics Management*, Vol. 36 No. 3, pp. 987-1013, doi: [10.1108/IJLM-03-2024-0194](https://doi.org/10.1108/IJLM-03-2024-0194).
- Boiral, O. (2009), “Greening the corporation through organizational citizenship behaviors”, *Journal of Business Ethics*, Vol. 87 No. 2, pp. 221-236, doi: [10.1007/s10551-008-9881-2](https://doi.org/10.1007/s10551-008-9881-2).
- Charmaz, K. and Mitchell, R.G. (2001), “Grounded theory in ethnography”, in Atkinson, P., Coffey, A., Delamont, S., Lofland, J. and Lofland, L. (Eds), *Handbook of Ethnography*, SAGE Publications, pp. 160-174, doi: [10.4135/9781848608337.n11](https://doi.org/10.4135/9781848608337.n11).
- Charmaz, K. and Thornberg, R. (2021), “The pursuit of quality in grounded theory”, *Qualitative Research in Psychology*, Vol. 18 No. 3, pp. 305-327, doi: [10.1080/14780887.2020.1780357](https://doi.org/10.1080/14780887.2020.1780357).
- Cichosz, M., Aluchna, M., Sońta-Drączkowska, E. and Knemeyer, A.M. (2025), “Navigating paradoxical tensions in pursuit of sustainable supply chain management: review and guidance for future inquiry”, *The International Journal of Logistics Management*, Vol. 36 No. 7, pp. 99-136, doi: [10.1108/IJLM-02-2024-0078](https://doi.org/10.1108/IJLM-02-2024-0078).

- Clegg, S.R., Da Cunha, J.V. and E Cunha, M.P. (2002), "Management paradoxes: a relational view", *Human Relations*, Vol. 55 No. 5, pp. 483-503, doi: [10.1177/0018726702555001](https://doi.org/10.1177/0018726702555001).
- De Vaujany, F.-X., Leclercq-Vandelannoite, A., Munro, I., Nama, Y. and Holt, R. (2021), "Control and surveillance in work practice: cultivating paradox in 'New' modes of organizing", *Organization Studies*, Vol. 42 No. 5, pp. 675-695, doi: [10.1177/01708406211010988](https://doi.org/10.1177/01708406211010988).
- Doz, Y.L. and Kosonen, M. (2010), "Embedding strategic agility", *Long Range Planning*, Vol. 43 Nos 2-3, pp. 370-382, doi: [10.1016/j.lrp.2009.07.006](https://doi.org/10.1016/j.lrp.2009.07.006).
- Eisenhardt, K.M. and Martin, J.A. (2000), "Dynamic capabilities: what are they?", *Strategic Management Journal*, Vol. 21 Nos 10-11, pp. 1105-1121, doi: [10.1002/1097-0266\(200010/11\)21:10<11%253C1105::AID-SMJ133%253E3.0.CO;2-E](https://doi.org/10.1002/1097-0266(200010/11)21:10<11%253C1105::AID-SMJ133%253E3.0.CO;2-E).
- European Commission (2022), *Towards a Green and Digital Future :Key Requirements for Successful Twin Transitions in the European Union*, Publications Office, available at: <https://data.europa.eu/doi/10.2760/54>
- Fallon-Byrne, L. and Harney, B. (2017), "Microfoundations of dynamic capabilities for innovation: a review and research agenda", *Irish Journal of Management*, Vol. 36 No. 1, pp. 21-31, doi: [10.1515/ijm-2017-0004](https://doi.org/10.1515/ijm-2017-0004).
- Felin, T. and Foss, N.J. (2005), "Strategic organization: a field in search of micro-foundations", *Strategic Organization*, Vol. 3 No. 4, pp. 441-455, doi: [10.1177/1476127005055796](https://doi.org/10.1177/1476127005055796).
- Felin, T., Foss, N.J., Heimeriks, K.H. and Madsen, T.L. (2012), "Microfoundations of routines and capabilities: individuals, processes, and structure", *Journal of Management Studies*, Vol. 49 No. 8, pp. 1351-1374, doi: [10.1111/j.1467-6486.2012.01052.x](https://doi.org/10.1111/j.1467-6486.2012.01052.x).
- George, G., Howard-Grenville, J., Joshi, A. and Tihanyi, L. (2016), "Understanding and tackling societal grand challenges through management research", *Academy of Management Journal*, Vol. 59 No. 6, pp. 1880-1895, doi: [10.5465/amj.2016.4007](https://doi.org/10.5465/amj.2016.4007).
- Gottfredson, R. and Crane, B. (2025), "Navigating complex environments requires complex leaders", *Business Horizons*, S000768132500103X, doi: [10.1016/j.bushor.2025.06.002](https://doi.org/10.1016/j.bushor.2025.06.002).
- Gram, E.G., Brodersen, J.B., Hansen, C., Pickles, K., Smith, J. and Jønsson, A.R.B. (2023), "Fictitious cases as a methodology to discuss sensitive health topics in focus groups", *International Journal of Qualitative Studies on Health and Well-Being*, Vol. 18 No. 1, 2233253, doi: [10.1080/17482631.2023.2233253](https://doi.org/10.1080/17482631.2023.2233253).
- Guest, G., Bunce, A. and Johnson, L. (2006), "How many interviews are enough?: an experiment with data saturation and variability", *Field Methods*, Vol. 18 No. 1, pp. 59-82, doi: [10.1177/1525822X05279903](https://doi.org/10.1177/1525822X05279903).
- Guest, G., Namey, E. and Chen, M. (2020), "A simple method to assess and report thematic saturation in qualitative research", *Plos One*, Vol. 15 No. 5, e0232076, doi: [10.1371/journal.pone.0232076](https://doi.org/10.1371/journal.pone.0232076).
- Hofmann Trevisan, A., Acerbi, F., Dukovska-Popovska, I., Terzi, S. and Sassanelli, C. (2024), "Skills for the twin transition in manufacturing: a systematic literature review", *Journal of Cleaner Production*, Vol. 474, 143603, doi: [10.1016/j.jclepro.2024.143603](https://doi.org/10.1016/j.jclepro.2024.143603).
- Huang, M.-H. and Rust, R.T. (2018), "Artificial intelligence in service", *Journal of Service Research*, Vol. 21 No. 2, pp. 155-172, doi: [10.1177/1094670517752459](https://doi.org/10.1177/1094670517752459).
- Kaur, S., Arora, M. and Mittal, A. (2025), "Nurturing green employee behaviour: exploring the role of leadership, human resource management practices and individual values", *Management Decision*, Vol. 63 No. 11, pp. 3843-3866, doi: [10.1108/MD-01-2024-0055](https://doi.org/10.1108/MD-01-2024-0055).
- Keegan, A., Brandl, J. and Aust, I. (2019), "Handling tensions in human resource management: insights from paradox theory", *German Journal of Human Resource Management: Zeitschrift für Personalforschung*, Vol. 33 No. 2, pp. 79-95, doi: [10.1177/2397002218810312](https://doi.org/10.1177/2397002218810312).
- Knight, E. and Harvey, W. (2015), "Managing exploration and exploitation paradoxes in creative organisations", *Management Decision*, Vol. 53 No. 4, pp. 809-827, doi: [10.1108/MD-03-2014-0124](https://doi.org/10.1108/MD-03-2014-0124).
- Koistinen, K., Kuokkanen, A., Mikkilä, M., Levänen, J. and Linnanen, L. (2023), "Sustainable transition", in Idowu, S.O., Schmidpeter, R., Capaldi, N., Zu, L., Del Baldo, M. and Abreu, R.

- (Eds), *Encyclopedia of Sustainable Management*, Springer International Publishing, pp. 3625-3632, doi: [10.1007/978-3-031-25984-5_434](https://doi.org/10.1007/978-3-031-25984-5_434).
- Lavie, D., Stettner, U. and Tushman, M.L. (2010), "Exploration and exploitation within and across organizations", *Academy of Management Annals*, Vol. 4 No. 1, pp. 109-155, doi: [10.5465/19416521003691287](https://doi.org/10.5465/19416521003691287).
- Lengnick-Hall, C.A. and Beck, T.E. (2005), "Adaptive fit versus robust transformation: how organizations respond to environmental change", *Journal of Management*, Vol. 31 No. 5, pp. 738-757, doi: [10.1177/0149206305279367](https://doi.org/10.1177/0149206305279367).
- Lepak, D.P. and Snell, S.A. (2002), "Examining the human resource architecture: the relationships among human capital, employment, and human resource configurations", *Journal of Management*, Vol. 28 No. 4, pp. 517-543, doi: [10.1177/014920630202800403](https://doi.org/10.1177/014920630202800403).
- Lewis, M.W. (2000), "Exploring paradox: toward a more comprehensive guide", *The Academy of Management Review*, Vol. 25 No. 4, p. 760, doi: [10.2307/259204](https://doi.org/10.2307/259204).
- Loorbach, D., van Bode, J.C., Whiteman, G. and Rotmans, J. (2010), "Business strategies for transitions towards sustainable systems", *Business Strategy and the Environment*, Vol. 19 No. 2, pp. 133-146, doi: [10.1002/bse.645](https://doi.org/10.1002/bse.645).
- Loorbach, D., Frantzeskaki, N. and Avelino, F. (2017), "Sustainability transitions research: transforming science and practice for societal change", *Annual Review of Environment and Resources*, Vol. 42 No. 1, pp. 599-626, doi: [10.1146/annurev-environ-102014-021340](https://doi.org/10.1146/annurev-environ-102014-021340).
- Ma, R., Lin, Y. and Lin, B. (2023), "Does digitalization support green transition in Chinese cities? Perspective from Metcalfe's law", *Journal of Cleaner Production*, Vol. 425, 138769, doi: [10.1016/j.jclepro.2023.138769](https://doi.org/10.1016/j.jclepro.2023.138769).
- MacQueen, K., McLellan-Lemal, E., Bartholow, K. and Milstein, B. (2008), "Team-based codebook development: structure, process, and agreement", in Guest, G. and MacQueen, K.M. (Eds), *Handbook for Team-Based Qualitative Research*, Altamira Press, a division of Rowman & Littlefield Publishers, pp. 119-135.
- Marchegiani, L. (2021), *Digital Transformation and Knowledge Management*, Routledge, London.
- McAfee, A. and Brynjolfsson, E. (2018), *Machine, Platform, Crowd: Harnessing Our Digital Future (First Published as a Norton Paperback)*, W. W. Norton & Company, New York.
- Mills, J., Bonner, A. and Francis, K. (2006), "The development of constructivist grounded theory", *International Journal of Qualitative Methods*, Vol. 5 No. 1, pp. 25-35, doi: [10.1177/160940690600500103](https://doi.org/10.1177/160940690600500103).
- Miron-Spektor, E., Ingram, A., Keller, J., Smith, W.K. and Lewis, M.W. (2018), "Microfoundations of organizational paradox: the problem is how we think about the problem", *Academy of Management Journal*, Vol. 61 No. 1, pp. 26-45, doi: [10.5465/amj.2016.0594](https://doi.org/10.5465/amj.2016.0594).
- Morley, C. (2013), "Critical reflection as a research methodology", *Knowing Differently: Arts-Based and Collaborative Research Methods*, November, pp. 265-280.
- Nambisan, S., Wright, M. and Feldman, M. (2019), "The digital transformation of innovation and entrepreneurship: progress, challenges and key themes", *Research Policy*, Vol. 48 No. 8, 103773, doi: [10.1016/j.respol.2019.03.018](https://doi.org/10.1016/j.respol.2019.03.018).
- Nayebpour, H. and Sehat, S. (2024), "Designing the competency model of human resource managers based on paradox theory (case study: information and communication technology industry)", *International Journal of Organizational Analysis*, Vol. 32 No. 7, pp. 1181-1203, doi: [10.1108/IJOA-02-2023-3645](https://doi.org/10.1108/IJOA-02-2023-3645).
- O'Connor, A., Carpenter, B. and Coughlan, B. (2018), "An exploration of key issues in the debate between classic and constructivist grounded theory", *The Grounded Theory Review*, Vol. 17 No. 1, pp. 90-103.
- Palmié, M., Rüggeger, S. and Parida, V. (2023), "Microfoundations in the strategic management of technology and innovation: definitions, systematic literature review, integrative framework, and research agenda", *Journal of Business Research*, Vol. 154, 113351, doi: [10.1016/j.jbusres.2022.113351](https://doi.org/10.1016/j.jbusres.2022.113351).

- Pavlou, P.A. and El Sawy, O.A. (2011), "Understanding the elusive black box of dynamic capabilities", *Decision Sciences*, Vol. 42 No. 1, pp. 239-273, doi: [10.1111/j.1540-5915.2010.00287.x](https://doi.org/10.1111/j.1540-5915.2010.00287.x).
- Perri, A. and Rocha, V. (2024), "Grand innovation challenges: celebrating 30 years of industry and innovation with a special issue", *Industry and Innovation*, Vol. 31 No. 1, pp. 1-15, doi: [10.1080/13662716.2023.2284934](https://doi.org/10.1080/13662716.2023.2284934).
- Rego, B.S., Lourenco, D., Moreira, F. and Pereira, C.S. (2024), "Digital transformation, skills and education: a systematic literature review", *Industry and Higher Education*, Vol. 38 No. 4, pp. 336-349, doi: [10.1177/09504222231208969](https://doi.org/10.1177/09504222231208969).
- Saldaña, J. (2021), *The Coding Manual for Qualitative Researchers*, 4th ed., SAGE Publishing, London.
- Schad, J., Lewis, M.W., Raisch, S. and Smith, W.K. (2016), "Paradox research in management science: looking back to move forward", *Academy of Management Annals*, Vol. 10 No. 1, pp. 5-64, doi: [10.5465/19416520.2016.1162422](https://doi.org/10.5465/19416520.2016.1162422).
- Schad, J., Lewis, M.W. and Smith, W.K. (2019), "Quo vadis, paradox? Centripetal and centrifugal forces in theory development", *Strategic Organization*, Vol. 17 No. 1, pp. 107-119, doi: [10.1177/1476127018786218](https://doi.org/10.1177/1476127018786218).
- Singh, N., Vishnani, S., Khandelwal, V., Sahoo, S. and Kumar, S. (2024), "A systematic review of paradoxes linked with digital transformation of business", *Journal of Enterprise Information Management*, Vol. 37 No. 4, pp. 1348-1373, doi: [10.1108/JEIM-07-2023-0397](https://doi.org/10.1108/JEIM-07-2023-0397).
- Smith, W.K. and Lewis, M.W. (2011), "Toward a theory of paradox: a dynamic equilibrium model of organizing", *Academy of Management Review*, Vol. 36 No. 2, pp. 381-403, doi: [10.5465/amr.2009.0223](https://doi.org/10.5465/amr.2009.0223).
- Smith, W.K. and Tushman, M.L. (2005), "Managing strategic contradictions: a top management model for managing innovation streams", *Organization Science*, Vol. 16 No. 5, pp. 522-536, doi: [10.1287/orsc.1050.0134](https://doi.org/10.1287/orsc.1050.0134).
- Smith, W.K., Lewis, M.W. and Edmondson, A.C. (2022), *Both/and Thinking: Embracing Creative Tensions to Solve your Toughest Problems*, Harvard Business Review Press, Boston, MA.
- Spencer, L.M. and Spencer, S.M. (1993), *Competence at Work: Models for Superior Performance*, Wiley, New York.
- Strauss, K., Lepoutre, J. and Wood, G. (2017), "Fifty shades of green: how microfoundations of sustainability dynamic capabilities vary across organizational contexts", *Journal of Organizational Behavior*, Vol. 38 No. 9, pp. 1338-1355, doi: [10.1002/job.2186](https://doi.org/10.1002/job.2186).
- Tabesh, P. and Vera, D.M. (2020), "Top managers' improvisational decision-making in crisis: a paradox perspective", *Management Decision*, Vol. 58 No. 10, pp. 2235-2256, doi: [10.1108/MD-08-2020-1060](https://doi.org/10.1108/MD-08-2020-1060).
- Teece, D.J. (2007), "Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance", *Strategic Management Journal*, Vol. 28 No. 13, pp. 1319-1350, doi: [10.1002/smj.640](https://doi.org/10.1002/smj.640).
- Teece, D., Peteraf, M. and Leih, S. (2016), "Dynamic capabilities and organizational agility: risk, uncertainty, and strategy in the innovation economy", *California Management Review*, Vol. 58 No. 4, pp. 13-35, doi: [10.1525/cmr.2016.58.4.13](https://doi.org/10.1525/cmr.2016.58.4.13).
- Thornberg, R. and Charmaz, K. (2014), "Grounded theory and theoretical coding", in *The SAGE Handbook of Qualitative Data Analysis*, SAGE Publications.
- Uhrenholt, J.N., Kristenses, J.H., Adamsen, S., Jensen, S.F., Colli, M. and Waehrens, B.V. (2022), "Twin transition: synergies between circular economy and internet of things – a study of Danish manufacturers", *Circular Economy*, Vol. 1 No. 1, doi: [10.55845/HRGW4040](https://doi.org/10.55845/HRGW4040).
- Warner, K.S.R. and Wäger, M. (2019), "Building dynamic capabilities for digital transformation: an ongoing process of strategic renewal", *Long Range Planning*, Vol. 52 No. 3, pp. 326-349, doi: [10.1016/j.lrp.2018.12.001](https://doi.org/10.1016/j.lrp.2018.12.001).
- World Economic Forum (2025), "The Future of Jobs Report 2025 (*Insight Report*)", p. 290, available at: <https://www.weforum.org/publications/the-future-of-jobs-report-2025/>

Zhang, Y., Waldman, D.A., Han, Y.-L. and Li, X.-B. (2015), "Paradoxical leader behaviors in people management: antecedents and consequences", *Academy of Management Journal*, Vol. 58 No. 2, pp. 538-566, doi: [10.5465/amj.2012.0995](https://doi.org/10.5465/amj.2012.0995).

Zhang-Zhang, Y. and Rohlfer, S. (2024), "Culture and international innovation: a theoretical approach", *Management Decision*, Vol. 62 No. 10, pp. 3286-3314, doi: [10.1108/MD-06-2023-0984](https://doi.org/10.1108/MD-06-2023-0984).

Further reading

Charmaz, K. (2006), *Constructing Grounded Theory. A Practical Guide Through Qualitative Analysis*, SAGE Publications, London.

Corresponding author

Federico Ceschel can be contacted at: federico.ceschel@uniroma3.it