



Intrapreneurship in public institutions: determinants and relationship with public value orientation

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Abstract

Public sector organizations increasingly see intrapreneurship as a mechanism to enhance performance and proactively address the demands of modernizing and transforming government administration. This study explored how five organizational levers—management support, work discretion, time availability, rewards/reinforcement, and organizational boundaries—influence intrapreneurial behavior within public sector institutions. The research also focused on how this behavior is associated with public value orientation. The data were gathered from employees across various public institutions via 503 questionnaires and 20 semi-structured interviews. A mixed-methods approach was applied in which the quantitative data were processed using structural equation modeling and the qualitative data were subjected to content analysis. The findings indicate that management support and work discretion are significant enablers of intrapreneurial behavior in the public sector. In contrast, rewards, time availability, and organizational boundaries have no significant effect. In addition, intrapreneurial behavior was found to have a positive impact on public value orientation, which highlights the role of intrapreneurship in enhanced service delivery and citizen satisfaction. The results have practical implications for public managers and policymakers, namely, actionable pathways to fostering intrapreneurship and thus promoting innovation and responsiveness in public institutions.

Keywords Intrapreneurship · Management support · Work discretion · Reward · Time availability · Organizational boundaries · Public value · Public sector

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1 Introduction

Intrapreneurship has emerged as a promising way to address the challenges faced by public organizations as they strive to meet more demanding societies' expectations of innovative, effective, and accountable public services (Borins 2002; Fourie and Poggenpoel 2017). Intrapreneurship is traditionally linked with the private sector, in which innovation, proactivity, and risk-taking are routine, but intrapreneurship is becoming an increasingly important mechanism for enhancing public organizations' performance (Funko et al. 2023; Neessen et al. 2018).

Intrapreneurship has been defined as "entrepreneurship within existing organizations" (Antoncic and Hisrich 2001, p. 496). This concept refers to employees' capacity to seize opportunities and create value internally (Drucker 1987; Pinchot 1985; Sharma and Shrisman 1999). Entrepreneurs take risks to initiate and manage activities that will have an *external* impact, while intrapreneurs carry out entrepreneurial activities *within* organizations. Both kinds of employees seek out opportunities to do new things (Antoncic and Hisrich 2001).

Intrapreneurship includes behaviors such as renewal and strategic proactiveness (Felicio et al. 2012) and aligns with private-sector frameworks, but must deal with distinct public-sector constraints (Civera and Meoli 2024). Government organizations operate in highly complex environments with reduced budgets, shifting mandates, and political pressures. These institutions also have to meet union demands and heightened expectations for transparency and service quality (Andrews et al. 2005; Meier and O'Toole 2009).

In public-sector contexts, intrapreneurship offers a strategic lever for fostering innovation and responsiveness in line with public value creation (De Santana and Pinheiro 2024; Martin et al. 2020). Government innovation has traditionally been associated with top-down reforms or broad modernization agendas (Bryson et al. 2014; Flores et al. 2024; Funko et al. 2023), but managers are expressing more interest in bottom-up intrapreneurial behaviors (i.e., driven by workers), especially among non-executive employees (Civera and Meoli 2024; Kraus et al. 2019; Nouman and Sayegh-Badan 2025; Santos et al. 2025).

The present study adopted Antoncic and Hisrich's (2003) multidimensional definition of intrapreneurship, which includes risk-taking, innovativeness, proactivity, and internal competition. The current research then extended this conceptualization to the public sector. Entrepreneurship in this context requires individual agency conditioned by regulations, procedural rigidity, and public accountability, which requires unique adaptive strategies (Backhaus and Vogel 2022; Grimm and Bock 2022; Moss et al. 2022).

Scholars have examined government innovation and confirmed the public sector's growing interest in intrapreneurship (e.g., Funko et al. 2023; Heinze and Weber 2016; Moss et al. 2022; Santos et al. 2025). However, empirical studies are needed to test theoretical models of intrapreneurship using context-specific data from underrepresented public sectors, such as those in Southern Europe. Institutional and cultural variables have been shown to shape how employees engage in and receive intrapreneurial activities (Flores et al. 2024; Nouman and Sayegh-Badan 2025; Santos et al. 2025).

Notably, various questions remain about the organizational conditions that foster intrapreneurial behaviors (Civera and Meoli 2024; Farrukh and Ghazzawi 2024; Huang et al. 2021; Kearney and Meynhardt 2016; Santos et al. 2025) and about their relationship with public value orientation (De Santana and Pinheiro 2024). Key enabling factors have been studied in isolation, such as management support, autonomy, time availability, reinforcement, and organizational boundaries (e.g., Hornsby et al. 2002; Huang et al. 2021; Neessen et al. 2018). However, the interplay of these variables is still only partly understood in public sector environments (Civera and Meoli 2024; Gorgievski et al. 2023; Kearney and Meynhardt 2016; Moss et al. 2022; Santos et al. 2025).

In addition, the literature often discusses innovation outputs, yet scholars know little about the link between intrapreneurship and public value orientation (De Santana and Pinheiro 2024). This normative outcome does much to establish the legitimacy of innovation in public institutions (Bozeman 2007). Thus, more context-sensitive theorization is needed (Heinze and Weber 2016) to expand the basic definition of intrapreneurship as bottom-up activities undertaken by organizational insiders in pursuit of innovation and renewal (Antoncic and Hisrich 2003). According to Lajçi (2025), research on intrapreneurship still lacks conceptual consensus.

In response to these gaps, the current study focused on how five organizational levers—management support, work discretion, time availability, rewards/reinforcement, and organizational boundaries—influence intrapreneurial behavior within public institutions. This research also explored the association between this behavior and public value orientation. Rather than forming a new conceptualization, the study sought to make more empirically robust contributions by testing a model that links these five levers.

The methodology included adapting the Corporate Entrepreneurship Assessment Instrument (CEAI) (Hornsby et al. 1999; Marques et al. 2022). In addition, the analyses relied on supporting evidence from the literature (e.g., Civera and Meoli 2024; Kearney and Meynhardt 2016; Santos et al. 2025) on intrapreneurial behavior and public value orientation. The data were collected from Portugal's public administration to contribute reliable findings to debates about public innovation.

On a theoretical level, this research sought to clarify the antecedents and outcomes of intrapreneurship in bureaucratic contexts. Portugal is characterized by a climate of post-austerity governance, evolving agendas for public sector modernization, and persistent structural hierarchies. The country's public system thus comprises formal constraints that coexist with increasing expectations for innovation and responsiveness (Calazans et al. 2024; da Fonseca Cameira et al. 2025). Studying intrapreneurship in this environment facilitated the exploration of how established organizational levers function under restrictions and whether these variables contribute to innovation in line with public value goals.

This study adopted a mixed-methods approach (i.e., a combination of quantitative and qualitative techniques). A total of 503 questionnaires were administered and analyzed using structural equation modeling (SEM) with the help of SmartPLS software. In addition, 20 semi-structured interviews were conducted with public sector employees, and the transcripts were subjected to content analysis using NVivo software.

2 Background and hypotheses development

2.1 Public sector intrapreneurship

Intrapreneurship is increasingly perceived as a strategic tool for enhancing innovation and responsiveness in public administration. This strategy is especially important for governments transitioning from traditional bureaucratic models to those emphasizing value creation and collaborative governance (Casady et al. 2020). Public institutions are under increased pressure to improve service delivery, citizen engagement, and accountability. In this context, intrapreneurial behavior has attracted more attention as employees engage in proactive, risky, and innovative initiatives within established organizations (Antoncic and Hisrich 2003; Pinchot 1985).

Rapid transformations have recently raised complex challenges for public administrations that require adaptive, innovative, and responsive institutions (Borins 2002; Fourie and Poggenpoel 2017). These challenges span many domains including demographic shifts, digitalization, climate change, and evolving social expectations. In this complex environment, intrapreneurship has emerged as a strategy that can foster innovation and enhance performance within public sector organizations (Moss et al. 2022; Neessen et al. 2018; Santos et al. 2025).

Intrapreneurship has primarily been associated with the private sector, but public entities are becoming more aware of its potential for generating public value (Gorjievski et al. 2023). However, public administrations must operate within unique institutional and regulatory frameworks, which significantly shape these organizations' capacity for entrepreneurial behavior (Grimm and Bock 2022). More specifically, many public subsectors (e.g., healthcare, education, social protection, and national defense) have to meet stringent regulatory requirements that reflect concerns about public safety, legal compliance, ethical oversight, and quality assurance.

These complex regulations are more than just bureaucratic constraints as they are mechanisms intended to protect social values, enforce accountability, and safeguard vulnerable populations (Markopoulos and Vanharanta 2019). For example, standardized procedures and legal protocols in healthcare and child protection services serve as critical checks and balances, ensuring both efficacy and equity. The public sector is criticized as inherently rigid or risk-averse, yet its inflexibility should be understood as a product of legitimate imperatives.

Intrapreneurial behavior can yield transformative outcomes within exactly this kind of highly regulated environment. The public sector is also not inherently resistant to change. On the contrary, many government organizations display a strong capacity for institutional innovation, especially when their leadership supports experimentation and front-line employees are empowered (Backhaus and Vogel 2022; Osborne and Brown 2013). Understanding the interplay between regulation and innovation thus requires a more nuanced approach. Formal structures can constrain autonomy to some degree, but they also provide a stable foundation on which transformations can be responsibly built and scaled (Mazzucato 2018).

From this viewpoint, intrapreneurship in public institutions comprises a proactive mobilization of resources, generation of innovative solutions, and ability to deal with complex regulatory environments. These features facilitate the improvement of

public service delivery and alignment of institutional objectives with evolving social needs (Diefenbach 2011; Moore 1995). Rather than being incompatible with public sector reasoning, intrapreneurship can reconcile institutional stability with strategic responsiveness, enabling organizations to create new forms of public value.

Academic interest in intrapreneurship has evolved significantly since it was initially conceptualized—together with corporate entrepreneurship—in the 1980s (Pinchot 1985). The term corporate entrepreneurship often denotes top-down strategic initiatives, while intrapreneurship emphasizes decentralized, bottom-up initiatives led by individuals or teams from across hierarchies (Franco and Verde 2018). The literature reflects this ongoing debate about terminology (e.g., Antoncic and Hisrich 2003; Kuratko et al. 2015; Zahra and Covin 1995), but recent research has indicated a convergence toward intrapreneurship as the more inclusive term. This trend is especially clear when a single term is used for entrepreneurial behaviors within both public and private organizations (Blanka 2019).

Three conceptual streams dominate the literature on employee intrapreneurship. The first is the entrepreneurial orientation approach, which emphasizes individual-level proactivity, innovation, and risk-taking (e.g., Demircioglu and Chowdhury 2021; Jong et al. 2015). The second stream is the entrepreneurial outcomes approach, which focuses on employees' involvement in specific innovation projects (e.g., Guerrero and Peña-Legazkue 2013; Urbano et al. 2013). The last is the behavioral approach, which frames intrapreneurship as daily innovation-oriented initiatives that enhance organizational adaptability (e.g., Gawke et al. 2019; Neessen et al. 2018; Chang et al. 2024).

Empirical research has stressed the value of intrapreneurship across organizational contexts. Scholars have demonstrated its association not only with improved service delivery and innovation performance (Wan et al. 2020) but also with individual outcomes such as job satisfaction, well-being, and enhanced performance (Pandey et al. 2021). These findings highlight the multidimensional nature of intrapreneurship and its growing importance in public institutions, which operate under complex conditions of stringent accountability and constrained resources (Funko et al. 2023; Vivona et al. 2025).

2.2 Factors influencing public institutions' intrapreneurship

An integrated approach is needed to understand the drivers of intrapreneurship in the public sector and move beyond isolated dimensions. Studies have usually assessed organizational factors such as management, work discretion, and organizational boundaries separately (e.g., Hornsby et al. 2002; Huang et al. 2021; Neessen et al. 2018). However, their practical effects are deeply interrelated and often mutually reinforcing (Civera and Meoli 2024; Gorgievski et al. 2023; Moss et al. 2022; Santos et al. 2025).

For instance, a supportive managerial style can strengthen employee discretion in decision making. This positive effect in turn can mitigate the constraints institutional boundaries or time pressures put on bottom-up innovation. Public sector intrapreneurship should thus be conceptualized as a dynamic, interdependent process shaped

by the interplay of organizational enablers, individual agency, and external institutional constraints (Gorgievski et al. 2023; Neessen et al. 2018).

This interdependence is especially noticeable in public organizations as their innovations must respect strict regulatory, procedural, and accountability frameworks (Grimm and Bock 2022). Legal mandates, transparency requirements, and public scrutiny impose legitimate constraints on change, yet these factors do not always inhibit it. Instead, these conditions require a more nuanced model of how intrapreneurial behavior is negotiated, shaped, and expressed within strongly controlled environments (Moss et al. 2020). The strategic alignment of internal organizational factors becomes vital in restrictive contexts. When integrated coherently, these variables can help intrapreneurs manage institutional rigidity and transform constraints into opportunities for socially- and value-driven innovation (Osborne and Brown 2013).

The present study explored how five organizational levers—management support, work discretion, rewards/reinforcement, time availability, and organizational boundaries—influence intrapreneurial behavior within public sector institutions. The analytical framework was grounded in prior empirical research using the CEAI (e.g., Hornsby et al. 1999; Marques et al. 2022) and other recent contributions to the field (e.g., Civera and Meoli 2024; Kearney and Meynhardt 2016; Santos et al. 2025). The following subsections present the theoretical mechanisms linking each lever to intrapreneurial behavior.

2.2.1 Management support

Leadership support in public administration is a key enabler of adaptive policies and institutionalized intrapreneurial practices, which are fundamental tools for effectively meeting the complex, evolving challenges of public governance (Grimm and Bock 2022). Transformational leaders invest in team development and employee autonomy, so they are especially well positioned to stimulate intrapreneurial behavior. However, this leadership style has been inconsistently adopted across government organizations. Many institutions follow rigid hierarchical management models that constrain creativity. In these environments, traditional leaders may even perceive intrapreneurial initiatives as threats to their authority (Santos et al. 2025).

An intrapreneurial culture requires sustained management support not only on a symbolic level but also through the provision of resources, legitimization of innovative activities, and creation of enabling structures. Public sector managers play a vital role in shaping organizational environments that support creativity and innovation, which are core elements of intrapreneurship (Bilhim 2013). Symes (1999) stresses that management support is especially valuable for government reforms that enhance public value and administrative efficiency. These amendments frequently introduce new technologies and managerial practices that can only be implemented effectively by a strong leadership (Pollitt and Bouckaert 2004).

Leadership style and motivation for public service are also strongly related to employees' willingness to engage in innovation. Leaders must articulate a clear vision, foster intrinsic motivation, and support adaptive behaviors to integrate emerging intrapreneurial practices more strongly into public organizations (Backhaus and

Vogel 2022). By legitimizing innovation, transformational leaders reduce institutional resistance, provide critical resources, and signal tolerance for risk. This support creates the conditions under which public employees are more likely to experiment, collaborate, and pursue value-creating initiatives (Civera and Meoli 2024; Santos et al. 2025). Based on the above findings, the first hypothesis was written as follows:

H1 Management support positively influences intrapreneurship in the public sector.

2.2.2 Work discretion

Work discretion or autonomy refers to how much organizations delegate authority and tolerate failure at lower hierarchical levels (Hornsby et al. 2002). Employees are more likely to engage in intrapreneurial behavior when they feel free to act independently and make decisions about their designated responsibilities.

However, discretion is difficult to achieve in the public sector because policymaking and accountability often require heightened scrutiny (Civera and Meoli 2024). One way employees may acquire greater discretion is by demonstrating excellence in specific performance indicators or settings. These successes in turn give institutional leaders increased operational autonomy. For example, high-performing universities are often part of governance systems, and these institutions benefit from implementing the most advanced reforms in autonomy and accountability (Michavila and Martínez 2018).

In public organizations, work discretion represents a key lever for generating intrapreneurial behavior because autonomous workers can make informed decisions, initiate new processes, and adapt routines to meet internal challenges (Foss et al. 2015). Unlike rigid, centralized control, discretion allows individuals to exercise creativity within institutions—an essential condition for innovation.

However, discretion in public service is limited. Moss et al. (2020) examined Project ECHO in Australia's Queensland health system and found that most cases of successful professional autonomy were deeply embedded in established leadership and decision-making structures. In this context, discretion implied regulated freedom, namely, shared leadership based on trust, legitimated procedures, and institutional alignment. Moss et al.'s (2020) finding suggests that autonomy in the public sector arises in culturally and legally tolerant environments, which both enable and constrain innovation (Moss et al. 2020).

In addition, intrapreneurial activities are inherently dynamic and adaptive. Public employees are usually exposed to financial, temporal, or regulatory constraints, so their capacity for proactive response is crucial. According to Antoncic and Hisrich (2003), intrapreneurial behavior includes multiple dimensions, more specifically, proactiveness, risk-taking, and adaptability. Individuals with these traits can overcome institutional barriers and persist despite embedded obstacles. Antoncic and Hisrich's (2003) conclusions indicate that effective discretion depends on not only organizational conditions but also individual agency and strategic resilience.

Employees' roles in public organizations have evolved significantly in recent decades (Neessen et al. 2018). Government workers have shifted toward expanded responsibilities and discretion, transforming workers from passive implementers to

active innovators and value creators (Bowen 2016). Discretion thus includes both autonomy over tasks and freedom to try novel approaches in work environments that tolerate failure (Hornsby et al. 2002). In the public sector, work discretion is best understood as giving employees a flexible structure of responsibilities and competencies that enables them to be proactive while remaining aligned with organizational goals (Corbett 2005; Giunipero et al. 2005). When discretion is guided by clear expectations and well-defined goals, it can effectively promote intrapreneurial behavior (Gartner 1988).

Public organizations face serious challenges when they depart from traditional paradigms of government administration, especially if these institutions encourage innovation and better service delivery (Gorgievski et al. 2023). During these transformations, intrapreneurial initiatives have become prominent mechanisms that facilitate internal innovation and improved performance (Demircioglu 2019; Gorgievski et al. 2023).

Work contexts significantly affect the viability and effectiveness of intrapreneurial behavior (Parker and Wang 2015). More specifically, cultural and structural factors (e.g., decentralization or participatory governance) directly influence staff members' ability to create public value (Moore 2021). Overall, employees need greater autonomy in planning work activities—in combination with decentralized decision making—to engage in intrapreneurial behavior (Meynhardt and Diefenbach 2012). This comportment will more likely emerge in environments with moderate formal constraints and institutional support for innovation (Morris et al. 2009). The above research was incorporated into the following hypothesis:

H2 Work discretion positively influences intrapreneurship in the public sector.

2.2.3 Reward and/or reinforcement

Organizations should recognize individuals' entrepreneurial behavior as this is a key mechanism for promoting intrapreneurship (Hornsby et al. 2002). Financial and non-financial rewards have been shown to encourage innovation and proactivity in the private sector (Hornsby et al. 2009). However, using financial incentives requires greater caution in the public sector as they may weaken the intrinsic motivations closely tied to public service, such as promoting social welfare, overcoming environmental challenges, and fostering knowledge diffusion (Civera et al. 2020).

Research on government organizations has emphasized non-financial recognition because of these concerns. Rewards can include formal recommendations, internal visibility, professional development, and career progression, which are more appropriate tools for successfully reinforcing public-sector intrapreneurial behavior (Kearney et al. 2009). Private business models often rely on direct financial rewards, but government agencies have strict accountability frameworks that require fairness, transparency, and a responsible use of taxpayer funds (Backhaus and Vogel 2022). Thus, symbolic, intrinsic reinforcement aligns more closely with the public sector's values and constraints.

The literature also mentions job satisfaction as an effective proxy for reward in public organizations. Civil servants' satisfaction is often derived from perceived pur-

pose, autonomy, meaningful work, and a sense of meeting collective goals (Van Wyk and Adonisi 2008). These perceptions are extremely important because they sustain intrapreneurial behavior, especially when financial rewards are limited. Antoncic and Hisrich (2003) note that individuals who feel their efforts are valued are more likely to remain engaged and motivated to innovate with or without formal recognition.

This dynamic is especially important in mission-driven institutions, in which the desire to increase social well-being is a significant motivation (Bozeman 2007; Moore 1995). Intrapreneurial initiatives can tangibly improve public services, so employees' feeling of accomplishment can reinforce their engagement through their satisfaction and civic pride, even without extrinsic rewards. Therefore, public sector reinforcement must be reformulated as a multidimensional system based on recognition, psychological safety, and alignment between individual values and institutional missions. Government managers play a key role in this system by strengthening innovation structures and creating environments in which entrepreneurial successes are rewarded in meaningful, context-appropriate ways (Civera and Meoli 2024; Santos et al. 2025).

Well-designed reward systems have to match organizational goals, consider measurable outcomes, and include financial and non-financial incentives. In this way, the rewards will motivate workers to engage more deeply in innovative and entrepreneurial activities (Madan 2013). Ireland et al. (2008) argue that fostering intrapreneurship requires organizations to go beyond traditional compensations and offer recognition, career advancement, and shared purpose. Entities need to value autonomy, creativity, and initiative and adopt reward systems that support these behaviors, thereby creating self-reinforcing loops that sustain intrapreneurial engagement (Antoncic and Hisrich 2001). Hence, the present study's third hypothesis stated that:

H3 Rewards and/or reinforcement positively influences intrapreneurship in the public sector.

2.2.4 Time availability

Potential entrepreneurs are more likely to engage in innovation when they have discretionary time to go beyond their core job tasks (Hornsby et al. 2009; Kuratko et al. 2014). Fixed schedules and heavy workloads can cause employees to miss opportunities and fail to develop creativity. Teamwork and strategic time distribution are especially important in the public sector (Civera and Meoli 2024) since collaborative processes and cross-functional coordination usually reinforce innovation.

Time availability is widely recognized as a crucial resource for intrapreneurship, in particular when innovation depends on experimentation, reflection, and collaboration outside routine duties (Hornsby et al. 2002; Zahra 1993). Kuratko et al. (2005) stress the need for managerial support in this context as supervisors who actively facilitate innovation and encourage workers to spend time on intrapreneurial activities significantly increase this behavior. Conversely, time constraints can prevent employees from balancing core duties with new project development, which reduces these individuals' potential for innovation (Antoncic and Hisrich 2001).

However, public organizations are often constrained by procedural formalities and limited staffing, so the time–innovation relationship is more than just a matter of allocating the necessary hours. Heinze and Weber (2016) studied intrapreneurs working in integrative medicine institutions. The cited authors found that successful innovation often hinges less on the time made formally available and more on strategic negotiations for space within organizations' structure.

Heinze and Weber (2016) further identified intrapreneurs' strategies for mobilizing change despite internal constraints. The tactics include (1) strategically framing initiatives to align with the dominant logic, (2) leveraging hybrid positions that cross boundaries between departments or stakeholder groups, and (3) cultivating supportive coalitions to build legitimacy. With these behaviors, intrapreneurs can create temporal and symbolic space for innovation even in time-pressured, heavily-regulated environments (Heinze and Weber 2016).

The above findings have to be translated for the public sector, in which time should be treated as a negotiated resource rather than a precondition for intrapreneurship. Government intrapreneurs can secure enough time by aligning their initiatives with official priorities, building alliances, and communicating the value of innovations to the public. This perspective avoids a static understanding of time and stresses government employees' agency and relational skills that create optimal conditions for innovation.

Formally available time is still an important enabler, but its real impact on intrapreneurial activities depends on how well individuals rationalize and leverage that time within their organization (Civera and Meoli 2024; Santos et al. 2025). Deeply entrenched public structures are often constrained and inflexible, so employees' ability to negotiate time is critical to successful innovation. These findings were incorporated into the following hypothesis:

H4 Time availability positively influences intrapreneurship in the public sector.

2.2.5 Organizational boundaries

Flexibility is critical to entrepreneurship as this characteristic facilitates adaptability and exchanges of resources and knowledge across organizational boundaries (Acs et al. 2013). These formal rules and informal norms define individual behavior, decision-making authority, and interactions between units and hierarchical levels (Burgelman 1983; Covin and Slevin 1991).

In public institutions, organizational boundaries tend to more pronounced due to statutory mandates, procedural constraints, and accountability hierarchies designed to ensure transparency, equity, and legal compliance (Santos et al. 2025). These structures directly shape government intrapreneurs' autonomy and discretion and define the 'playing field' for intrapreneurial behavior. When overly rigid or vague, boundaries tend to restrict innovation, weaken the legitimacy of new initiatives, and increase the risk of contravening established procedures (Hornsby et al. 2002; Ingram and Bratnicka-Mysliwiec 2021).

In contrast, clearly articulated yet moderately flexible boundaries can function as supportive constraints that offer structure while encouraging creative discretion.

Research on autonomy and work discretion suggests that entrepreneurial activity flourishes when individuals understand both the limitations of—and degree of freedom within—their official role (Foss et al. 2015; Heinze and Weber 2016). In this kind of context, intrapreneurs are better positioned to exercise their judgement, navigate constraints, and pursue value-creating initiatives without diminishing their legitimacy.

Organizational boundaries are thus more than just passive limitations on behavior, functioning instead as key components in negotiations for increased autonomy and discretion. In the public sector, reinforcing legitimacy and following procedure are paramount, so limits must be carefully calibrated. Government managers should reconceptualized boundaries as an institutional framework that supports intrapreneurial behavior through reduced ambiguity and reinforces permissible activities within complex systems (Kuratko and Morris 2018). The above findings were translated into the fifth hypothesis:

H5 Organizational boundaries positively influence intrapreneurship in the public sector.

2.3 Intrapreneurship in public institutions and public value

Public value orientation is a key concept in public management (Bason 2010; Hartley 2012) because this approach stresses efficient public services and social relevance, transparency, and accountability (Bozeman 2007; Moore 1995). Public institutions are frequently depicted as bureaucratic, inflexible, or slow to innovate, but these stereotypes underplay government organizations' crucial role as protectors of the public trust, deliverers of consistent services, and responsible stewards of public resources.

In this context, intrapreneurship emerges as a vital mechanism for creating public value (Da Silva Souza and Takahashi 2017; De Santana and Pinheiro 2024; Nouman and Sayegh-Badan 2025). Intrapreneurship allows managers and employees to respond creatively to complex challenges and facilitates organizations' adaptation to evolving social needs (Kearney et al. 2007). According to O'Flynn (2007), intrapreneurial innovations facilitate the provision of inclusive, efficient, and citizen-oriented services, which constitute core attributes of public value.

More importantly, intrapreneurship both improves operations and produces broader outcomes, namely, social equity and the democratic legitimacy of public services (Bozeman 2007; D'Angelo et al. 2024). Rainey (1991) stresses that government institutions' innovation capacity should be driven by intrapreneurial practices in order to address multifaceted social issues more decisively. These strategies change public organizations' role from passive service providers to active co-creators of public solutions, especially when innovation is harnessed to improve their performance (Diefenbach 2011). Public value thus becomes a co-produced outcome of partnerships between the government and civil society and of active collaboration with society (Osborne 2010). Intrapreneurship fosters cooperation and innovation across organizational boundaries, so this strategy contributes significantly to reorientating public agencies toward social value creation (Moore 1995).

Notably, sectors such as healthcare education, transport, and child protection operate under strict legal and procedural constraints precisely because of their critical services. As mentioned previously, these structures may appear to prevent innovation, but they also protect vulnerable groups, promote equity, and ensure procedural accountability (Bryson et al. 2014). Within government institutions, intrapreneurship must consider legal, ethical, and operational constraints, which is when intrapreneurial behavior can prove especially valuable. Public sector intrapreneurship largely avoids decreasing regulatory scrutiny and instead strengthens institutional accountability by generating innovations that enhance transparency and operational efficiency (Kearney et al. 2007; Osborne 2010).

Government employees can identify service gaps, engage in co-creation with citizens, or redesign internal workflows, which is more than merely innovating. These individuals thus engage in institutional stewardship. Their actions directly reinforce public value by aligning service provision with social needs, as well as enhancing legitimacy, ethical accountability, and organizational learning (Hartley 2012; Meynhardt and Diefenbach 2012). The above research was incorporated into the final hypothesis:

H6 Public sector intrapreneurship positively influences public value orientation.

The conceptual model presented in Fig. 1 was based on the literature review and six research hypotheses.

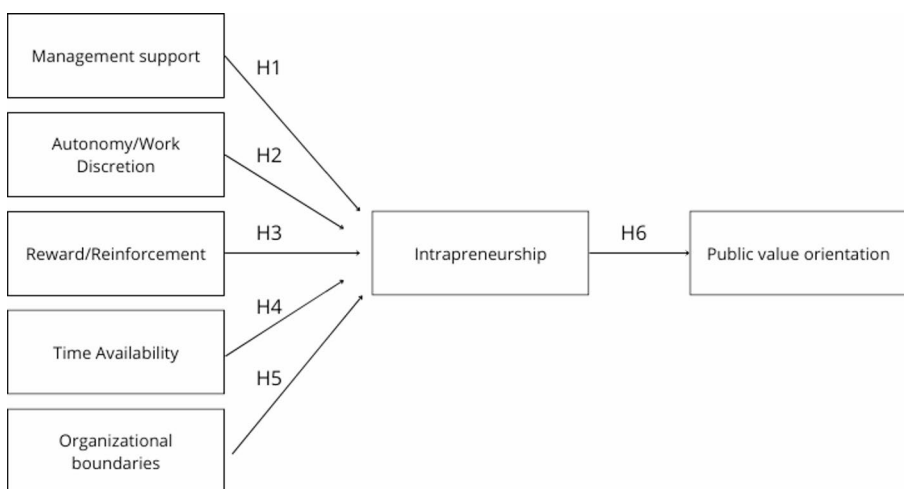


Fig. 1 Conceptual model

3 Methodology

3.1 Methods applied

This study explored intrapreneurship in public service contexts using a mixed-methods approach that integrated both quantitative and qualitative techniques. The quantitative methodology relied on a structured questionnaire that facilitated broader geographic coverage, ensured respondent anonymity, and minimized potential bias by allowing the participants to respond independently and at their own pace (Cooper and Schindler 2016). The qualitative methodology, in turn, comprised semi-structured interviews that offered a deeper understanding of individual experiences and organizational processes and dynamics. Interpretative analysis was conducted of interviewees' perceptions of these complex phenomena, which produced generalizations grounded in theory (Yin 2017).

Johnson et al. (2007) note that, because mixed-methods research is strengthened by both qualitative and quantitative approaches, this methodology helps mitigate the limitations of each type of method on its own (Molina-Azorín 2012). This complementarity offers a more comprehensive understanding of research contexts and phenomena (Jick 1979).

3.2 Data collection and sample profile

The data were collected using an online questionnaire and semi-structured interviews with employees of Portuguese public sector organizations. The survey was administered between May 2024 and January 2025, yielding 503 valid questionnaires completed by workers from a diverse array of institutions and geographical regions. The research population comprised Portugal's central public administration, which included 556,458 employees in 2024 (Direção-Geral da Administração e do Emprego Público 2024).

Taherdoost (2017) states that the sample size is adequate if the total number of questionnaires provides a low margin of error and a 95% confidence level, which was true for the current study. In addition, the distribution strategy intentionally targeted a broad population to mitigate the risk of non-response bias and to ensure reliable findings.

The final sample constituted approximately 0.09% of the total public sector workforce, so the sample followed precedents in empirical research on complex constructs within large-scale bureaucratic systems (e.g., Gorgievski et al. 2023). The data gathered also met the minimum thresholds for partial least squares (PLS)-SEM, namely, the 10-times rule and benchmarks in power analysis (Hair et al. 2022).

The main goal of the current study was to test relationships between constructs rather than to derive population-level generalizations. Nonetheless, this research prioritized representative analytical results, taking care to capture a wide range of experiences across hierarchical levels and administrative domains. The data collection ensured variation in key sociodemographic and institutional attributes by recruiting respondents from diverse occupational categories, ministerial departments, and seniority levels.

The early and late respondents were compared to make sure no statistically significant differences existed in core sociodemographic indicators and thus to mitigate concerns about non-response bias (Armstrong and Overton 1977). The eligibility criteria also required the participants to be employed actively in a public sector institution (i.e., central or local administration) and to occupy either managerial or non-managerial positions. Each respondent had a minimum tenure of 12 months to ensure adequate familiarity with the organizational processes related to intrapreneurship.

The survey was distributed using institutional mailing lists, internal newsletters, and professional networks, with the help of public sector unions and human resource departments. Participation was fully voluntary. Informed consent was obtained in accordance with ethical standards for studies involving human subjects, and the respondents were assured that their data would be kept confidential and used exclusively for academic purposes.

Table 1 provides a detailed demographic and professional profile of the respondents. The majority were females (62.8%) between 46 and 55 years old (42.8%), who had earned at least a bachelor's degree (55.5%). Regarding seniority, 28.8% of the participants had between 1 and 5 years of experience, while 25.6% reported having worked between 21 and 30 years. The most representative job categories were senior specialists (71.4%) and mid-level technicians (21.5%).

Twenty semi-structured interviews were conducted with individuals who had already completed the survey and consented to follow-up contact in order to enrich

Table 1 Characterization of the questionnaire sample

		<i>n</i>	%
Gender	Feminine	316	62.8%
	Masculine	187	37.2%
Age	<25 years	0	0.0%
	25–35 years	43	8.5%
	36–45 years	142	28.2%
	46–55 years	215	42.8%
	>55 years	103	20.5%
Literary qualifications	PhD	16	3.2%
	Masters	104	20.7%
	Graduates	279	55.5%
	Secondary Education	100	19.9%
	Basic Education	4	0.7%
Level of seniority	<5 years	145	28.8%
	6–10 years	56	11.1%
	11–15 years	47	9.3%
	16–20 years	63	12.6%
	21–30 years	129	25.6%
	>30 years	63	12.6%
Occupation type	Leadership and executive categories	8	1.6%
	Senior specialist careers	359	71.4%
	Mid-level technical careers	108	21.5%
	Operational staff careers	17	3.4%
	Specialized careers	11	2.2%

and triangulate the survey data. The interviews lasted approximately 15 min and took place between November 2024 and January 2025. The participants were selected for their professional and institutional diversity to enhance the depth and contextual richness of the data. The qualitative component failed to meet Siggelkow's (2007) 'talking pig' criterion, but the data collected comprised a meaningful complement to the quantitative findings because the qualitative information highlighted specific organizational traits and individual experiences.

Despite their brevity, the interviews provided valuable insights into the perceived enablers of and constraints on intrapreneurial behavior within the public sector. The interview protocol promoted discussions of organizations' internal dynamics and routines, which ensured meaningful triangulation with the survey results. According to Gioia et al. (2013), triangulation enhances the richness and credibility of findings, adding depth to interpretations of empirical robust analyses' results.

The qualitative data were processed using thematic coding that matched the study's conceptual framework. This abductive approach (Dubois and Gadde 2002) highlighted conditional mechanisms and anchored theoretical interpretations in the practitioners' lived experiences. The goal was not to generate theory but rather to enhance interpretations of statistical results. Thus, the qualitative analysis stopped short of making independent theoretical or empirical generalizations due to the limited scope and depth of the methodology. Instead, the thematic coding provided a complementary layer that contextualized and humanized the quantitative results, which contributed to the robustness of the analyses.

Table 2 presents the 20 interviewees' profile. These individuals were mostly employees involved in operations, including frontline service providers and administrators. The interview data provided a deeper understanding of ground-level intrapreneurial practices, but this information fell short of fully reflecting senior executives or strategic decision makers' perspectives. The data limitations mean that more research is needed to cover a broader range of hierarchical perspectives.

3.3 Measures

As mentioned previously, two instruments were used to collect the data. The first was a structured questionnaire with seven sections: one to capture the respondents' characteristics (e.g., age, gender, education, and job category) and six to measure the core constructs under study.

The organizational antecedents of intrapreneurship were assessed using the CEAI, which was developed by Hornsby et al. (1999) and validated for Portugal by Marques et al. (2022). The CEAI covers five dimensions: management support (19 items), work discretion (10 items), rewards/reinforcement (6 items), time availability (6 items), and organizational boundaries (7 items). Each factor in theory influences employees' intrapreneurial behavior. This questionnaire was originally designed for private-sector firms, but it has been adapted to fit varied contexts, including public administration (e.g., Kontic and Vidicki 2016).

The present study made two additional adaptations to ensure relevance to the Portuguese public sector. First, a pre-test was run to align the semantic and conceptual

Table 2 Characterization of interviewees

Interviewee	Gender	Professional category	Academic qualifications	Location	Area of activity of the institution
1	Feminine	Senior Technician	Graduates	Lisbon	Justice
2	Feminine	Senior Technician	Graduates	Faro	Infrastructure and housing
3	Feminine	Technical assistant	Secondary Education	Lisbon	Social Security
4	Masculine	Senior Technician	Masters	Santarém	Infrastructure and housing
5	Masculine	Senior Technician	Graduates	Évora	Higher education
6	Feminine	Senior Technician	PhD	Vila Real	Higher education
7	Masculine	Operational Assistant	Secondary Education	Vila Real	Education
8	Masculine	Senior Technician	Graduates	Porto	Infrastructure and housing
9	Masculine	Senior Technician	PhD	Coimbra	Local authority
10	Masculine	Operational Assistant	Secondary Education	Lisbon	Internal administration
11	Feminine	Technical assistant	Secondary Education	Aveiro	Infrastructure and housing
12	Feminine	Senior Technician	Graduates	Porto	Finances
13	Feminine	Senior Technician	Graduates	Aveiro	Culture
14	Masculine	Senior Technician	Masters	Vila Real	Infrastructure and housing
15	Masculine	Senior Technician	Graduates	Faro	Health
16	Masculine	Senior Technician	Graduates	Braga	Transport
17	Feminine	Technical assistant	Secondary Education	Lisbon	Agriculture and fisheries
18	Masculine	Senior Technician	Graduates	Viseu	Infrastructure and housing
19	Feminine	Senior Technician	Graduates	Bragança	Infrastructure and housing
20	Feminine	Senior Technician	Masters	Viana do Castelo	Health

content, replacing or removing references to profitability, market share, or commercial competition with terms related to public value, transparency, and procedural efficiency.

Second, previous adaptation guidelines were followed (e.g., Foss et al. 2015), which included embedding contextual clarifications into selected items to accommodate respondents less familiar with entrepreneurship terminology. The CEAI originated in private sector research, but, because this questionnaire emphasizes internal organizational levers rather than market dynamics, it is also appropriate for non-market environments, with adequate contextualization. The CEAI is consistent with the present research aim of empirically testing how well these levers transfer to highly institutionalized public contexts, such as ministries and municipalities within the Portuguese administrative system.

Intrapreneurship was measured using 9 items from Gawke et al.'s (2017) work, and public value orientation was assessed by 5 items developed by Meynhardt (2009)

and Diefenbach (2011). All the items relied on 5-point Likert scales ranging from 1 (“Strongly disagree”) to 5 (“Strongly agree”).

Multiple strategies were applied to mitigate potential common method bias (Podsakoff et al. 2003; Podsakoff and Organ 1986) while designing the questionnaire. The sequence of items intentionally avoided mirroring the structure of the conceptual framework, thereby reducing the likelihood that respondents would make any direct associations between the constructs. The participants also received no information about the specific relationships under analysis, and some items were reverse coded to counteract directional response tendencies (Cooper and Emory 1995).

In addition, the instrument included other questions measuring constructs outside the defined scope of the present study (i.e., part of a broader research project) (Siemsen et al. 2010). Each scale provided explicit descriptions for the extreme points of 1 and 5 and the midpoint of 3. Finally, the invitation email and introductory page of the questionnaire specifically stated that all the data would remain confidential, both at the individual and organizational level (Podsakoff et al. 2003; Podsakoff and Organ 1986).

The current study used a second instrument: a semi-structured interview guide. These instructions included eliciting basic respondent descriptors (e.g., gender, location, and institutional activity area) and asking two open-ended questions. The first focused on the interviewee’s ideas about the main characteristics of public-sector intrapreneurs, while the second question concentrated on ways that superiors can foster intrapreneurship among their employees.

3.4 Data processing

SMART PLS 4.0 software was used to analyze the quantitative data from the questionnaires and to estimate the proposed structural model (Hair et al. 2022; Ringle et al. 2022). This program has lower requirements regarding data distribution and sample size as compared to covariance-based-SEM, which is more restrictive. SMART PLS 4.0 is especially lenient in terms of assumptions of multivariate normality, minimum sample size, model complexity, and issues related to construct identification and indeterminacy (Hair et al. 2022).

The qualitative component subjected the data collected via the semi-structured interviews to content analysis. This procedure involved organizing sources and coding the data systematically using NVIVO 15 software, which extracted significant information segmented by theme. The analysis identified three hierarchical nodes, which were used to structure the selected information with labels and branches.

4 Results

4.1 Reflective measurement models for organizational antecedents, intrapreneurship, and public value orientation

Sarstedt et al. (2017) recommend that the convergent validity, internal consistency reliability, and discriminant validity of the constructs under analysis be verified, in

this case using the data from 503 valid questionnaires. The seven reflective measurement models satisfy the suggested evaluation criteria (see Table 3).

The constructs were assessed, and only indicators with outer loadings above 0.60 were retained in the measurement models to ensure acceptable reliability (Hair et al. 2013). Overall, the Cronbach's alpha (CA), composite reliability (CR) and average variance extracted (AVE) values exceeded the thresholds set in the literature, namely, -0.70 , 0.70 , and 0.50 , respectively (Fornell and Larcker 1981; Hair et al. 2019).

The organizational boundaries construct was the only exception as it presented a CA value below the recommended threshold ($CA=0.526$). However, this value is considered acceptable for exploratory studies as the CR and AVE exceed 0.70 and 0.50 , respectively (Hair et al. 2019). These results indicate that the latent variables display adequate convergent validity and internal consistency reliability, so the analysis could proceed.

Discriminant validity was assessed using the Fornell-Larcker criterion (Fornell and Larcker 1981) and the heterotrait monotrait ratio (HTMT) (Henseler et al. 2015). The correlations between each pair of constructs fall below the square root of the AVE (see Table 4). All the HTMT values are also below the conservative limit of 0.85 (Kline 2011).

A bootstrapping procedure (i.e., bias-corrected and accelerated bootstrap) was followed to analyze the confidence intervals for each HTMT ratio value. The limit was set at 5000 samples, with a unilateral test set for a significance level of 5%. This analysis confirmed that the confidence intervals for each HTMT value exclude any values of 1 (see Table 5), so each pair of constructs has discriminant validity.

4.2 Organizational determinants of intrapreneurship and its relationship with public value orientation

The structural model evaluation (see Fig. 2) comprised assessing multicollinearity by analyzing the variance inflation factor (VIF) values for each dependent variable in the partial regressions (see Table 6). All the VIF values are below the recommended threshold (i.e., $VIF < 5$) (Hair et al. 2019), which means that multicollinearity in the present data is of no concern.

The path coefficients for the links between the independent and dependent variables range from -0.117 to 0.416 , with varying levels of statistical significance (see Table 6 above). Moreover, the variables included in each partial regression account for 28.4% of the variance in intrapreneurship (coefficient of determination [R^2]= 0.284) and 17.3% of the variance in public value orientation ($R^2=0.173$).

Effect size (f^2) analysis complements that of the R^2 by assessing how much independent variables influence the relevant endogenous constructs, which is also reflected as changes in R^2 values (Cohen 1988). According to the cited author, f^2 values of $0.02 \leq f^2 < 0.15$, $0.15 \leq f^2 < 0.35$, and $f^2 \geq 0.35$ correspond to a weak, medium, and strong f^2 , respectively. The largest f^2 values in the proposed model were obtained for three relationships: intrapreneurship \diamond public value orientation (0.210), work discretion \diamond intrapreneurship (0.107), and management support \diamond intrapreneurship (0.061).

Table 3 Convergent validity and internal consistency reliability

Latent variables	Indicators	Convergent validity			Internal consistency reliability		
		External loads	Indicator reliability	AVE	CR ρ_C	ρ_A	CA
Intrapreneurship (INTRA)	INTRA1	0.728	0.529	0.705	0.956	0.949	0.947
	INTRA2	0.878	0.771				
	INTRA3	0.846	0.716				
	INTRA4	0.886	0.785				
	INTRA5	0.855	0.731				
	INTRA6	0.846	0.716				
	INTRA7	0.831	0.691				
	INTRA8	0.846	0.716				
	INTRA9	0.832	0.692				
Management support (MS)	MS2	0.680	0.462	0.565	0.959	0.958	0.955
	MS3	0.651	0.424				
	MS4	0.725	0.526				
	MS5	0.757	0.573				
	MS6	0.707	0.499				
	MS7	0.747	0.558				
	MS8	0.721	0.519				
	MS9	0.740	0.548				
	MS10	0.731	0.534				
	MS11	0.704	0.496				
	MS12	0.793	0.629				
	MS13	0.792	0.627				
	MS14	0.835	0.697				
	MS15	0.785	0.616				
	MS16	0.757	0.573				
	MS17	0.780	0.608				
	MS18	0.791	0.626				
	MS19	0.811	0.658				
	Work discretion (WD)	WD1	0.603				
WD3		0.691	0.477				
WD4		0.722	0.521				
WD5		0.895	0.801				
WD6		0.866	0.749				
WD7		0.897	0.805				
WD8		0.810	0.656				
WD9		0.786	0.618				
Reward/Reinforcement (REW)		REW1	0.783	0.613	0.685	0.896	0.862
	REW2	0.718	0.516				
	REW3	0.901	0.812				
	REW4	0.894	0.799				
Time availability (TA)	TA2	0.670	0.449	0.636	0.838	0.979	0.742
	TA3	0.788	0.621				
	TA6	0.916	0.839				

Table 3 (continued)

Latent variables	Indicators	Convergent validity			Internal consistency reliability		
		External loads	Indicator reliability	AVE	CR ρ_C	ρ_A	CA
Organizational boundaries (OB)	OB4	0.655	0.429	0.516	0.761	0.525	0.526
	OB6	0.787	0.619				
	OB7	0.706	0.498				
Public value orientation (PVO)	PVO1	0.811	0.658	0.624	0.892	0.848	0.849
	PVO2	0.796	0.634				
	PVO3	0.851	0.724				
	PVO4	0.768	0.589				
	PVO5	0.718	0.516				

Table 4 Fornell and larcker criteria

	WD	TA	INTRA	OB	PVO	REE	MS
WD	<i>0.790</i>						
TA	0.420***	<i>0.798</i>					
INTRA	0.473***	0.302***	<i>0.840</i>				
OB	0.242*	0.235†	0.191†	<i>0.718</i>			
PVO	0.261***	0.167†	0.416****	0.251*	<i>0.790</i>		
REW	0.563****	0.444****	0.300***	0.266*	0.180*	<i>0.828</i>	
MS	0.543****	0.544****	0.449****	0.360***	0.268***	0.644****	<i>0.752</i>

The italicized numbers on the diagonal of the matrix correspond to the square root of the average variance extracted (AVE)

The off-diagonal values are the correlations between the constructs

The correlations are significant at the following levels: † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.005$, **** $p < 0.001$

Table 5 HTMT ratio

	WD	TA	INTRA	OB	PVO	REW	MS
WD	–						
TA	0.468 [0.318; 0.635]	–					
INTRA	0.477 [0.347; 0.608]	0.309 [0.182; 0.500]	–				
OB	0.352 [0.232; 0.633]	0.438 [0.306; 0.753]	0.260 [0.200; 0.536]	–			
PVO	0.294 [0.212; 0.434]	0.188 [0.163; 0.379]	0.450 [0.303; 0.603]	0.394 [0.263; 0.691]	–		
REW	0.660 [0.525; 0.786]	0.533 [0.376; 0.719]	0.332 [0.177; 0.508]	0.441 [0.344; 0.697]	0.230 [0.161; 0.418]	–	
MS	0.594 [0.439; 0.742]	0.591 [0.422; 0.759]	0.442 [0.300; 0.595]	0.507 [0.329; 0.725]	0.282 [0.229; 0.448]	0.719 [0.602; 0.819]	–

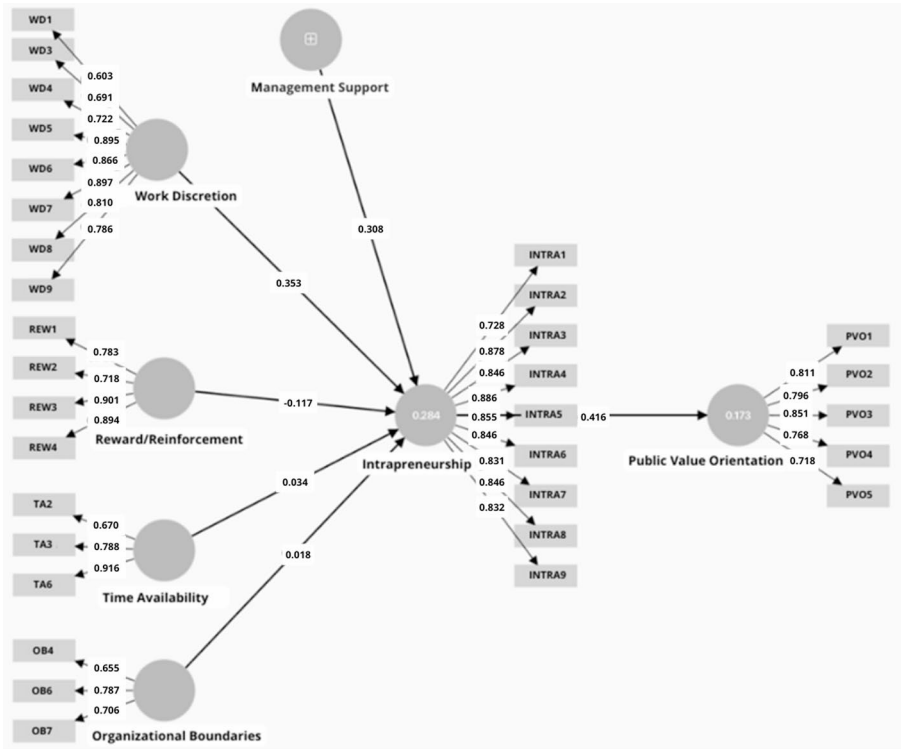


Fig. 2 PLS-SEM model

Table 6 Results of the structural model

Relationships	R ²	f ²	Effect size	β	p-value	VIF	Supported hypotheses?
H1: MS → INTRA	0.284	0.061	Weak	0.308 (2.544**)	0.005	2.186	Yes
H2: WD → INTRA		0.107	Weak	0.353 (3.267***)	0.001	1.628	Yes
H3: REW → INTRA		0.010	–	-0.117 (0.931)	0.176	1.939	No
H4: TA → INTRA		0.001	–	0.034 (0.295)	0.384	1.481	No
H5: OB → INTRA		0.000	–	0.018 (0.159)	0.437	1.156	No
H6: INTRA → PVO	0.173	0.210	Medium	0.416 (5.182****)	0.000	1.000	Yes

Values in parentheses represent t-statistics

R²=explained variance of the dependent variable; VIF=variance inflation factor

Coefficients are significant at the following levels: †p<0.10 *p<0.05, **p<0.01, ***p<0.005, ****p<0.001

The results in Table 6 above indicate that these relationships are statistically significant. That is, more work discretion is associated with stronger intrapreneurship (beta [β]=0.353, probability [p] <0.005). More management support leads to stronger intrapreneurship ($\beta=0.308$, $p<0.01$), and intrapreneurship positively influences public value orientation ($\beta=0.416$, $p<0.001$).

Regarding indirect effects (see Table 7), two relationships are statistically significant: work discretion \diamond intrapreneurship \diamond public value orientation ($\beta=0.147$, $p<0.005$) and management support \diamond intrapreneurship \diamond public value orientation ($\beta=0.128$, $p<0.05$). In addition, the direct relationships between work discretion and public value orientation ($\beta=0.147$, $p<0.005$) and between management support and public value orientation ($\beta=0.128$, $p<0.05$) are significant, with both effects partially mediated by intrapreneurship.

4.3 Intrapreneur characteristics

Effective intrapreneurs must display a distinctive combination of characteristics that foster not only innovation within their organization but also effective implementations of ideas. Figure 3 presents the main attributes identified as critical to good intrapreneurial performance. The interviewees' responses indicate that a set of fundamental traits are essential to the intrapreneurial profile (i.e., individuals able to drive innovation and organizational improvement).

The first—and perhaps the most significant—characteristic is initiative. Intrapreneurs proactively take the lead, seeking opportunities without waiting for external instructions or guidance. This capacity is reinforced by proactivity, namely, the ability to anticipate potential problems and devise solutions before the former escalate. Together, these qualities make intrapreneurs into change catalysts within their institution.

The participants also frequently stressed innovation, which is the ability to design and implement new solutions for existing challenges. Innovation is central to improving processes, products, and services, making this trait especially valuable in dynamic, constantly changing environments such as public sector organizations. Creativity is closely related to innovation because the former quality helps intrapreneurs think beyond conventional approaches and develop alternative answers to complex problems.

Table 7 Indirect effects

Relationships	β	p -value	Supported hypotheses?
WD \rightarrow INTRA \rightarrow PVO	0.147 (2.780 ^{***})	0.003	Yes
TA \rightarrow INTRA \rightarrow PVO	0.014 (0.276)	0.391	No
OB \rightarrow INTRA \rightarrow PVO	0.008 (0.148)	0.441	No
REW \rightarrow INTRA \rightarrow PVO	-0.049 (0.848)	0.198	No
MS \rightarrow INTRA \rightarrow PVO	0.128 (2.104 [*])	0.018	Yes

Values in parentheses represent t-statistic values

Coefficients are significant at the following levels: † $p<0.10$ * $p<0.05$, ** $p<0.01$, *** $p<0.005$, **** $p<0.001$



Fig. 3 Characteristics of intrapreneurship (NVIVO output)

Resilience additionally emerged in the transcripts as a decisive factor. The results underline the importance of coping effectively with adversity and persisting in the face of setbacks. The ability to recover quickly from failure is essential to maintaining focus and driving initiatives forward even without immediate results. Persistence complements resilience, both of which are reflected in intrapreneurs' determination to overcome obstacles while pursuing their objectives.

Many interviewees further asserted that a strategic vision is indispensable. Successful intrapreneurs understand broader organizational contexts and align their initiatives with official long-term goals. This vision allows these individuals to identify promising opportunities to innovate and to evaluate which projects warrant the investment of their time and resources.

These findings are supported by the participants' statements. For example, Interviewee 3 said:

An intrapreneur in public institutions must be proactive, creative, [and] resilient; have a clear vision of public service; be able to take calculated risks; work autonomously; collaborate effectively; adapt quickly to change; be results-oriented; and demonstrate leadership by positively influencing colleagues and promoting continuous improvements in processes and services.[...].

Interviewee 8 stated that intrapreneurs have to “be resilient, [...] guided by their line of work, [and...] receptive to change.” Finally, Interviewee 15 reported, “intrapreneurs are characterized by proactivity and creativity. They identify problems and opportunities for improvement in the[ir] organization and propose solutions to these demands through innovation.”

4.4 Promotion of intrapreneurship

Intrapreneurship is an increasingly important strategy in organizational contexts, especially in corporate and public environments that foster innovation and continuous development. Figure 4 represents the interviewees’ perspectives on how senior managers should promote intrapreneurship. Several key themes emerged with regard to the link between leadership and intrapreneurial behavior.

To promote intrapreneurship effectively, senior managers need to cultivate an organizational culture that values innovation and collaboration, actively listens to employees’ ideas, and provides autonomy and adequate resources. This culture must also include continuous learning so that mistakes are reframed as opportunities for growth. Another equally important feature is managers who recognize and reward innovative efforts. Leadership additionally has to model intrapreneurial behavior and foster open, cross-departmental communication. Through these practices, managers can stimulate employee creativity, motivation, and engagement, thereby creating an environment that supports sustained innovation and growth.

Interviewee 1 emphasized that:

Although the public administration management model is rigid, I believe that there is room for greater organizational openness to encourage a more proactive spirit among employees and institutions. [...] Promoting more democratized and participatory management—coupled with enhanced training and autonomy—would foster intrapreneurial attitudes within [public] organizations.

Interviewee 6 also highlighted that:

[Public administration management should] encourage creativity, provide autonomy, allocate resources, recognize and reward innovation, support continuous training, facilitate interdepartmental collaboration, and establish a culture of constructive feedback, [thereby] creating an environment that values innovation and [is] proactivity aligned with public service objectives.

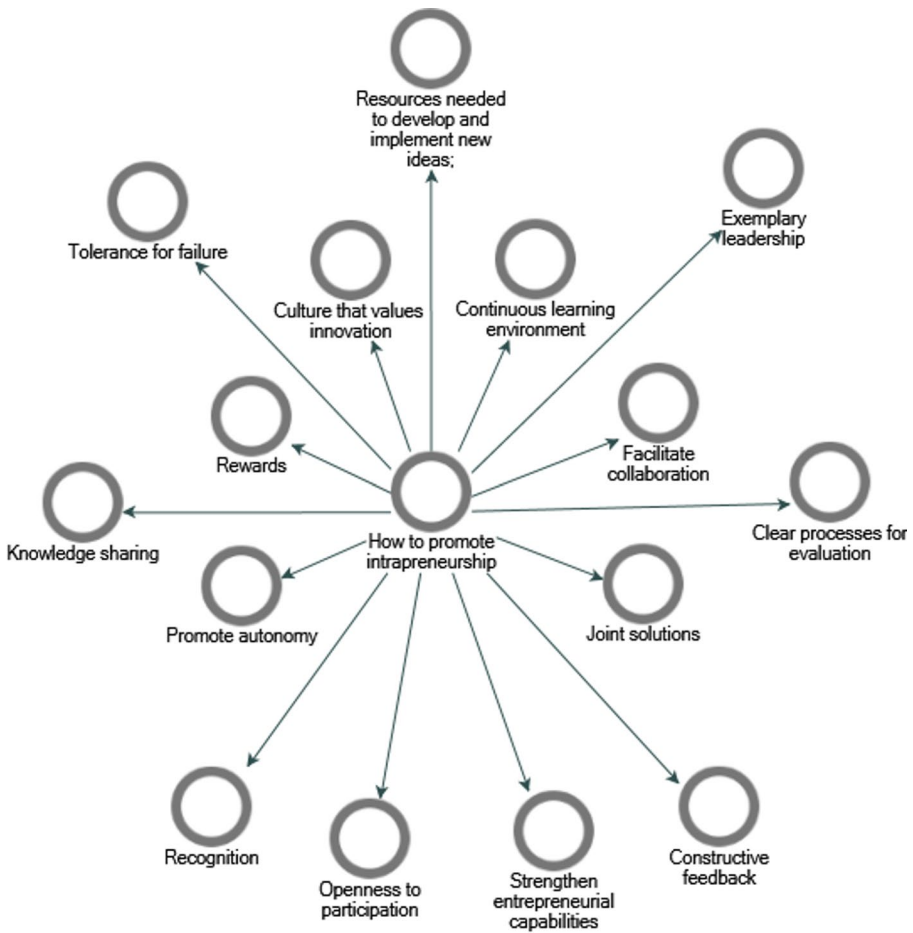


Fig. 4 How to promote intrapreneurship (NVIVO output)

Finally, Interviewee 12 stressed the importance of “encouraging employees to think and act like entrepreneurs [and] cultivating an environment conducive to the emergence of innovative ideas.”

5 Discussion

This study explored five antecedents of intrapreneurship and the latter’s subsequent effect on public value orientation within public institutions. The quantitative findings were complemented by excerpts from semi-structured interviews with public officials.

Regarding the hypotheses, H1 proposed that management support positively influences intrapreneurship, which the data confirmed ($\beta=0.308, p<0.01$). This result is in alignment with the literature’s emphasis on the pivotal role of leadership in creat-

ing an organizational culture that encourages innovation and creativity (Bilhim 2013; Santos et al. 2025; Symes 1999). The interviewees also reinforced this finding by pointing out that effective leadership is essential for motivating workers to engage in intrapreneurial practices and the implementation of new ideas (Backhaus and Vogel 2022; Civera and Meoli 2024; Grimm and Bock 2022).

H2 posited that work discretion has a positive impact on intrapreneurship, which the results also supported ($\beta=0.353, p<0.005$). The results suggest that autonomy and freedom in the workplace are critical drivers of entrepreneurial behavior and that they allow employees to explore ideas, take risks, and innovate (Demircioglu 2019; Gorgievski et al. 2023). This finding corroborates studies that have confirmed the importance of work discretion as a facilitator of proactivity and creativity within organizations (Civera and Meoli 2024; Foss et al. 2015; Santos et al. 2025).

In contrast, H3 (i.e., a positive effect of rewards and/or reinforcement on intrapreneurship) received inadequate support ($\beta = -0.117, p>0.05$). This unexpected result contradicts the literature, which generally considers reward systems to be a crucial tool for fostering innovation (Civera and Meoli 2024; Hornsby et al. 2009; Neessen et al. 2018; Santos et al. 2025). The absence of a significant effect may reflect the interviewees' perception that rewards mechanisms are still insufficiently aligned with or focused on intrapreneurial initiatives in the public sector.

Financial incentives in this context must be offered with caution as they could weaken the intrinsic motivations closely linked with public service values, such as advancing social welfare, meeting environmental challenges, and increasing knowledge sharing (Civera et al. 2020). Private sector organizations frequently rely on direct financial rewards. However, public institutions operate within stringent accountability frameworks that emphasize fair procedures, transparency, and prudent stewardship of taxpayer funds (Backhaus and Vogel 2022). Thus, symbolic and intrinsic reinforcement may be a better match for the public sector's normative values and constraints.

H4, in turn, proposed that time availability enhances intrapreneurship, but this hypothesis was also rejected ($\beta=0.034, p>0.05$). Time is widely seen as essential for innovation (Hornsby et al. 2002; Zahra 1993), yet the present results indicate that time availability alone has an insignificant effect on intrapreneurial behavior. This finding is also reported by Heinze and Weber (2016), who argue that time availability in the public sector is more than just a precondition for intrapreneurship because time is a negotiated resource.

Government intrapreneurs must tactically secure time by aligning their initiatives with their organization's priorities, building alliances, and communicating the public value of their innovations. This perspective goes beyond a static view of time and recognizes how public employees' agency and relational skills create conditions conducive to innovation. Official time availability remains an important enabler, but it only influences intrapreneurial activities when individuals can legitimize and mobilize that time in their organization (Civera and Meoli 2024; Santos et al. 2025). Highly institutionalized public environments often lack flexibility, so intrapreneurs' ability to negotiate for more time is as a critical determinant of innovation.

H5 suggested that organizational boundaries facilitate intrapreneurship, which the results failed to support ($\beta=0.018, p>0.05$). This finding indicates that the pub-

lic sector has rigid organizational boundaries that are often perceived as barriers to innovation. Inflexible structures and stringent regulations can hinder experimentation with and implementations of new solutions. Previous research has also detected tensions between control and innovation in public organizations (Covin and Slevin 1991; Hornsby et al. 2002; Ingram and Bratnicka-Mysliwicz 2021).

Boundaries need to be defined clearly yet be moderately flexible so that they can serve as enabling constraints, providing necessary structure while allowing creative discretion. Studies of autonomy and work discretion have confirmed this result, namely, that entrepreneurial action thrives when individuals understand both the limits of—and freedom offered by—their roles (Foss et al. 2015; Heinze and Weber 2016). Within this structure, intrapreneurs can better exercise their judgement, manage institutional constraints, and pursue value-creating initiatives without losing legitimacy.

H6 asserted that intrapreneurship has a positive effect on public value orientation, which the data strongly supported ($\beta=0.416$, $p<0.001$). The results confirm that intrapreneurial practices positively affect public value orientation and that fostering innovation within public institutions can improve service delivery and make these organizations' activities more socially relevant. This finding corroborates prior research (e.g., Da Silva Souza and Takahashi 2017; De Santana and Pinheiro 2024; Moore 2021; Nouman and Sayegh-Badan 2025) and verifies that innovation is a critical driver of value creation in the public sector.

More specifically, the present analysis of indirect effects revealed that intrapreneurship partially mediates the relationships between work discretion and public value orientation and between management support and public value orientation. The findings overall highlight that intrapreneurial behavior is a critical mechanism through which organizational antecedents are translated into enhanced public value.

Previous research has similarly stressed that employee autonomy and leadership support are key enablers of intrapreneurial initiatives that drive performance (Billhim 2013; Foss et al. 2015). Work discretion grants individuals the freedom to experiment and innovate, thereby creating a fertile environment for thriving intrapreneurship, which then helps organizations to deliver public value (Moore 2021). Concurrently, supportive management directly drives both public value creation and employee engagement in entrepreneurial behaviors that generate solutions aligned with public service goals (Osborne and Brown 2013).

This partial mediation also highlights the complex interplay between structural factors and individual agency in public sector innovation. Management support and work discretion clearly foster intrapreneurship, but this effect fails to explain fully the significant influence these two factors have on public value. The nuanced findings resonate with the literature stressing that organizational culture and leadership practices must encourage individual autonomy to produce public value through innovation (Covin and Slevin 1991; Symes 1999).

Finally, interviews were conducted with public officials for the current study in order to develop a deeper understanding of government intrapreneurs' characteristics and other factors that promote intrapreneurship. Key traits include initiative, proactivity, creativity, resilience, and strategic vision, which are essential qualities for identifying opportunities for improvement and innovative solutions (Demircioglu

and Chowdhury 2021; Gawke et al. 2019; Guerrero and Peña-Legazkue 2013; Jong et al. 2015).

The data collected with the present interviews also emphasize that leadership is primarily responsible for promoting intrapreneurship. Leaders thus must create workplace environments that encourage innovation by providing autonomy and adequate resources. The results further stress exemplary leadership practices and open, cross-departmental communication. These findings match those of prior research underlining leadership's critical role in shaping an institutional culture that supports intrapreneurship (Osborne and Brown 2013).

6 Conclusion

The above findings offer important insights into how to enhance intrapreneurial management and innovation within the public sector. Management support and work discretion are critical antecedents of intrapreneurship, so effective leadership and employee empowerment are central components of entrepreneurial culture. Intrapreneurship also positively affects public value orientation, indicating that more entrepreneurial behavior can improve government organizations' service quality and responsiveness to social needs. The interviews with public officials complemented these results by identifying initiative, proactivity, creativity, and resilience as key intrapreneurial traits. Overall, the findings confirm that leadership and autonomy drive innovation and public value creation in public institutions.

This study did not seek to introduce a new theoretical model of the link between intrapreneurship and public value, but the results nonetheless provide a more empirically robust understanding in three ways. First, five organizational antecedents were concurrently assessed with the CEAI. Second, public value orientation was included as a behavioral outcome. Last, the substantial sample was drawn from a Southern Europe public sector underrepresented in the literature. These contributions refine the available theoretical models of public innovation, offering grounded, individual-level evidence that enriches the discourse on how to foster innovation while respecting democratic governance constraints.

From a theoretical perspective, the findings confirm the importance of management support and work discretion as stimulants of intrapreneurship in public organizations. This result reinforces established views that leadership commitment and employee autonomy are vital catalysts for innovation. However, the present outcomes also challenge the assumption that traditional reward systems and rigid organizational boundaries are effective strategies in public sector innovation. These factors fail to promote intrapreneurial behavior consistently, which requires a thoughtful reconfiguration of models to accommodate public institutions' distinct values, constraints, and accountability demands. This finding suggests a need for further studies to identify more sensitive mechanisms that can balance control with creative freedom.

The results additionally offer public managers and policymakers five recommendations. First, substantive and sustained management support has to extend beyond symbolic gestures to include active engagement. Leaders should implement concrete measures such as establishing innovation 'safe zones', dedicated teams, or pilot proj-

ects shielded from the negative repercussions of experimentation. For instance, city councils could empower task forces to run trials of new digital services, with temporary exemptions from standard procedures to signal an official endorsement of innovative risk-taking.

Second, strengthening employee discretion is crucial. Public managers need to assess existing rules and policies critically to identify areas in which flexibility may be introduced without weakening accountability or fairness. Mid-level managers and frontline workers should be given greater decision-making autonomy so that they can adapt services to meet local needs more effectively. This approach can generate a stronger sense of ownership and greater motivation. For example, social services agencies could provide broad guidelines that allow case workers to customize their client engagement strategies, which should encourage creative solutions in line with organizational goals.

Third, time constraints are a persistent barrier to intrapreneurship in public institutions. To address this problem, organizations need to adopt structural and symbolic supports that set aside the time needed for innovation. Formal mechanisms can include, among others, innovation weeks, dedicated reflection periods, or rotational project assignments that provide staff with protected windows in their schedules to develop ideas. Organizations' symbolic legitimization of this allotted time is equally important to reassure employees that innovation is a valued priority rather than an extra burden. For instance, government departments could introduce quarterly innovation cycles and publicly recognize contributions made during each period as a way to integrate innovation into their organizational culture.

Fourth, financial incentives are limited in public contexts, so recognition practices need to be reframed to stress intrinsic, symbolic rewards. Managers can use internal communication channels to celebrate innovative efforts, give employees opportunities to present their ideas to senior leadership, and encourage participation in innovation networks across functions. These strategies are aligned with public service values and maintain motivation while respecting the need for strict fiscal accountability.

Last, organizational boundaries have to be clarified and relaxed judiciously to mitigate the tension between control and creativity. Public institutions should openly communicate the scope of and limits on permissible innovation, thereby reducing employees' uncertainty and fear of negative consequences. Cross-departmental collaboration needs to be encouraged to break down silos further in order to facilitate exchanges of ideas and integrative solutions. For example, ministries can establish inter-agency teams with the authority to pilot joint initiatives, which would foster a balance between control and flexibility.

Regardless of the above valuable contributions, this study had various limitations that require further research. The qualitative component was restricted by the narrow range of interviewees' jobs because their reflections—albeit rich and practice-oriented—primarily arose out of operational experiences. Middle and senior management perspectives should be included in future studies to provide a deeper understanding of how intrapreneurship unfolds across institutional and decision-making hierarchies.

The qualitative data were also constrained by brevity and limited interpretative depth. Twenty semi-structured interviews were conducted, but their average duration

of 15 min reduced the in-depth exploration typical of qualitative inquiry. The interviews provided valuable illustrations yet could not be used to conduct rigorous tests or refine the theoretical framework. The qualitative component thus served more as a complementary tool for triangulating and sensemaking than as a robust foundation for developing theory. A more integrated qualitative approach could have suggested alternative explanations or model refinements.

Future research would benefit from incorporating more extended case studies or in-depth interviews with multiple stakeholders from diverse organizational levels. Additional studies could embrace a deeper exploratory strategy to move beyond mere illustration and uncover rival reasoning, non-linear dynamics, and contextual variations that challenge theoretical assumptions or offer more nuanced conclusions. The findings could then better capture the complex, processual nature of intrapreneurship in public sector contexts.

Another limitation is related to the CEAI instrument, which was developed for private-sector research. The origin of this scale raises concerns about construct validity when the CEAI is applied to public organizations. This issue was addressed in the present study by carefully adapting items and running a pilot test, but various constructs (e.g., reward/reinforcement) have distinct meanings in public service. Future research should develop context-specific instruments for measuring public intrapreneurship or adopt other mixed-methods approaches to validate existing scales (e.g., the CEAI) for different governance systems.

In the quantitative phase, the data were collected from 503 respondents working in varied public sector organizations. This sample included diverse jobs within the Portuguese public sector. However, the respondents were only a small fraction of this workforce and thus fell short of being statistically representative of the entire population. The overall goal was instead analytical generalization to develop a theory-grounded understanding of the relationships between key constructs in a real-world public sector environment.

In addition, an effort was made to collect a diverse sample, but it developed a modest demographic skew, overrepresenting women and mid-career professionals. Voluntary participation may have introduced self-selection bias due to individuals' availability, interest in the topic, or access to digital tools. No subgroup analyses were conducted, which also limited the attention paid to variations in perceptions across hierarchies. This omission further constrains the generalizability of the findings across different jobs. Further research is needed to explore whether perceived intrapreneurial conditions vary systematically by hierarchical or policymaking roles.

Finally, this study focused on how organizations' conditions influence intrapreneurial behavior, disregarding other factors that can play a critical part in public sector innovation. The literature identifies political support, regulatory burden (i.e., red-tape reduction), and digital capability as significant enablers or inhibitors of government institutions' innovation (Funko et al. 2023; Santos et al. 2025). For instance, political sponsorship can legitimize bottom-up initiatives and create experimental spaces, especially within hierarchical or risk-averse bureaucracies.

Efforts have additionally been made to lower bureaucratic barriers through policy reforms or improved internal processes. These changes could enhance employees' perceived capacity for creative initiatives. Digital capabilities are also increasingly

pivotal because they not only facilitate service innovation but also promote transparency and cross-departmental collaboration, thereby reinforcing intrapreneurial behavior.

These institutional and technological dimensions fell outside the scope of this study, but their importance is clear. Future research could combine these variables with organizational factors and construct multidimensional models that offer a more comprehensive, nuanced understanding of how innovation emerges and becomes sustainable in the public sector.

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Data availability The authors confirm that all data generated or analysed during this study are included in this published article. Further information about the data generated or analysed during this study are available from the corresponding author upon request.

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