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Driving Innovation through Organizational Dynamics in Public–Private Partnerships

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ABSTRACT

This study addresses a gap in evidence on how organizational characteristics shape both the probability of obtaining public funding and the amount awarded in Spanish public–private partnership (PPP) calls for research, development, and innovation (R&D&I) projects. Using entity-level data from Spain's PPP R&D call (matched with financial and operational information from the Iberian Balance Analysis System (SABI)), we examine how seniority, workforce size, prior grant success, and thematic orientation relate to funding outcomes. Contrary to conventional assumptions, older organizations do not secure funding more frequently, although they tend to participate in larger-budget projects. Workforce size is positively associated with higher subsidy amounts, whereas a past record of grant success does not necessarily translate into better outcomes in the current call. Finally, while thematic orientation matters, technologically oriented proposals are not systematically funded more than socially oriented ones. These findings highlight the complexity of public funding allocation to PPPs and suggest that policy design should consider both organizational capacity and the breadth of innovation agendas, fostering collaborations that combine technological and social innovations to address societal needs.

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1. Introduction

Public–private partnerships (PPPs) have emerged as a central mechanism for advancing research, development, and innovation (R&D&I) initiatives aimed at addressing ever more complex societal and technological challenges. By leveraging public funding, these collaborations bring together governmental agencies, private enterprises, and other relevant stakeholders—such as universities or research centers—to foster interdisciplinary solutions that align with overarching policy priorities (Carbonara & Pellegrino, 2020). Given the growing emphasis on issues such as sustainability, digital transformation, and societal well-being, PPPs have become pivotal frameworks for generating knowledge, building capacity, and spurring technological breakthroughs in strategic domains (Balan & Dan, 2022). Despite the apparent potential of PPPs, securing public funding within these collaborations can be an intricate process, influenced by multiple organizational and contextual factors. A first theoretical lens to consider is organizational learning theory, which posits that entities with greater experience—often indicated by their age—are more adept at navigating administrative procedures, forming partnerships, and refining project proposals (Argote, 2013). According to this view, the capacity to learn from past successes and failures confers an adaptive advantage, as organizations continually calibrate internal processes on the basis of prior feedback. For instance, entities that have repeatedly participated in public calls for proposals may possess well-established grant-writing routines, comprehensive stakeholder networks, and a heightened awareness of funding agencies' expectations. These accumulated capabilities can, in turn, bolster the likelihood of designing robust R&D&I projects and securing the associated grants. In parallel, infant industry theory highlights the structural disadvantages often faced by newer or smaller organizations when competing with larger, more established enterprises (Krugman, 1987; Amsden, 1991). Insufficient capital reserves, fewer specialized personnel, and limited administrative infrastructure can hamper their competitiveness in R&D&I funding processes, where the ability to deliver large-scale, high-impact projects is frequently a decisive criterion. From this perspective, targeted public interventions—such as training programs, early-stage seed funding, and institutional mentorship—can help alleviate the entry barriers for smaller or emerging entities. Over time, these measures may allow nascent organizations to develop a track record of successful project delivery, adopt more sophisticated technologies, and forge strategic alliances with larger actors. Nonetheless, the gap persists in many contexts, revealing a persistent need for policy mechanisms that ensure equitable participation in collaborative innovation. A third lens, public agenda theory, suggests that the distribution of public funds generally reflects policy objectives and prevailing societal concerns (Kingdon, 1995). Whether at local, national, or international levels, governmental bodies are inclined to favor proposals that align with salient policy goals—such as transitioning toward green energy, improving health services, or enhancing digital infrastructures (Stone, 2001). As a result, organizations that can demonstrate direct relevance to these areas often stand a better chance of obtaining funds. This thematic alignment can be heightened by global frameworks such as the Sustainable Development Goals or the European Green Deal, wherein key sectors receive considerable institutional support (Council of the European Union, 2024). Furthermore, projects

that convincingly integrate stakeholder engagement and display broad-based impact may also be viewed more favorably, reflecting funders' growing interest in inclusive and durable outcomes. From an empirical standpoint, the interplay of these three perspectives—organizational learning, infant industry, and public agenda—suggests multiple hypotheses regarding what influences success in securing public funding for PPPs (Zapatrina & Shatkovska, 2024). Organizational age and prior grant experience may function as proxies for learning and competence. Workforce size could shape the capacity to undertake sophisticated research endeavors, complying with rigorous administrative demands and complex project management requirements. Meanwhile, thematically relevant proposals that address pressing policy issues—such as health, environmental sustainability, or emerging technologies—might be predisposed to receive more substantial financial support.

To examine these questions, the present study focuses on data derived from a call for R&D&I projects under a Spanish public–private partnership scheme. The dataset encompasses details about each participating organization—its age, number of employees, and primary activity sector—as well as information on the thematic orientation of submitted proposals (e.g., energy transition, health and well-being, and digital solutions) and the corresponding amounts requested and ultimately granted. Financial profiles gleaned from the Iberian Balance Analysis System (SABI) provide an additional layer of insight into the operational capacities of applicant entities. Preliminary findings indicate that the relationship between organizational age and funding success is more nuanced than one might assume, calling into question the straightforward premise that older entities invariably secure more grants. By contrast, workforce size exhibits a modest positive correlation with larger funding awards—an outcome consistent with the notion that scale confers certain administrative and technical advantages. The study also evaluates the extent to which prior success in obtaining grants predicts future outcomes, engaging debates on cumulative advantage and reputational effects within the R&D&I funding landscape. Finally, thematic alignment proves significant, though not always in the ways anticipated: certain technology-focused areas may indeed garner heightened attention, yet proposals addressing social or demographic priorities can also demonstrate strong performance under favorable policy contexts. Taken together, these insights highlight the multifaceted nature of public funding allocation in collaborative innovation projects. Policymakers and practitioners would benefit from a holistic view that encompasses not only organizational capacity and experience but also the alignment of projects with current policy priorities and the specific funding criteria employed in each call. By strengthening the interplay among learning processes, supportive policies for smaller or younger entities, and carefully calibrated funding agendas, the R&D&I ecosystem can become more inclusive and capable of addressing grand societal challenges in a comprehensive manner.

Literature Review

We focus on three building blocks. First, we review how public–private partnerships (PPPs) and related collaborative arrangements are used as governance instruments for R&D and innovation funding, and how contemporary European policy priorities shape the logic of competitive calls. Second, we examine organizational determinants that influence performance in competitive innovation programs—especially those features that signal execution capacity under conditions of uncertainty. Third, we articulate the theoretical foundations of the study, showing explicitly how organizational learning theory, infant industry theory, and public agenda theory explain why some applicants are more likely than others to obtain public support. The section closes with a short bridging paragraph mapping each theory to the mechanisms embedded in H1–H6.

PPPs and Innovation Funding

PPPs are commonly understood as institutional arrangements through which public bodies and private organizations coordinate resources, share risks, and deliver projects whose complexity or strategic value makes purely market-based delivery unlikely. In innovation and R&D, the rationale for partnership-based funding is particularly strong because knowledge creation generates spillovers, learning effects, and long time horizons that can cause private underinvestment relative to socially desirable levels. As a result, governments often use competitive innovation calls not only to finance projects but also to shape collaboration patterns and steer innovation activity toward policy goals. A key implication of PPP research is that outcomes depend heavily on governance design and partner characteristics. Carbonara and Pellegrino (2020) emphasize that PPP performance is not simply the sum of partner resources; it is mediated by the quality of coordination, incentive alignment, and the ability of participating organizations to operate within shared rules. Translating this insight to competitive innovation programs, calls that encourage (or require) multi-actor collaboration, implicitly demands capabilities that go beyond technical competence: applicants must be able to propose credible governance structures, coordinate different organizational cultures, and manage interdependencies throughout implementation. Even where formal consortia are not mandatory, evaluators often value evidence of network access, complementarities, and pathways to deployment—features that mirror the logic of partnership-based delivery.

Competitive R&D&I programs also reflect the policy environment in which they are embedded. In the European context, the policy narrative of the last decade has increasingly framed innovation as a lever for structural transformation rather than incremental productivity gains. The European Green Deal is a prominent example: it positions innovation as central to decarbonization, resilience, and an economy-wide transition, encouraging aligned public and private investment across sectors and value chains (Council of the European Union, 2024). This matters for selection decisions because evaluation criteria tend to mirror the dominant po-

licy story: proposals that demonstrate contributions to transition objectives, credible impact pathways, and alignment with public priorities can become more competitive—sometimes even when technical novelty is similar across applicants. The "entrepreneurial state" perspective provides a conceptual language to explain this shift. Mazzucato (2018) argues that the state is not merely correcting market failures; it can actively create and shape markets by taking risks, building capabilities, and directing innovation toward strategic missions. In funding competitions, this implies that public agencies may favor applications that make a convincing case for public value creation: not only "can it work?" but "does it contribute to the mission the public sector is trying to advance?" In practice, such missions often include sustainability, energy transition, and broader socioeconomic outcomes. From a PPP standpoint, this reinforces the view that innovation funding is partly a governance tool: it mobilizes private and third-sector actors to deliver a public program whose objectives are defined politically and socially, not only technically.

Overall, the PPP and policy literatures suggest two expectations relevant to this study. First, the probability of receiving funding is likely influenced by an applicant's collaborative capacity and its ability to propose credible coordination and implementation arrangements consistent with PPP logics (Carbonara & Pellegrino, 2020). Second, selection processes are affected by the agenda expressed through policy priorities—meaning that the framing of innovation projects in terms of public missions (e.g., sustainability transitions) becomes an important competitive dimension (Council of the European Union, 2024; Mazzucato, 2018). These insights motivate the inclusion of policy alignment mechanisms in the study's explanatory model (linked to H5–H6).

Organizational Determinants in Competitive Innovation Calls

A recurring insight across organizational and innovation research is that competitive outcomes are shaped not only by the intrinsic quality of project ideas but also by organizational features that affect both the perceived and actual ability to execute. Competitive calls are characterized by information asymmetry: evaluators must decide with limited time and incomplete information whether an organization can deliver complex tasks, manage finances, and produce credible outputs. In this environment, organizational attributes become signals. They reduce uncertainty for decision-makers and act as proxies for implementation probability. Organizational learning theory provides an especially relevant framework for understanding these dynamics. Levitt and March (1988) conceptualize organizations as learning systems that encode experience into routines, standard procedures, and shared interpretations. Repeated participation in funding competitions can generate learning about how to craft persuasive proposals, interpret criteria, manage documentation, and coordinate partners. Over time, this becomes embedded into organizational routines—reducing errors, shortening response times, and improving the fit between proposals and evaluators' expectations. Argote (2013) further stresses that organizational learning involves the creation, retention, and transfer of knowledge across members and time. This is critical in grant competitions because proposal writing and project management are often distributed tasks: the capacity to coordinate roles, preserve institutional memory, and transfer tacit knowledge (e.g., "what works in this call") can materially affect success.

A related concept that links learning to innovation capability is absorptive capacity. Cohen and Levinthal (1990) define absorptive capacity as the ability to recognize the value of external knowledge, assimilate it, and apply it. Innovation calls often require applicants to position their work relative to the state of the art, integrate partner inputs, and translate policy objectives into operational work packages. Thus, absorptive capacity can influence both the technical content of proposals and their coherence. Zahra and George (2002) extend this perspective by distinguishing between potential absorptive capacity (acquisition and assimilation) and realized absorptive capacity (transformation and exploitation). This distinction is useful for competitive calls: some organizations may be excellent at scanning and incorporating external information into proposals, while others may excel at transforming ideas into implementable plans and commercially or socially exploitable outputs. Both dimensions can shape evaluator perceptions and eventual performance. Beyond learning and knowledge capabilities, structural characteristics such as organizational age and size can affect competitive success through resource endowments and administrative capacity. Mature organizations are more likely to have dedicated staff for grant writing, compliance, reporting, and financial controls. They may also possess reputational capital—prior projects, known partners, and past outputs—that reduce perceived risk. Larger organizations can absorb the fixed costs of applying (time, documentation, and cofinancing) more easily than small organizations. Conversely, younger and smaller applicants often face binding constraints: fewer specialized staff, less slack time, thinner financial buffers, and less experience navigating administrative requirements. Importantly, these constraints can matter even when the underlying innovation idea is strong, because the selection process typically values deliverability alongside novelty. However, organizational learning theory also warns against assuming that more experience always yields better performance. Levitt and March (1988) highlight the risk of competency traps: successful routines may be repeated even when they are no longer appropriate. Argote (2013) similarly notes that learning is path dependent; organizations can accumulate knowledge that is valuable in one setting but becomes less adaptive when environments change. In innovation funding, criteria and policy priorities can shift (e.g., toward sustainability missions), so organizations whose routines were built around earlier criteria may initially be slower to adjust. Absorptive capacity helps explain adaptation, but it does not eliminate the possibility that established routines create rigidity.

PPP considerations amplify the importance of these organizational determinants. Partnership arrangements increase coordination costs, impose governance requirements, and expose weaknesses in administrative routines. Carbonara and Pellegrino (2020) show that partner attributes and go-

vernance design influence PPP outcomes; in competitive innovation calls with PPP-like features, the same logic applies to selection decisions. Evaluators may prefer applicants with demonstrable ability to manage interorganizational coordination, protect knowledge while collaborating, and comply with reporting obligations. Organizations with stronger knowledge-transfer routines and higher absorptive capacity may therefore be positioned as lower risk and higher impact.

As a consequence, the literature suggests that funding success is shaped by a bundle of organizational determinants: (i) accumulated experience embedded in routines (Levitt & March, 1988; Argote, 2013), (ii) knowledge-processing capabilities such as absorptive capacity (Cohen & Levinthal, 1990; Zahra & George, 2002), and (iii) resource and administrative endowments correlated with size and age, which act as signals under uncertainty. These mechanisms provide the conceptual foundation for hypotheses linking organizational characteristics to funding outcomes (H1–H4), and for exploring how these characteristics interact with evolving policy priorities.

Theoretical Bases of the Study

To explain why funding outcomes differ across applicants, the study draws on three complementary theoretical lenses. Organizational learning theory explains microlevel mechanisms through which experience and routines increase proposal quality and implementation credibility. Infant industry theory explains why younger/smaller organizations may face structural disadvantages and why public support can be framed as capability-building. Public agenda theory explains how policy priorities shape selection criteria and evaluation narratives, creating advantages for projects and organizations aligned with the dominant agenda.

Organizational learning is especially relevant in competitive funding environments because applications and project delivery are repeated, complex tasks. Levitt and March (1988) argue that organizations learn from history by encoding experience into routines that guide decision-making. In the context of innovation calls, these routines include identifying suitable calls, translating criteria into proposal structures, assembling evidence of capability, and coordinating internal contributions under time pressure. Over multiple cycles, organizations can internalize what evaluators value, which reduces uncertainty and increases fit. Argote (2013) adds that learning is not merely individual; it is organizational when knowledge is retained and transferred across members. This matters because proposal writing is often a team activity with turnover. Organizations with mechanisms to retain templates, maintain institutional memory (e.g., prior reviewer feedback), and transfer tacit knowhow can generate a cumulative advantage. In addition, learning can operate at multiple levels: learning how to write proposals, learning how to partner effectively, and learning how to manage reporting and compliance. Each can influence both selection and subsequent performance, reinforcing reputation and future success. Absorptive capacity extends this logic to the handling of external knowledge. Cohen and Levinthal (1990) emphasize that prior related knowledge enables organizations to identify and assimilate relevant information. Competitive calls require rapid comprehension of policy priorities, scientific advances, and partner capabilities. Zahra and George (2002) argue that absorptive capacity includes both the ability to acquire/assimilate and the ability to transform/exploit knowledge. For this study, that implies two distinct channels of advantage: (a) applicants with stronger acquisition/assimilation can craft proposals that are better aligned with "what the call wants" and the state of the art; and (b) applicants with stronger transformation/exploitation can design work plans that are more feasible and impactful. Together, these mechanisms underpin hypotheses linking experience and knowledge capabilities to funding success (H1, H3, and H4), while leaving open the possibility of routine rigidity and diminishing returns from experience (Levitt & March, 1988; Argote, 2013).

On the other hand, infant industry theory offers a structural perspective on why smaller or younger organizations may face disadvantages in competitive environments. Classical arguments stress that early-stage firms and emerging industries may be initially less efficient because they lack scale, accumulated learning, and access to finance, but can become competitive as capabilities develop. Krugman (1987) highlights how economic structures and policy environments can influence industrial development paths, while Amsden (1991) emphasizes the role of capability-building and the diffusion of development through targeted support. Applied to innovation funding competitions, infant industry logic suggests that newer/smaller organizations may have strong ideas but face barriers in converting them into competitive proposals and credible delivery plans. These barriers can be administrative (limited staff for compliance), financial (reduced capacity to cofinance or absorb delays), and reputational (fewer prior projects to signal reliability). Competitive selection processes, especially those that prioritize deliverability and risk reduction, can therefore systematically favor established applicants—even when the social returns of supporting newer entrants might be high. From this viewpoint, public funding is not only a reward for existing capability; it can function as a policy instrument to create capability. This is consistent with mission-oriented and entrepreneurial-state arguments that public institutions can actively shape markets and build ecosystems (Mazzucato, 2018). It also aligns with the rationale for support measures that mitigate early-stage constraints and accelerate learning-by-doing. In hypothesis terms, infant industry mechanisms motivate expectations about how size/age constraints relate to success (H2) and how they may interact with learning processes (H3). They also provide an interpretive lens for heterogeneity: if the empirical results show systematic disadvantages for newer/smaller applicants, this may indicate that selection processes are implicitly tuned to risk reduction rather than capability creation; if results show more balanced outcomes, that may signal a stronger mission/transition orientation and a more inclusive innovation policy design.

Finally, public agenda theory explains how certain issues rise to prominence and become encoded into policy decisions, including funding criteria. Kingdon (1995) proposes that

agendas are shaped through the coupling of problems, policies, and politics, often when windows of opportunity open. Stone (2001) emphasizes that policy-making is inherently interpretive: actors compete to define problems, attach meaning to evidence, and justify decisions through narratives and symbols. For innovation funding, this implies that calls and evaluation criteria are not neutral technical instruments; they reflect the prevailing policy story about what innovation is for. In the European context, the European Green Deal illustrates a powerful agenda that elevates sustainability and decarbonization as central policy objectives (Council of the European Union, 2024). Under such an agenda, project proposals are likely to be assessed not only on technical merit but also on their contribution to transition goals, perceived public value, and coherence with strategic priorities. This is consistent with the entrepreneurial-state view that public actors can direct innovation toward missions (Mazzucato, 2018). In practical terms, agenda alignment can operate through multiple channels: evaluation rubrics may allocate points to sustainability impact, calls may specify thematic priorities, and evaluators may use alignment as a heuristic for relevance and legitimacy. Public agenda mechanisms are therefore directly relevant for hypotheses about policy alignment (H5 and H6). They also help interpret why two technically similar proposals might receive different evaluations: one may better match the dominant agenda, use the language of public missions, and provide decision-makers with a stronger justification for allocating scarce public resources. In other words, competitive funding is partly a contest over meaning: applicants are not just presenting solutions; they are demonstrating that their projects fit the public definition of the problem and the preferred direction of policy.

The three lenses provide a coherent explanatory map for the study's hypotheses. Organizational learning theory (Levitt & March, 1988; Argote, 2013), complemented by absorptive capacity (Cohen & Levinthal, 1990; Zahra & George, 2002), underpins hypotheses linking accumulated experience, routines, and knowledge-processing capabilities to higher likelihood of success in competitive calls (H1, H3, and H4), while recognizing potential rigidity and diminishing returns from established routines. Infant industry theory (Krugman, 1987; Amsden, 1991) motivates hypotheses proposing that younger/smaller organizations face structural disadvantages in selection owing to resource and capability constraints (H2) and that learning mechanisms may partially offset (or interact with) those constraints (H3). Finally, public agenda theory (Kingdon, 1995; Stone, 2001), situated within mission-oriented policy frames (Council of the European Union, 2024; Mazzucato, 2018), motivates hypotheses proposing that alignment with dominant policy priorities and compelling public-value framing increases the probability of funding (H5 and H6). Together, these theories justify the study's focus on organizational characteristics and policy alignment as joint drivers of funding outcomes in PPP-oriented innovation environments.

Hypotheses

Theories of organizational learning emphasize that entities with greater seniority have had more opportunities to accumulate institutional knowledge and adapt their practices to the expectations of public funding bodies. Levitt and March (1988) argue that organizational learning occurs through repetition, where entities refine their processes, improve compliance with regulations, and develop capabilities for navigating complex collaboration frameworks. Seniority, therefore, serves as a proxy for accumulated experience, which enhances the likelihood of meeting public funding criteria. From the perspective of infant industry theory, younger organizations often face structural disadvantages owing to their limited organizational capacity and lack of established networks. As Krugman (1987) noted, newer entities often require protection or subsidies to compete effectively in markets dominated by more experienced players. This logic extends to public funding contexts, where older organizations are better positioned to compete for resources owing to their operational maturity and demonstrated track record. Additionally, senior entities may have more robust relationships with stakeholders, including policymakers and public institutions, which further increases their success rate in obtaining funding (Argote, 2013). These relationships enable them to better align their project proposals with public priorities and funding objectives. Thus:

H1: Entities with greater seniority have a higher probability of obtaining public funding in public–private collaboration projects.

The size of an organization, often measured by the number of employees, is a significant determinant of its capacity to execute large-scale projects. In organizational learning theory, larger entities are viewed as having greater internal diversity and knowledge repositories, which allow them to develop comprehensive and competitive funding proposals (Cohen & Levinthal, 1990). Their ability to assign specialized teams to project management and compliance tasks gives them a clear advantage in securing higher funding amounts. From an infant industry perspective, smaller organizations frequently lack the resources needed to scale their operations to the demands of ambitious R&D&I projects (Amsden, 1991). Larger organizations, by contrast, are perceived as lower-risk beneficiaries by public funding bodies because they can demonstrate operational stability and a track record of successful project delivery. This aligns with findings by Zahra and George (2002), who argue that organizational absorptive capacity—a concept closely linked to the size of the workforce—is critical for innovation and funding success. Thus:

H2: The number of employees in private entities positively influences the amount of funding obtained in R&D&I projects.

Organizations with more years of operation are better equipped to manage large-scale collaborations owing to their experience in coordinating complex stakeholder relations-

hips and navigating institutional frameworks (Argote, 2013). Seniority allows organizations to develop routines, protocols, and tacit knowledge that facilitate the execution of high-impact projects (Levitt & March, 1988). In the context of infant industry theory, younger entities face barriers to scaling their operations, including limited managerial expertise and inadequate infrastructure (Krugman, 1987). These challenges often prevent them from meeting the expectations of large-scale public–private collaboration projects, where organizational maturity and strategic coordination are essential. Thus:

H3: The seniority of entities influences their ability to manage large-scale public–private collaboration projects.

Organizational learning theories highlight the concept of cumulative advantage, where past successes enable organizations to refine their grant application strategies and build credibility with funding bodies (Argote, 2013; Levitt & March, 1988). Repeated participation in public funding programs contributes to the development of institutional memory and best practices, which increase the likelihood of future success. From an infant industry perspective, organizations without prior successes face higher barriers to entry. Their lack of a track record makes them less attractive to funding bodies, which often favor entities with proven capabilities and established relationships (Amsden, 1991). This aligns with the findings of Zahra and George (2002), who emphasize the importance of past performance in securing funding for innovation-driven projects. Thus:

H4: Successfully competing for public grants in prior calls positively influences the likelihood of securing funding in the current call.

Public agenda theory suggests that funding priorities are heavily influenced by societal and policy objectives (Kingdon, 1995). Projects in areas closely aligned with the public agenda, such as renewable energy, digital transformation, or public health, are more likely to receive institutional support owing to their perceived societal relevance. This alignment enables entities specializing in these themes to build capacity through enhanced access to public funding and technical support. Additionally, the alignment of project themes with government priorities creates opportunities for entities to collaborate with public institutions, further enhancing their capacity to deliver impactful outcomes (Stone, 2001). Thus:

H5: The thematic areas of R&D&I projects influence the capacity of entities.

Technological innovation is often prioritized in public funding allocations owing to its perceived potential for driving economic growth and global competitiveness (Mazzucato, 2018). Public agenda theory posits that governments allocate resources to projects that align with strategic economic goals, such as fostering high-tech industries and enhancing national innovation capacity (Kingdon, 1995). Technologies such as the Internet of Things (IoT), and artificial intelligence (AI), and nanotechnology are seen as catalysts for industrial modernization, making them attractive targets for funding. Conversely, social projects may receive lower funding levels because their outcomes, while impactful, are less directly tied to measurable economic returns. As Stone (2001) observes, the prioritization of funding often reflects political considerations, with technological areas receiving greater attention owing to their alignment with economic agendas. Thus:

H6: R&D&I projects in technological areas (e.g., IoT, AI, and nanotechnology) receive higher funding levels than projects in social areas (e.g., health and well-being).

Lead applicants, who bear primary responsibility for project coordination and outcomes, are subject to greater scrutiny by funding bodies. Public agenda theory suggests that funding bodies prioritize entities with proven track records and thematic alignment with policy objectives (Kingdon, 1995). The role of the lead applicant requires significant organizational capacity and alignment with the public agenda, making these entities more likely to secure higher funding amounts. The type of organization also influences funding outcomes. For instance, public institutions and social economy organizations may be favored in projects with strong social impact objectives, reflecting the alignment of their missions with public policy goals (Stone, 2001). Conversely, private companies may excel in technology-driven initiatives, where economic returns are a primary consideration. Thus:

Methodology and Results

The data employed in this study come from the final allocation proposal (award decision) issued under Spain's 2021 R&D call for public–private partnerships (PPPs), an instrument designed to stimulate collaborative R&D projects involving universities, research centers, and private organizations (including both commercial firms and social-economy entities). The timeframe of the analysis corresponds to the 2021 call cycle, and the database is the official call documentation (applications and final award resolution) complemented with firm accounts from the Iberian Balance Analysis System (SABI) matched through each applicant's unique tax identifier (NIF). The unit of analysis is an entity–project participation record (i.e., each organization participating in a given project consortium), which enables us to relate organizational attributes to the observed funding outcome while preserving the consortium context. Organizational type was classified (as public, social economy, or commercial) using legal-form information linked to the NIF, and each proposal was coded by thematic orientation (e.g., technological, environmental, and social). We extracted project financials (total budget, requested public intensity, and awarded amounts—grant and/or loan where applicable) and, via SABI matching, constructed financial and operational indicators (e.g., size proxies such as employees, and standard balance-sheet ratios capturing liquidity/solvency when available). To ensure replicability and align with established research designs that model selection in competitive funding environments, the main inferential specification is a binary logistic regression (logit) model estimated by maxi-

mum likelihood, where the dependent variable equals 1 if the proposal receives any funding in the final allocation (and 0 otherwise), and explanatory variables include organizational type and capacity signals (age, size, and financial structure), together with project-level controls (theme, requested intensity, and scale) to isolate organizational effects from proposal characteristics. This approach is consistent with prior studies that use logistic regression to explain success in grant competitions or the probability of receiving public/European Union (EU) funding on the basis of applicant characteristics (e.g., Rusu, Mocanu, & Bibiri, 2022), and with related evidence on how firm attributes shape participation and outcomes in EU research programs using logit-type specifications (e.g., Børing, Fevolden, Mark, & Piro, 2020). In addition, descriptive and nonparametric bivariate analyses (chi-squared/Fisher for categorical variables; Mann–Whitney/Kruskal–Wallis for continuous variables; Spearman correlations) are used to characterize distributions and associations prior to multivariate estimation, and an exploratory two-step cluster procedure is applied to identify recurrent organizational profiles combining typology and financial features, maintaining a conventional significance threshold of $\alpha = 0.05$ throughout.

Table 1 presents the results corresponding to hypothesis H1, which proposes that older organizations would be more likely to secure public funding in public–private collaboration projects. According to the data, the average age of funded organizations (34.62 ± 23.8 years) is very similar to that of unfunded entities (33.71 ± 24.2 years). The Mann–Whitney *U* test ($U = -0.737$, $p = 0.461$) shows no statistically significant difference between the two groups.

		AGE							
	Total		≤ 5 years		6–30 years		> 30 years		
	Count	% of column *N*	Count	% of column *N*	Count	% of column *N*	Count	% of column N	
	Total	1378	100.0%	88	100.0%	630	100.0%	660	100.0%
STATUS	Granted	314	22.8%	16	18.2%	143	22.7%	155	23.5%
	Denied	1064	77.2%	72	81.8%	487	77.3%	505	76.5%

Table 1. *Results for age.*

Likewise, when age is regrouped into three categories (≤ 5 years, 6–30 years, and > 30 years), the chi-squared analysis ($\chi^2(2) = 1.246$, $p = 0.536$) reveals no notable association between age bracket and funding outcome (granted or denied). Consequently, the results do not support the initial hypothesis 1.

The findings displayed in Table 2 and Fig. 1 indicate a slight positive correlation (Spearman's $\rho = 0.144$, $p = 0.011$) between the number of employees in private entities and the total subsidy awarded for R&D&I projects. Although this correlation is weak, regrouping the data according to typical company-size categories reveals a clearer pattern. Specifically, median subsidies are statistically higher among medium-sized firms (50–249 employees) compared with micro-enterprises (< 50 employees), as confirmed by a Kruskal–Wallis test ($KW(2) = 7.716$, $p = 0.021$). This partially supports hypothesis 2 that a larger workforce positively influences the amount of funding obtained. (fig.1)

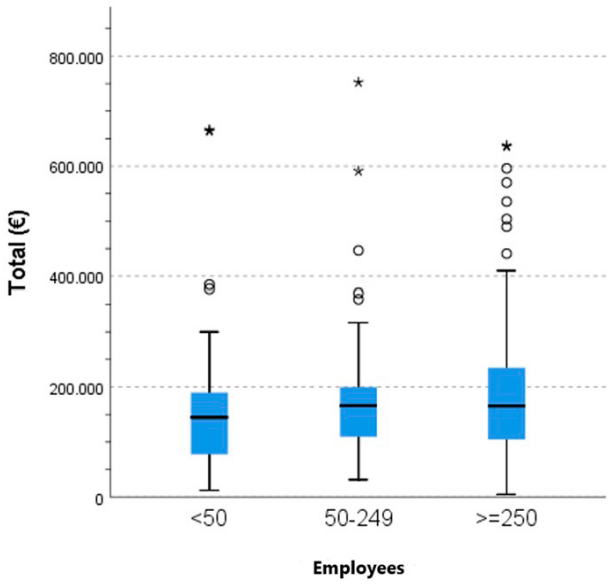

Fig. 1. *Results for number of employees.*

Total		Employees			
		< 50	50–249	≥ 250	
Total (€)	**Valid *N***	312	73	57	182
	Mean	179,084.45	153,840.02	184,097.95	187,639.81
	Standard deviation	118,820.18	116,898.57	125,071.04	116,808.41
	Median	160,000.00	144,879.75	165,938.50	165,406.00
	25th percentile	99,994.30	77,395.19	109,109.00	104,486.21
	75th percentile	213,431.50	189,969.60	199,832.26	235,050.00

Table 2. *Results for number of employees.*

The Spearman correlation between entity age and total project budget is statistically significant and positive, though weak (ρ = 0.138, p = 0.014). When separating organizations by whether they received funding, the correlation coefficients remain quite similar (ρ = 0.138, p = 0.014 for those granted and ρ = 0.162, p < 0.001 for those denied). (fig.2)

When age is regrouped into three brackets, there are statistically significant differences in project budgets by bracket, with budgets increasing as the organization's age rises (KW(2) = 42.937, p < 0.001). Specifically, the median budget for organizations over 30 years old is €268,196, which is higher than for those aged 6–30 years (€230,071) and those aged up to 5 years (€181,843). Budgets for organizations aged 6–30 years are also higher than those for organizations aged up to 5 years. Hypothesis 3 is thus confirmed. (Fig.3)

Total		AGE			
		≤ 5 years	6–30 years	> 30 years	
Budget (€)	**Valid *N***	1378	88	630	660
	Mean	295,138.33	201,144.17	286,761.56	315,666.89
	Standard deviation	208,765.35	131,436.91	203,930.21	217,770.46
	Median	239,913.15	181,843.27	230,071.50	268,196.40
	25th percentile	166,978.21	119,862.00	162,032.80	178,253.94
	75th percentile	373,720.80	225,005.00	356,696.00	392,956.53

Table 3. *Results for age.*

Regarding hypothesis 4, which posits that having previously been successfully awarded public grants positively influences obtaining aid in the current call, the data do not provide support. Specifically, there are no statistically significant differences in the percentage of funded proposals on the basis of whether a firm had been awarded a grant before ($\chi^2(1)$ = 0.017, p = 0.896).

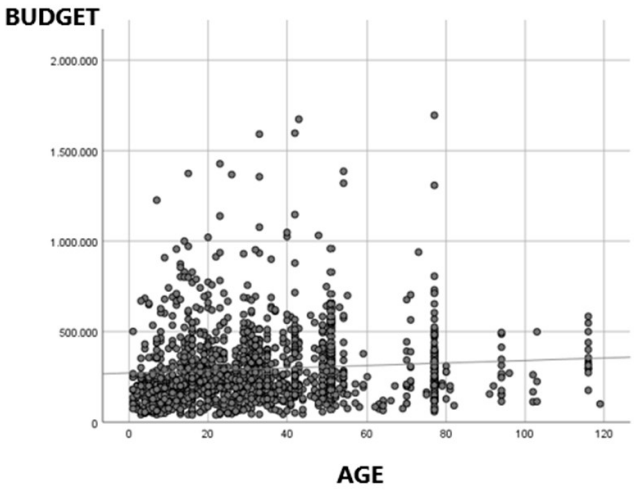

Fig. 2. *Results for age versus budget.*

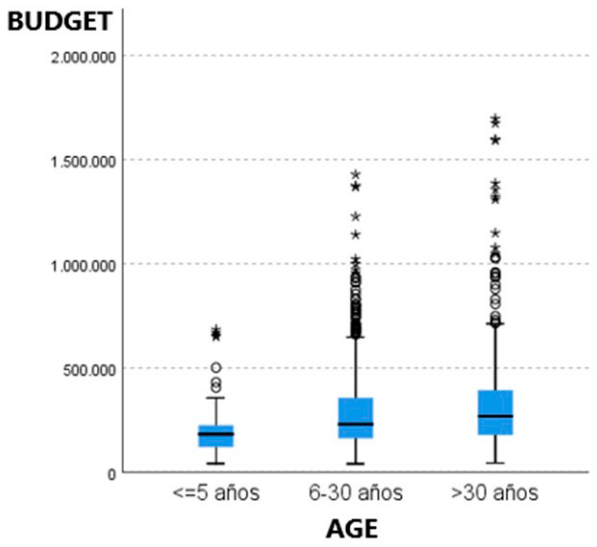

Fig. 3. *Results for age versus budget.*

		Previously granted					
		Total		No		Yes	
		N	%	*N*	%	*N*	%
STATUS	Total	1446	100.0%	878	100.0%	568	100.0%
	Granted	331	22.9%	202	23.0%	129	22.7%
	Denied	1115	77.1%	676	77.0%	439	77.3%

Table 4. *Results based on previous grant awards.*

There are significant differences in the percentage of awards between the "health and well-being" and "demographics and urban mobility" areas ($\chi^2(3) = 8.038$, $p = 0.045$), indicating a higher number of grants in the latter group.

		Thematic grouping									
		Total		Demographics, urban mobility, and cultural heritage		Renewable energy, environment, and wildlife conservation		Health, well-being, and care for the elderly		Software, IoT, AI, nanotechnology, emerging technologies, Big Data, etc.	
		Count	% of column *N*	Count	% of column *N*	Count	% of column *N*	Count	% of column *N*	Count	% of column *N*
Status	Total	745	100.0%	71	100.0%	190	100.0%	262	100.0%	222	100.0%
	Granted	166	22.3%	24	33.8%	45	23.7%	48	18.3%	49	22.1%
	Denied	579	77.7%	47	66.2%	145	76.3%	214	81.7%	173	77.9%

Table 5. *Results by theme.*

When analyzing the total grant amounts, significant differences emerge in median values by organizational theme. Notably, software companies receive, on average, 1.7 times more funding than firms in the demographics category (KW(3) = 8.011, $p = 0.046$). (fig.4)

		Status				
		Granted				
		Thematic grouping				
		Total	Total	Total	Total	Total
Total (€)	**Valid *N***	166	24	45	48	49
	Mean	166,214.70	116,618.61	146,600.03	192,453.96	182,816.36
	Standard deviation	127,380.95	91,137.59	68,426.57	165,754.91	134,319.86
	Median	146,022.32	92,587.75	148,488.00	142,898.38	156,254.30
	25th percentile	92,649.38	40,227.51	100,000.00	97,843.00	100,977.40
	75th percentile	193,757.91	173,939.45	191,945.75	199,686.00	194,229.40

Table 6. *Results by theme.*

Moreover, the statistical findings suggest that hypothesis 5 is partially supported. Based on the Kruskal–Wallis test (KW(3) = 23.403, $p < 0.001$), there are indeed statistically significant differences across thematic areas in terms of the grant amounts received. Specifically, the "demography, urban mobility, and cultural heritage" category exhibits notably lower funding compared with the remaining groups, as confirmed by post hoc comparisons ($p < 0.01$). However, the findings do not support the hypothesis that projects in technological do-

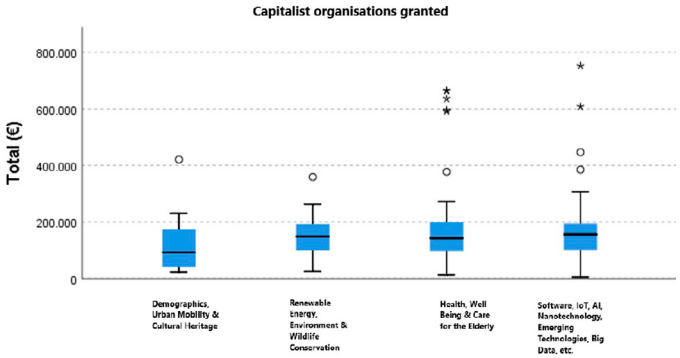

Fig. 4. *Results by theme.*

mains (such as IoT, AI, and nanotechnology) systematically secure higher levels of funding than those in social sectors (such as health and welfare). The pairwise comparisons between these two groups fail to reach statistical significance (p = 1.000), indicating no decisive evidence that technologically oriented projects are more highly funded than social ones. Furthermore, a separate Mann–Whitney comparison focusing solely on these two categories (technological versus social) yields a nonsignificant result (U = −0.822, p = 0.411), confirming that the anticipated funding advantage for high-tech initiatives does not emerge within the sample. Consequently, the stated hypothesis 6 remains unconfirmed.

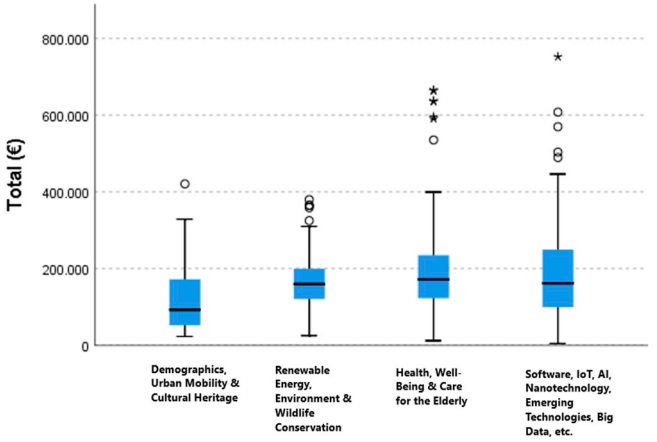

Fig. 5. *Results by theme.*

		Granted				
		Thematic grouping				
	Total	Demographics, urban mobility, and cultural heritage	Renewable energy, environment, and wildlife conservation	Health, well-being, and care for the elderly	Software, IoT, AI, nanotechnology, emerging technologies, Big Data, etc.	
Total (€)	**Valid *N***	331	50	81	101	99
	Mean	180,532.73	119,787.76	168,748.63	206,369.16	194,495.17
	Standard deviation	120,086.23	86,955.00	75,887.74	138,909.07	132,309.95
	Median	160,000.00	92,587.75	160,000.00	171,836.28	161,882.93
	25th percentile	99,991.60	52,342.15	120,776.73	122,548.10	99,526.50
	75th percentile	214,250.00	172,377.50	199,978.43	235,050.00	251,310.80

Table 7. *Results by theme.*

Conclusions

Overall, the evidence supports the idea that competitive innovation funding is jointly shaped by capability signals and policy- and program-specific selection logics: applicants that can credibly demonstrate delivery capacity and present proposals consistent with the call's priorities tend to be better positioned, but the magnitude and stability of "structural" advantages (such as seniority) is lower than conventional expectations would imply in a pure cumulative-advantage story.

A central—and initially counterintuitive—finding is that seniority (e.g., organizational age) and past success records do not systematically translate into higher probability of receiving funding or larger awarded amounts once we account for other relevant factors. This result contrasts with a substantial body of research on cumulative advantage in competitive allocations. For instance, the "Matthew effect" literature documents how early successes can increase later success probabilities, generating path-dependent inequalities over time (Bol, de Vaan, & van de Rijt, 2018). If such dynamics dominated this setting, we would expect organizational seniority and a strong track record to act as persistent advantages. Yet, in our context, these variables do not operate as "guarantees," and their influence appears contingent and, in some specifications, statistically weak.

We interpret this pattern through three complementary contextual mechanisms. First, the program's evaluation logic is strongly project-contingent: proposals are assessed on feasibility, expected impact, and alignment with strategic priorities; consequently, organizational history can be overridden by the perceived merits (and risks) of the specific proposal at hand. In PPP-style calls, evaluators may also attribute execution capacity to the consortium configuration rather than to a single entity, meaning that organizational seniority becomes diluted when delivery credibility is inferred from partner complementarities, governance arrangements, and budget coherence. Second, seniority may be associated with organizational inertia: established routines can improve administrative competence but may also reduce adaptability when calls evolve toward new mission framings (e.g., sustainability and transition language). In that scenario, experience provides procedural fluency yet does not necessarily improve com-

petitive fit if the proposal narrative does not match shifting evaluation heuristics. Third, competitive funding outcomes typically contain a nontrivial element of timing and volatility, especially where annual budgets, thematic emphases, or reviewer composition fluctuate. Evidence from other competitive funding systems shows that seniority does not automatically entail better outcomes and that success can become partly decoupled from seniority or past performance under fluctuating conditions (Kindsiko, Rõigas, & Niinemets, 2022).

Although this work is in a research-grant setting, the underlying point generalizes: when competition is intense and allocation is sensitive to context, "being senior" or "having won before" is not sufficient. Importantly, our results do not imply that experience or past success is irrelevant; rather, they suggest bounded cumulative advantage in this specific program environment. One plausible reconciliation with the Matthew-effect literature is that cumulative advantage often operates partly through a participation channel—prior winners apply more often, persist longer, or access better information—whereas our analysis focuses on a pool of already-participating applicants within a single call cycle. In other words, once organizations are "in the competition" and evaluated on a proposal-by-proposal basis, the marginal predictive power of seniority may shrink relative to the explanatory weight of proposal quality, consortium design, and thematic fit, because cumulative advantage may manifest primarily through differential reapplication behavior rather than persistent evaluator preference for prior winners (Bol, de Vaan, & van de Rijt, 2018; Traag et al., 2025). This helps explain why seniority and track record do not mechanically yield larger awards: competitive calls can intentionally (or unintentionally) counterbalance cumulative advantage through project-centered scoring, budget constraints, and risk diversification across winners.

From a policy perspective, these findings have two implications. First, the absence of a strong seniority premium may be interpreted positively: it suggests that the program does not operate as a closed club where only established players repeatedly capture resources. This can support ecosystem renewal, which is particularly relevant for social-economy entities and smaller firms that may face structural disadvantages in other settings. Second, if volatility and project contingency are key drivers, agencies should reinforce transparency and feedback mechanisms so that organizations can learn what "fit" means in practice and adapt their proposals accordingly. From an organizational strategy perspective, the message is also practical: relying on seniority or previous wins is insufficient. Competitive advantage is more likely to come from (i) aligning the proposal narrative with the call's policy logic, (ii) designing consortia that credibly distribute capabilities, and (iii) matching budgets and requested intensity to deliverable work plans that evaluators perceive as proportionate and low-risk.

Future Lines of Investigation

Building on these findings, future research could investigate whether the observed patterns hold across diverse funding programs and geographic contexts. Comparative cross-country analyses would be especially valuable, as public funding mechanisms can differ substantially, even within the European Union. By examining how organizations navigate variations in policy priorities, administrative processes, and cultural attitudes toward public–private partnerships, scholars could gain deeper insights into the universal versus context-specific drivers of funding success. Moreover, mixed-methods approaches that integrate quantitative data with qualitative case studies would offer a more holistic understanding of why certain entities—particularly smaller social-economy organizations—either thrive or struggle in the competitive R&D&I landscape. Interviews with project coordinators, grant evaluators, and policymakers could reveal the underlying motivations, collaborations, and strategic decisions that influence funding decisions. Such insights might clarify how intangible organizational features—such as mission-driven culture or participatory governance—translate into more (or less) successful grant applications. Future studies could also investigate the long-term impacts of funded projects. For instance, exploring how successfully completed collaborations influence organizational learning, network growth, and subsequent innovation capacity would yield valuable evidence on whether public funding fosters sustainable development beyond immediate project timelines. This line of inquiry could further illuminate whether an "experience dividend" eventually manifests, in contrast to the negligible effect of prior grants found here. Lastly, there remains scope for research into thematic synergies. While the current study found no significant advantage for high-tech proposals over social-oriented ones, a future line of work could consider whether hybrid projects—those integrating both technological and social components—might enjoy greater overall success. Investigating how these complex, cross-disciplinary proposals are evaluated, and whether they address public priorities more comprehensively, could provide actionable insights for policy design and consortium formation.

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