

Adapting InCaS as an Acceleration Architecture for Emerging Organisations: A Work-in-Progress Report

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Abstract: This paper reports on an ongoing research project investigating the adaptation and digital operationalisation of the InCaS (Intellectual Capital Statement) method as an acceleration architecture for emerging, knowledge-based organisations. The research is being conducted within the Impacta Júnior programme, a structured acceleration initiative promoted by Concentro and funded by the Coalizão pelo Impacto, involving ten university-based junior enterprises as the empirical field. The paper presents the theoretical grounding, the methodological design, and the full InCaS application process as implemented in this context, together with preliminary insights drawn from the first application cycle. The adapted process encompasses nine sequential stages, beginning with organisational pre-arrangement and business modelling, followed by intellectual capital factor identification, Quality-Quantity-Systematics (QQS) evaluation, and impact analysis. These stages feed into intervention potential mapping, indicator definition through Key Performance Indicators (KPIs), and structured strategic action planning, culminating in a pitch-based Demo Day as the final output. A purpose-built digital platform was developed to support this process at scale, enabling anonymised multi-stakeholder participation, automated composite scoring, and real-time visualisation of results. Twenty-four management factors were derived from organisational listening sessions and mapped across the three intellectual capital dimensions, using simplified terminology adapted to low-maturity organisational contexts. Early observations indicate that the adapted method fosters structured organisational self-reflection, makes latent knowledge gaps more visible, and encourages collective deliberation processes, even in organisations with limited prior exposure to formal management practices. Recurring challenges were observed in areas such as KPI definition, prioritisation of strategic factors, and the consolidation of shared organisational understanding. Full empirical analysis, including systematic pre-post comparisons of organisational maturity and longitudinal assessment of development trajectories, remains underway. The study contributes a documented and replicable model for adapting the InCaS method to acceleration environments, demonstrates the feasibility of its digital operationalisation, and offers initial evidence of its applicability for practitioners, programme designers, and policymakers working with knowledge-intensive and resource-constrained organisations.

Keywords: Intellectual capital, InCaS, Business acceleration, Intangible assets, Organisational development, Knowledge management

1. Introduction

The growing strategic significance of intangible assets in knowledge-based economies has generated sustained scholarly interest in frameworks capable of making intellectual capital (IC) visible, measurable, and actionable at the organisational level. While macro-level evidence for the positive relationship between IC intensity and economic growth is well established (Gashe, Sime and Mada, 2024), the translation of this evidence into operational tools for organisations with limited management maturity remains a persistent challenge. Small and emerging organisations, particularly those embedded in university ecosystems, frequently possess substantial knowledge potential that remains structurally unrecognised and therefore strategically underutilised.

The Brazilian policy context sharpens this concern. The Nova Indústria Brasil (NIB) Action Plan 2024-2026 treats intangible assets as structural vectors of national competitiveness (Brasil, 2024, p. 11), whilst instruments such as FINEP have expanded towards scientific infrastructure and enterprise capacity-building (FINEP, 2024), creating institutional demand for methodological tools capable of supporting IC management in resource-constrained organisations.

Against this backdrop, this paper reports on an ongoing research project adapting the InCaS method as a structured acceleration architecture within the Impacta Júnior programme, targeting ten university-based junior enterprises in Brazil. Originally developed by the European Commission for application in SMEs across five countries (Mertins, Wang and Will, 2009), InCaS offers a rigorous yet flexible process for identifying, evaluating, and communicating IC across Human, Structural and Relational Capital dimensions. Its documented applicability in diverse national contexts, including prior Brazilian pilots (Sequeira et al., 2013), makes it a theoretically grounded candidate for methodological adaptation.

The central research question is: how can the InCaS method be adapted and digitally operationalised as a viable acceleration architecture for emerging organisations with low management maturity, and what preliminary evidence can be drawn from an initial empirical application? Three contributions are advanced: a systematic and replicable methodological adaptation of InCaS to a low-maturity acceleration context, including a 24-factor

management model grounded in organisational listening; a purpose-built digital platform that operationalises IC assessment at scale; and actionable design principles for programme developers and policymakers integrating structured IC management into enterprise development instruments.

The paper details the adapted process, the digital infrastructure developed to support it, and preliminary observations from the initial application cycle.

2. Theoretical Background

2.1 Intellectual Capital

Edvinsson and Sullivan (1996) define intellectual capital as knowledge that can be converted into value, a framing that extends well beyond legally protected intellectual property to encompass tacit capabilities, formalised knowledge systems, and relational assets. This conception evolved into the tripartite structure now widely adopted: Human Capital (HC), Structural Capital (SC), and Relational Capital (RC), endorsed by the Danish Ministry of Science (2003), the Fraunhofer Institute (2004), and the European Commission (2008).

A critical evolution in IC scholarship has been the shift from classificatory to process-oriented perspectives. Demartini and Paoloni (2013) argue that IC should be understood through its functionality in organisational processes rather than as a static inventory of resources. Kujansivu and Lonnqvist (2007) that IC management is most effective when embedded within, rather than appended to, the processes through which knowledge is created, shared, applied, and institutionalised. This functional orientation directly shapes the methodological choices documented in this paper, particularly the reframing of IC dimensions as organisational process axes.

Mouritsen and Larsen (2005) offer a further conceptual anchor, arguing that IC measurement cannot be presented as sufficient for value creation in isolation. Measurement must serve as an input to managerial action, supporting interventions in the actual processes through which knowledge is developed and applied. This distinction between IC reporting and IC management is central to the design logic of the adapted InCaS approach presented here.

2.2 The InCaS Method

Understanding what intellectual capital is, and how it can be structured and managed, is the necessary starting point for the methodological contribution this paper advances.

The InCaS method emerged from a European Commission-funded initiative involving more than 120 SMEs across Germany, Spain, France, Poland, and Slovenia (Mertins, Wang and Will, 2009), drawing on the German Wissensbilanz framework and Danish IC reporting guidelines (Mouritsen et al., 2003). The synthesis offers a process individualisable for internal management whilst remaining standardised enough to support external benchmarking (European Commission, 2008).

The method structures IC analysis across three capital dimensions. Human Capital covers what individual employees contribute to value-generating processes, encompassing technical competences, tacit knowledge, motivation, and learning capacity. Structural Capital refers to the organisational residue of knowledge: processes, information systems, culture, routines, and intellectual property that persist independent of individual tenure. Relational Capital captures the organisation's external relationships, including clients, suppliers, strategic partners, and research institutions. The method's process logic moves from business modelling through factor identification, assessment, impact analysis, and indicator definition, culminating in an Intellectual Capital Statement as the formal output.

In Brazil, the first pilot applications were conducted by Sequeira et al. (2013) in ten SMEs in the oil and gas sector. That experience demonstrated that the method's conceptual integrity can survive significant procedural adaptation, establishing a precedent for context-sensitive appropriation that has informed subsequent applications in innovation institutes and technology-based firms (Mota, 2014; Motta and Gomes, 2014; Prim, 2022). The present study extends this lineage to a new context: university-based junior enterprises undergoing structured acceleration.

3. Research Design

This study is positioned within the design science research (DSR) tradition (Hevner et al., 2004), which treats the development and evaluation of purposeful artefacts as its primary mode of knowledge contribution. The research produces and evaluates two utility-driven outputs: an adapted methodological framework and a supporting digital platform, assessed in terms of their fitness for purpose in a low-maturity acceleration context.

The unit of analysis is the individual junior enterprise as an organisational participant in a structured acceleration programme. Ten organisations constitute the empirical field, drawn from the second cycle of the Impacta Junior programme promoted by Concentro and funded by Coalizao pelo Impacto. The two-cycle structure was a deliberate methodological choice, enabling an observational phase in the first cycle and a controlled application phase in the second.

Data collection draws on multiple sources: field observation during the first cycle for qualitative profiling; secondary data from Concentro (session transcripts, performance reports, satisfaction assessments) for model calibration; and primary data from the application phase through the platform's anonymous voting records, consensus deliberations, KPI selections, and Demo Day scores, currently undergoing comparative pre-post and cross-case analysis.

The research unfolded across eight stages: bibliographic review; first-cycle field observation; platform development; usability testing; InCaS application; data analysis (ongoing); preparation of a Technical Conclusive Report; and academic dissemination. This paper reports primarily on Stages 1 through 5, with preliminary observations from Stage 6 in Section 5.

3.1 First-Cycle Field Observation

During the first acceleration cycle, the researcher participated in a non-interfering, observational capacity, documenting data from secondary sources made available by the programme organisers. These included session transcripts, testimony compilations, internal performance reports, and satisfaction assessments. The observation phase revealed a consistent pattern of low organisational repertoire across participants: limited familiarity with strategic management concepts, sparse use of formal processes, and low baseline awareness of intellectual capital. These findings directly shaped vocabulary, sequencing, and scaffolding decisions in the subsequent InCaS adaptation.

3.2 Digital Platform Development

A purpose-built platform was developed to operationalise the adapted InCaS method at the scale and pace required by the programme. Its architecture adopted a hybrid approach: a no-code front-end for rapid iteration and a custom-coded back-end for data flexibility and control, with dynamic spreadsheets as the computational substrate for scoring and reporting. Core functionalities included a general organisational dashboard, individual company pages with member management, anonymised multi-stakeholder voting, and automated calculation of QQS scores, impact rankings, and intervention potential matrices. Usability testing with the researcher's own enterprise and a simulated participant enterprise preceded live deployment, with identified improvements logged for future iteration.

4. The Adapted InCaS Application Process

The application followed the structure proposed by the European ICS Guideline (European Commission, 2008) with respect to core stages and analytical logic. Adaptations were introduced in data collection, scoring, output design, and vocabulary, each documented below with its underlying rationale. The process unfolds across nine stages, from initial onboarding through to the final Demo Day presentation.

4.1 Stage 0: Organisational Pre-arrangement

Prior to substantive engagement, selected organisations registered on the programme platform and designated a primary and secondary representative for organisational liaison. The primary representative received administrative access and was tasked with enrolling all company members. Only registered members were eligible to participate in subsequent voting stages. Inclusive enrolment across functional areas and hierarchical levels was actively encouraged, reflecting the InCaS principle that IC analysis gains diagnostic validity from capturing multiple organisational perspectives simultaneously.

4.2 Stage 1: Business Modelling

Each organisation completed a structured organisational profile encompassing four dimensions: (i) business model, describing how the company creates, delivers, and captures value; (ii) solutions portfolio, detailing current services or products; (iii) strategic objectives, covering short- and medium-term goals; and (iv) organisational maturity level, assessed through a self-report instrument designed and administered by Concentro. This instrument comprised three thematic blocks: life stage and strategic situation (degree of value proposition definition and formal planning); managerial and cultural capacity (leadership practices, process formalisation, and cultural characteristics); and absorption and learning capacity (openness to innovation and

organisational learning mechanisms). The resulting maturity profiles served as the analytical baseline against which post-programme development would subsequently be assessed.

4.3 Stage 2: IC Factor Identification

The 24 management factors used in this study were derived from AI-assisted analysis of first-cycle session transcripts conducted by Concentro, which identified 24 recurrent themes in participants' organisational discourse. These themes were condensed into management factor nomenclature and reframed, following Kujansivu and Lonnqvist (2007), as organisational processes distributed across the three IC dimensions. To reduce conceptual friction for participants with limited management experience, the HC-SC-RC taxonomy was relabelled as People, Processes, and Relations. Each dimension was subdivided into two thematic axes, each containing four factors, producing the model detailed in Table 1.

Table 1: Management Factors Derived from Organisational Listening Sessions

Dimension	Axis	Management Factors
People (Human Capital)	Talent	Competency Management; Leadership Development; Talent Attraction and Retention; Succession Planning
People (Human Capital)	Culture	Innovative Environment; Organisational Climate; Internal Engagement; Decision Architecture
Processes (Structural Capital)	Operations	Portfolio Management; Performance Indicator Monitoring; Technological Maturity; Compliance
Processes (Structural Capital)	Knowledge	Intellectual Property; Organisational Learning; Knowledge Transfer; Information Infrastructure
Relations (Relational Capital)	Partnerships	Engagement Strategy; Process Integration; Demand Management; Relationship Protocols
Relations (Relational Capital)	Positioning	Sustainability; Institutional Narrative; Reputation and Image; Results Transparency

An onboarding session introduced all ten organisations and their registered members to the programme, the InCaS framework, and the 24 factors. Following the presentation, participants gathered in virtual breakout rooms to collaboratively select the nine factors most relevant to their organisational reality. The restriction to nine factors was a technical constraint of the platform architecture, designed to maintain analytical uniformity across organisations. Unlike the original European methodology, proportional selection across the three dimensions was not required, given the programme's emphasis on practical organisational strengthening rather than formal IC statement preparation.

4.4 Stage 3: QQS Evaluation

The first individual mentoring session assessed each of the nine selected factors along three criteria: Quality (the calibre of the factor's current state), Quantity (volume or availability of the resource), and Systematics (degree of formalisation and routine management). Each registered member voted independently through the platform using a four-point percentage scale: 0% (not sufficient), 30% (partially sufficient), 60% (predominantly sufficient), and 90% (absolutely sufficient). This replaced the original visual card system (coloured facial expressions) with a numerical scale, chosen for its reduced cognitive load and greater compatibility with the digital interface.

Where significant inter-voter discrepancies emerged, participants responsible for extreme assessments were invited to justify their positions. Structured deliberation followed, with consensus sought on whether initial scores required revision. Argumentation summaries were recorded separately for each QQS criterion, ensuring traceability. The platform then calculated improvement potential as the arithmetic mean of QQS scores per factor, expressing the gap between the mean and 100 as the available developmental space. This figure became the first axis of the subsequent intervention potential analysis.

The consensus-building element of this stage warrants particular note. It was embedded intentionally as a developmental mechanism, not merely a data-reconciliation procedure. By requiring teams to articulate and defend divergent assessments, the process generates precisely the kind of deliberative self-analysis that

Mouritsen and Larsen (2005) argue must accompany IC measurement if it is to serve managerial intervention rather than mere classification.

4.5 Stage 4: Impact Analysis

The second mentoring session addressed the relative strategic importance of each selected factor. Drawing on the simplified version of this stage (European Commission, 2008, pp. 31-32), each registered member ranked the nine factors on a scale of 1 to 9, with 9 denoting the factor of greatest perceived contribution to the organisation's strategic objectives. The platform computed mean weights across all voters and ranked factors in descending order of perceived impact. This ranking constituted the second axis feeding into the intervention potential matrix.

4.6 Stage 5: Intervention Potential Matrix

The third mentoring session synthesised the QQS improvement potential and impact scores into an intervention potential composite for each factor, visualised as a two-dimensional matrix. Factors located in the high-potential, high-impact quadrant were identified as priority intervention points. The session opened a structured dialogue on the coherence of results and any unexpected patterns. Three or four factors with the highest composite scores were then examined in relation to the organisation's business model and strategic objectives, not to revise them, but to clarify how these priority factors interact with existing strategic commitments. This stage functioned simultaneously as an analytical consolidation and an organisational learning exercise.

4.7 Stage 6: Indicator Definition and the Personalised Development Plan

The original InCaS methodology recommends defining indicators for at least 50% of priority factors. Given that systematic performance monitoring was not institutionalised in any participating organisation, this research restricted indicator definition to three or four factors from those identified as highest-priority in the intervention potential analysis. The fourth mentoring session introduced the concept of Key Performance Indicators (KPIs) and their distinction from targets, illustrating their articulation with Objectives and Key Results (OKRs) through worked examples. Methodologically, the study departed from the European specification by decoupling indicator selection from the residual intervention potential scores. Rather than requiring KPIs to correspond directly to the gap between observed and maximum QQS values, indicators were selected according to the criteria of comprehensibility, applicability, and local verifiability. Intervention potential scores guided which factors to prioritise; they did not determine which metrics to adopt. Teams registered their collective decisions in the Personalised Development Plan (PDP), a structured planning instrument formalising the organisational commitment to monitoring priority management factors.

4.8 Stage 7: Strategic Refinement and Action Planning

The fifth mentoring session invited organisations to specify the actions, projects, or initiatives they intended to implement in pursuit of the targets defined for priority factors. Building on the PDP completed in the preceding session, teams formulated proposals with defined objectives, responsibilities, timelines, and expected outcomes. Deliberations centred on feasibility, with reflection prompted on available resources, implementation complexity, and realistic timelines. Beyond producing formal action plans, the session aimed to strengthen what might be understood, following Zahra and George (2002), as the organisations' absorptive capacity: their ability to identify, assimilate, and apply knowledge to operational and strategic purposes. An emergent and significant dimension of this stage was the conversation it opened about coherence between internal processes and external positioning. As teams revisited their priority factors and established indicators, the relationship between organisational capabilities and the value proposition communicated to clients and partners became a recurring subject of reflection. This connection between internal IC development and external strategic identity, whilst unplanned, proved a consistent feature across multiple organisations, suggesting that the InCaS process may generate strategic self-awareness effects that extend beyond the immediate diagnostic objectives.

4.9 Stage 8: Demo Day

The final output of the adapted methodology replaced the traditional InCaS Intellectual Capital Statement with a pitch-format institutional development presentation, delivered at a closing Demo Day event. Organisations completed the PDP as an internal synthesis document and prepared a public presentation of up to seven minutes, covering their programme journey, learnings, and strategic priorities. An evaluation panel of professionals experienced in operations management and business development assessed each presentation on six criteria rated from 1 to 5, as detailed in Table 2.

Table 2: Demo Day Evaluation Criteria

Criterion	Description	Evaluative Focus
1. Context and Problem Clarity	Presentation of initial challenges and rationale for participation	Capacity to contextualise the prior situation, articulate difficulties, and justify programme engagement as a strategic response
2. Strategy and Prioritisation	Coherence in priority definition and results measurement	Clarity in strategic focus, methodological consistency in KPI use, and feasibility of action plans
3. Results and Internal Impact	Alignment with mission and transformation potential	Realism of expectations, adherence to organisational values, and potential impact on the business model
4. Social-Environmental Impact	Articulation between internal practices and external impact	Coherence between institutional discourse and practice; positioning potential as a social and environmental impact business
5. Presentation Quality	Clarity, narrative structure, time management	Command of oral communication, logical organisation, and emphasis on key contributions
6. Feasibility and Execution	Viability of proposed actions and implementation capacity	Factibility of presented strategies and medium-to-long-term sustainability of solutions

The Demo Day served a dual purpose. At the individual level, it provided each organisation with a structured opportunity to externalise and consolidate their developmental narrative. At the programme level, it created a shared moment of cross-organisational learning and mutual accountability. The choice to replace the formal IC Statement with this format reflects a deliberate trade-off: some of the rigour of traditional IC reporting was sacrificed in favour of accessibility, communicability, and fit with the acceleration programme's cultural logic. This trade-off is explicitly framed as an adaptation rather than a simplification, and its implications are examined further in Section 6.

5. Preliminary Insights and Expected Outcomes

Data collection was completed in early 2026, and comprehensive analysis is currently underway. The observations reported below are preliminary, drawn from qualitative review of platform records, mentoring session notes, and Demo Day assessments. They should be read as initial evidence, subject to revision as formal analysis proceeds, rather than as validated findings. Longitudinal follow-up with participating organisations is planned to assess the persistence of effects over time.

5.1 Preliminary Observations from the Application

A first observation concerns the near-universal absence of prior KPI culture. Across all ten organisations, teams consistently conflated KPIs with activities rather than outcomes, requiring repeated re-anchoring. This aligns with entry-level maturity baselines and suggests the indicator definition stage may require more robust scaffolding in future programme designs.

A second observation concerns patterns in factor prioritisation. People-dimension factors, particularly Internal Engagement and Organisational Climate, received disproportionately high priority selections, whilst Structural Capital factors were systematically less chosen. This raises the question of whether selection patterns reflect genuine strategic diagnosis or factor salience, a dimension being examined in the current analysis.

A third observation concerns the effects of consensus-based QQS deliberation. Significant divergence between individual votes prompted substantive internal debates that would not otherwise have occurred. Participants from different functional areas expressed markedly different perceptions of the same factor, and the process of negotiating these differences generated what might be characterised as an organisational learning event: surfacing tacit knowledge and building shared representations. This was observed across multiple organisations and represents one of the most potentially valuable findings of the initial application.

A fourth observation concerns the intervention potential matrix and strategic coherence. Several organisations expressed surprise at the gap between high-impact and well-developed factors, and the visualisation of this gap prompted reflection on misalignments between ambition and capacity. Several teams spontaneously revised

their strategic objectives in light of these insights, suggesting the matrix operates as a strategic provocation as much as a diagnostic tool.

A fifth observation concerns differentiation across organisations. Despite the sample's homogeneity, substantial variation was observed in factor selections, QQS profiles, and intervention rankings, indicating that the adapted process captures genuine organisational differences rather than producing uniform outputs and underscoring its value as a personalisation mechanism.

5.2 Expected Outcomes Pending Full Analysis

The primary expected finding is a measurable increase in management maturity, with organisations at entry-level classifications anticipated to show advancement in strategic clarity, routine institutionalisation, and learning capacity, alongside more systematic recognition and articulation of the intangible assets underpinning their operations. A secondary expected outcome concerns self-positioning as impact organisations. The integration of social-environmental criteria in both the action planning and Demo Day stages, combined with the method's emphasis on coherence between internal processes and external value propositions, may encourage a proportion of participants to reframe their strategic identities around impact-oriented objectives. Whether and to what extent this reframing is observed will be a substantive dimension of the forthcoming analysis.

6. Discussion

Three claims are now sufficiently grounded to be substantively discussed ahead of complete empirical analysis.

The first concerns methodological flexibility. The InCaS framework's tripartite capital model proved robust enough to sustain significant procedural adaptation without losing its analytical coherence. The relabelling of dimensions as People, Processes, and Relations, the substitution of the visual card system with a percentage scale, the replacement of the IC Statement with a PDP and a Demo Day, and the decoupling of KPI selection from residual intervention potential scores all represent departures from the European specification. Yet across all nine stages, the method's core logic, moving from strategic context through IC diagnosis to prioritised action, remained intact. This resilience extends and confirms observations from prior Brazilian applications (Sequeira et al., 2013; Mota, 2014), whilst adding new evidence from a qualitatively different organisational context characterised by lower maturity and a digital-first delivery mode.

The second concerns the digital platform's contribution to IC operationalisation. Traditional IC assessment has been labour-intensive, consultant-dependent, and difficult to scale. The platform addresses each of these constraints: simultaneous multi-organisation application, anonymised participation reducing social desirability bias, automated composite scoring, and real-time transparency for all members collectively expand the addressable population for IC-based acceleration. The platform may function not only as an operational tool but as an institutional infrastructure capable of supporting ongoing IC assessment across programme cycles.

The third, and perhaps the most theoretically significant contribution, concerns the developmental function of the method itself. The preliminary observation that consensus-building in the QQS stage generates organisational learning effects (see Section 5.1) connects to a body of literature on absorptive capacity (Zahra and George, 2002) and on the conditions under which IC information enables rather than merely documents organisational knowledge. Mouritsen and Larsen's (2005) argument that IC measurement must serve as a managerial input, not a reporting output, finds empirical traction in the observation that the structured deliberation required by the adapted InCaS process surfaces tacit disagreements, builds shared organisational language, and generates the kind of collective self-knowledge that precedes purposeful strategic action. The method, in this reading, is not only a diagnostic instrument but a vehicle for organisational learning.

The consistent difficulty in distinguishing indicators from activities suggests that a minimum threshold of prior management vocabulary may be a prerequisite for effective IC management, pointing to a design implication that the ongoing analysis is expected to clarify. Limitations include the small and homogeneous sample, the absence of a control group, and the researcher's dual role as facilitator and investigator, managed through non-interference protocols. These constrain generalisation without undermining the methodological contribution or the theoretical interest of the preliminary observations.

7. Conclusions and Research Status

This paper has presented a work-in-progress account of an ongoing research project adapting the InCaS method as a structured acceleration architecture for emerging knowledge-based organisations. The nine-stage adapted

process has been fully implemented with ten junior enterprises and initial evidence drawn from the application cycle supports three substantive contributions: a replicable methodological adaptation of a rigorously designed IC framework to a low-maturity context; a digital platform demonstrating that IC assessment can be delivered at scale; and preliminary evidence that the method generates organisational learning effects meaningful even in organisations with no prior IC management experience.

Full empirical results and longitudinal follow-up are underway, with the methodological model and platform being prepared for application in other acceleration contexts to generate comparative evidence on portability. The study's implications extend to practitioners, policymakers and IC researchers alike: it provides a replicable process model integrating IC diagnosis with developmental facilitation, evidence that IC-based acceleration is feasible and scalable, and preliminary indication that the method's developmental value may reside as much in the deliberative processes it activates as in its diagnostic outputs.

Ethics Declaration: The research involved human participants through an acceleration programme context. Ethical clearance was obtained through the institutional review processes of the Instituto Tecnológico de Aeronáutica (ITA) and in accordance with the norms of the PROFNIT graduate programme. All participant data were treated confidentially and anonymised in reporting.

AI Declaration: AI tools were used at two stages of this research. In the data preparation phase, Concentro employed AI-assisted transcript analysis to identify the 24 recurrent organisational themes that informed the management factor model; those outputs were subsequently reviewed and theoretically grounded by the researcher. In the preparation of this article, AI-assisted writing tools were used for language revision. In both cases, the researcher retained full critical oversight and assumes complete responsibility for the final content.

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