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Human resource management in early-stage ventures: fractional HRM as an alternative approach – evidence from a multiple case study

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Abstract

Purpose – This study aims to examine how early-stage ventures develop and adapt human resource management (HRM) practices under resource constraints, and how founders envision addressing gaps between current practices and organisational HR needs.

Design/methodology/approach – A qualitative multiple case study examined eight ventures across five countries (France, Italy, Switzerland, Tunisia and the UK) through semi-structured interviews with eight founders and three early-hire employees. Analysis followed Gioia *et al.*'s (2013) three-phase methodology within an abductive research design, with resource-based view and contingency theories as sensitising frameworks.

Findings – Four aggregate dimensions characterise HRM development in early-stage ventures: network-based resource orchestration, adaptive practices, founder-centric knowledge transfer and formalisations. These dimensions operate across the core HRM domains of hiring, onboarding, development and retention. Founder-led practices provide initial agility but become unsustainable as ventures scale beyond their founding team. Participant accounts consistently converge on fractional HRM as a potentially viable response to capability gaps that conventional HR solutions cannot address within existing resource constraints.

Practical implications – Founders should anticipate the organisational limits of network-dependent hiring before resource pressures ease. Selective formalisation, introducing structure in specific HRM domains while preserving flexibility in others, represents a more viable path than direct adoption of established HR frameworks. HR professionals entering start-up contexts require tolerance for ambiguity and a willingness to co-create practices alongside founders.

Originality/value – This study advances understanding of HRM in resource-scarce organisational settings by identifying four aggregate dimensions that characterise founder-led HRM and introducing fractional HRM

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as an empirically grounded theoretical approach with specified boundary conditions, thereby contributing to HRM theory and the practice of people management in early-stage ventures.

Keywords Human resource management (HRM), Human capital (HC), Early-stage start-up, Fractional HRM

Paper type Research paper

1. Introduction

The start-up ecosystem has witnessed remarkable growth over the past three decades (Tripathi *et al.*, 2019), emerging as a core driver of economic growth and innovation. These fast-growing organisations possess the capacity to revolutionise industries and reshape the global economy. Within these dynamic ventures, human capital (HC) constitutes the foundation of organisational success (Colombo and Grilli, 2005; Atkinson, 2007). Viewed through the resource-based view (RBV), HC represents the most valuable, rare, inimitable and non-substitutable (VRIN) resource available to firms (Barney, 1991; Nason and Wiklund, 2018). However, managing HC effectively presents significant challenges for early-stage ventures (Cardon and Stevens, 2004; Barrett and Mayson, 2008; Gjerløv-Juel and Guenther, 2019; Eisenmann, 2020; Choi *et al.*, 2023; Rocha and Grilli, 2024). Research indicates that most start-up failures stem from internal difficulties, particularly team management and retention issues (Unger *et al.*, 2011; CB Insights, 2021), and firms in their early stages exhibit substantially higher exit rates than established organisations (Zacharakis *et al.*, 1999; Santarelli and Vivarelli, 2007; Marmer *et al.*, 2011; Eisenmann, 2021). These patterns underscore the strong correlation between HR investment and start-up success (Pfeifer, 2022; Van Lancker *et al.*, 2022) and confirm that effective human resource management (HRM) significantly impacts organisational performance (Cardon and Stevens, 2004; Chatterji *et al.*, 2019; Jiang *et al.*, 2012; Messersmith and Wales, 2011).

From a contingency theory perspective, the unique characteristics of early-stage start-ups require HRM approaches that differ fundamentally from those employed by established firms (Dyer and Reeves, 1995; Wood, 1999; Atkinson, 2007; Lai *et al.*, 2016; Delery and Roumpi, 2017). This theoretical framework demonstrates that HRM effectiveness is contingent upon both internal organisational dynamics and external factors. For early-stage start-ups, these contingencies are the resource constraints, growth requirements and the need to sustain organisational expansion.

Despite the critical importance of HRM in start-ups, research examining human resource practices in early-stage ventures remains limited (Baron, 2003; Cardon and Stevens, 2004; Messersmith and Wales, 2011; Nyström, 2021; Pfeifer, 2022; Van Lancker *et al.*, 2022). Existing work has established a link between HRM and organisational performance; however, it focuses predominantly on established start-ups or mature small and medium enterprises (Huselid, 1995; Tocher and Rutherford, 2009; Barrett and Meyer, 2010; Guest, 2011). This leaves an underexamined question at the formative stage: how organisations in their earliest years develop, adapt and implement HR practices (Katz *et al.*, 2000; Leung *et al.*, 2006; Atkinson, 2007; Sheehan, 2014; Lai *et al.*, 2016; McClean and Collins, 2019; Antcliff *et al.*, 2021; Harney and Alkhalaf, 2021; Ulvenblad and Barth, 2021; Meurs *et al.*, 2025), and how they manage the persistent tension between rising HR demand and their organisational capacity. Similar capability tensions in small organisations have increasingly been addressed through externalised and shared executive arrangements across functions such as finance, technology and operations (Kratzer *et al.*, 2022; So and Teckchandani, 2023). The application of this logic to HRM remains underexplored, despite long-standing recognition in the outsourcing literature that the timing and design of external HR access can shape organisational performance trajectories (Klaas *et al.*, 1999; Sim *et al.*, 2023; Xiao *et al.*, 2024).

The outsourcing HR literature is divided on whether external arrangements strengthen or dilute the HR function, with evidence that they can reduce fixed costs and provide timely access to specialised expertise (Cooke *et al.*, 2005), but can also produce coordination loss and weaken alignment with organisational identity in the longer term (Cooke *et al.*, 2004). This tension makes fractional HRM an important alternative phenomenon for understanding how start-ups adapt HR practices under resource constraints, especially at their formative stages. Drawing on the intersection of RBV and contingency theory, this study addresses that question through the lens of fractional HRM understood as part-time, on-call or project-based access to specialised HR expertise. We extend the outsourcing HRM logic (Klaas *et al.*, 1999; Cooke *et al.*, 2005; Sheehan, 2014; Abdul-Halim *et al.*, 2016) and apply it as fractional management in the HR domain. Accordingly, we pose three integrated research questions:

RQ1. How do early-stage start-ups strategically develop and adapt their human capital management practices within resource constraints, particularly in the hiring, onboarding, development and retention phases?

RQ2. What specific organisational contingencies influence HRM practices in early-stage start-ups, and how do these contingencies shape practice development and implementation?

RQ3. How do early-stage start-ups envision addressing the capability gaps between their current HR practices and acknowledged needs?

These questions are addressed through an abductive, exploratory investigation that combines literature analysis with qualitative interviews with founders and employees. Emerging patterns in our data suggest that fractional HRM may be particularly suitable for resource-constrained ventures, for example, those at their formative stages. The remainder of the paper proceeds as follows. Section 2 sets out the theoretical framework, integrating the RBV and contingency theory and locating fractional executive arrangements within the broader literature on externalised capability access. Section 3 describes the multiple case study design and the Gioia-based analytical procedure. Section 4 reports findings organised around the four core HRM domains, supplemented by early-hire employee perspectives. In Section 5, we discuss the theoretical contributions, specify the boundary conditions under which the fractional HRM approach holds, identify implications for practice and orient future directions. In Section 6, we conclude the study.

2. Background

2.1 Theoretical framework

The emergence and evolution of organisations rest on the relationship between opportunity recognition and resource orchestration, with HC serving as a critical mediating mechanism linking the two (Muñoz-Bullon *et al.*, 2015; Yi, Amenuvor and Boateng, 2021; Howell *et al.*, 2022). Organisational success depends not only on identifying opportunities but also on the systematic development and deployment of HC resources to act on them (Leung *et al.*, 2006; Colombo and Grilli, 2010). These relationships operate through interdependent mechanisms in which initial HC investments create trajectories that shape subsequent organisational development and competitive positioning (Eisenhardt and Schoonhoven, 1990; Davila, 2005; Davila and Foster, 2007; Brymer and Rocha, 2024). What is contested in the literature is not whether HC matters but how the relationship between HC and organisational outcomes is theorised, particularly in settings where the firm itself is too young to possess the stable resource base that strategic HRM research typically presumes. These mechanisms have been most systematically theorised through the RBV, which treats HC as a stock of firm-specific assets whose strategic value depends on rarity, inimitability and organisational embeddedness (Barney, 1991; Nason and Wiklund, 2018). Strategic HRM theory builds on these RBV perspectives, conceptualising practices within a system of employment relationship management (Jiang *et al.*, 2012; Boon *et al.*, 2019; Meurs *et al.*, 2025) and positioning people as the primary strategic resource within the employment relationship (Boxall, 1996; Boxall and Purcell, 2022). RBV thus became the dominant theoretical lens for HRM and HC studies and was subsequently extended to account for outsourced and external HRM arrangements (Barney, 1991; Ulrich, 1996; Xiao *et al.*, 2024). Its core assumptions, however, have been contested. Delery and Roumpi (2017), for instance, observe that RBV functions more as an organising backdrop in strategic HRM research than as a theory directly tested by it, and they argue that HRM does not generate competitive advantage directly but performs an embedding role within it. Gerhart and Feng (2021) raise further questions about whether the VRIN conditions can be met at the firm-specific level when viewed through the RBV lens. Boon *et al.* (2019), in a similar way, highlight the inconsistencies in HRM systems research and propose alternative theoretical combinations to explain strategic HRM. Taken together, these critiques and the shifting empirical landscape of HRM itself point to the value of integrating RBV with a complementary theoretical perspective, an approach recently suggested by Hutchings *et al.* (2024). We therefore complement the RBV with contingency theory (Delery and Doty, 1996; Morgan, 1999; Lengnick-Hall *et al.*, 2009), which has long emphasised that the effectiveness of organisational practices depends on alignment with internal characteristics and external conditions. Where RBV explains why HC matters strategically, contingency theory explains when and under what structural conditions particular approaches to managing that capital become viable. This distinction is particularly important for early-stage ventures, where organisational needs evolve rapidly and formalised internal HR structures often remain underdeveloped. Within this framework, the established HRM literature distinguishes four core HRM dimensions: hiring (strategic recruitment and selection), onboarding (cultural and process integration), development (capability enhancement through training and performance management) and retention (sustained engagement through compensation and work environment design) (Dess and Lumpkin, 2003). These four dimensions function as sensitising categories that structure data collection, while leaving open the question of how the underlying practices are configured in resource-constrained settings, a question to which the analysis returns through the construct of fractional HRM developed later in the study.

2.2 Human capital and HRM in start-ups

2.2.1 Strategic role of founding teams. Entrepreneurship research has progressively displaced the individual-founder model with team-based accounts of venture emergence (Beckman, 2006; Klotz *et al.*, 2014), although the displacement is empirical rather than paradigmatic, and the relative explanatory weight of individual founder characteristics vs team-level configurations remains an active line of inquiry (Howell *et al.*, 2022). The shift reflects accumulating evidence that organisational outcomes under uncertainty are produced by collective rather than individual entrepreneurial action, and that the influence of founding teams operates as a central mechanism shaping organisational trajectories during formative stages (Ucbasaran *et al.*, 2008; Muñoz-Bullon *et al.*, 2015). Team formation processes represent a crucial theoretical mechanism linking initial conditions to subsequent organisational outcomes. The composition of founding teams reflects both deliberate strategic choices and processes, incorporating varied combinations of knowledge, skills and competencies. Colombo and Grilli (2010) demonstrate how specific combinations of complementary capabilities within founding teams generate synergistic effects that exceed the sum of their individual contributions. Moreover, founders typically face the "liability of newness" when hiring and composing their initial team. They usually draw on their existing social capital through shared past experiences and recruit through affiliation-based hiring (ABH), whereas, in some cases, founders bring prior expertise that helps them overcome this liability (Gjerløv-Juel and Guenther, 2019). These founding team dynamics create unique challenges for HRM practices in start-ups, particularly as organisations transition from founder-centric to more structured organisational forms.

2.2.2 HRM challenges in early-stage ventures and fractional arrangements. The structural configuration of founding teams in early-stage start-ups presents unique theoretical considerations. Despite formal role assignments, team members typically engage in multiple functional areas, a pattern that contrasts sharply with specialised role structures in established organisations (Pratiwi *et al.*, 2018). Contemporary research indicates that the emergence and complexity of HRM challenges correlate more strongly with organisational growth trajectories than organisational age (Rutherford *et al.*, 2003; Tocher and Rutherford, 2009). This finding challenges traditional life-cycle models of organisational development and suggests the need for more dynamic theoretical frameworks that capture the temporal evolution of HC development in start-ups (Choi *et al.*, 2023). Empirical evidence demonstrates this complexity, with internal factors being critical determinants of start-up outcomes. Research suggests that internal factors contribute to the majority of start-up failures (Marmer *et al.*, 2011). The integration of early employees represents a critical phase in organisational development, and their departure can affect organisational performance as significantly as a founder's departure (Gjerløv-Juel and Guenther, 2019; Choi *et al.*, 2023). This finding underscores the need for theoretical models that account for the distinctive characteristics of early-stage HC development, particularly regarding core HR practices. These conditions create a specific access problem. Early-stage ventures require strategic HRM expertise of a kind that mainstream theory presumes is in-house, but their resource base cannot sustain the senior, permanent appointments through which such expertise is conventionally delivered (Cardon and Stevens, 2004; Rocha and Grilli, 2024).

Resource-constrained organisations have responded to this expertise-access problem by developing fractional arrangements, in which experts serve multiple organisations on a part-time, retained basis rather than as full-time employees of any one organisation. The construct has emerged unevenly across functional domains. Early formulations situated fractional roles in academic labour markets, where the part-time, multi-employer pattern was first systematised (Birnie *et al.*, 2005; Gatrell, 2007). Subsequent work extended the logic to information systems leadership through the fractional Chief Information Officer (Kratzer *et al.*, 2022), and to senior executive roles across functional domains more generally (So and Teckchandani, 2023). A related stream of research on HR outsourcing examines arrangements in which discrete HR functions are outsourced on a transactional basis, typically without the integrated, ongoing engagement that defines fractional executive work (Klaas *et al.*, 1999; Sim *et al.*, 2023; Xiao *et al.*, 2024). The fractional executive literature converges on a core definition: an arrangement that differs from project-based consulting by sustaining ongoing organisational involvement and from full-time employment by sharing the cost of senior expertise across organisations whose individual scale would not support an in-house equivalent (Kratzer *et al.*, 2022; So and Teckchandani, 2023). The literature is less developed regarding the structural conditions under which the construct travels well across functional domains. Fractional arrangements have been theorised for functions in which senior work is substantially advisory, episodic and project-bound, conditions under which the part-time presence of an experienced executive is sufficient to add value. HRM presents a different mix of conditions. Some HR activities are strategic and episodic, including recruitment and training. Others, including day-to-day employee relations, the cultural integration of new hires and ongoing compliance, are continuous and contextually embedded (Boxall and Purcell, 2022).

3. Methodology

3.1 Research design

Our research design follows a qualitative multiple case study strategy to examine HRM practices in early-stage start-ups (Yin, 2009). This methodology enables detailed analysis of organisational practices in their operational context while facilitating the systematic identification of cross-case patterns (Beach and Pedersen, 2016). Our research design is abductive (Dubois and Gadde, 2002), moving iteratively between prior theoretical knowledge and empirical discovery. RBV and contingency theory served as sensitising frameworks that guided initial attention during data collection, while analytical categories emerged and evolved through iterative engagement with the data.

Figure 1 illustrates the iterative research process integrating sampling decisions with analytical progression. This design enabled systematic refinement of both case selection and analytical categories across distinct data-collection phases, thereby addressing the inherent tension between theoretical sensitivity and openness to emergent findings characteristic of abductive research.

3.2 Sample and data collection

For this investigation, we operationalise early-stage start-ups as ventures in the initial growth phase, characterised by resource constraints, evolving organisational structures and emerging market presence, as indicated empirically by founding within the past decade and headcounts ranging from fewer than 10 to fewer than 100 employees. Our sampling strategy used maximum variation sampling (Patton, 2015). This method deliberately seeks cases that differ across theoretically relevant dimensions to identify common patterns that transcend contextual variation. The rationale for seeking variation was not to systematically compare contexts, but rather to strengthen the transferability of emergent patterns by demonstrating

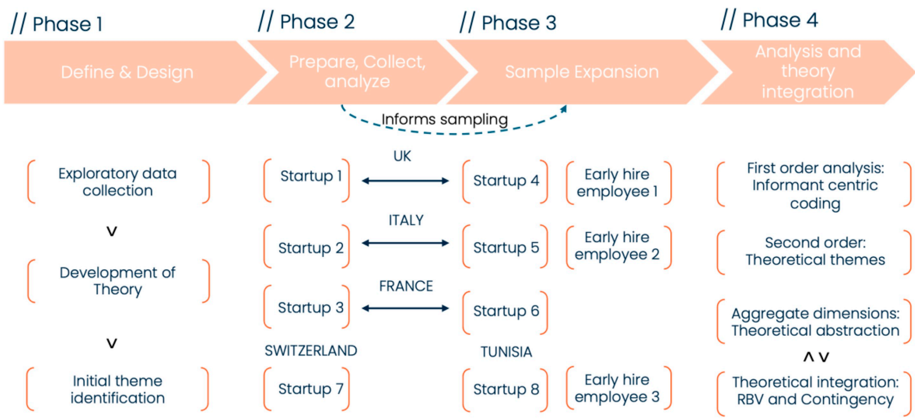

Figure 1. Iterative research design framework

Source Authors' own work

their recurrence across heterogeneous settings. When patterns appear consistently across contexts, confidence in their broader applicability increases (Miles *et al.*, 2014).

3.2.1 Exploratory phase. The first author conducted initial exploratory interviews with founders from ventures accessible through professional networks. These conversations were documented through detailed field notes. This method, while limiting *verbatim* quotations, facilitated naturalistic dialogue and enabled deeper rapport with participants who hesitated to participate in recorded discussions of sensitive organisational matters. Following each interview, the first author systematically organised the observations, identifying emergent themes related to HR challenges, resource allocation decisions and founders' experiences managing early-stage teams. This exploratory phase served a dual purpose: identifying preliminary thematic categories warranting deeper investigation and informing subsequent sampling decisions regarding which contextual variations might illuminate the phenomenon under study.

3.2.2 Maximum variation sampling expansion. Building on the initial themes identified in the exploratory phase, the second author expanded the sample using maximum variation sampling logic. Specifically, we sought variation across three dimensions identified as potentially consequential from the exploratory phase and from extant literature: geographical and regulatory context (France, Italy, Switzerland, Tunisia and the UK), industry sector (software, food and beverage, green infrastructure, electric mobility and energy, art and printing) and organisational maturity as indicated by founding year (2014–2022) and current employee count (5–100). Interviews in this expansion phase were audio-recorded and transcribed *verbatim*, providing richer evidentiary material for subsequent analysis.

Through this iterative process, we selected eight cases across five countries (Table 1). Data were collected in 2023–2024 through semi-structured interviews with two stakeholder groups: founders/CEOs ($n = 8$) and early-hire employees ($n = 3$). Supplementary interviews with employees enabled triangulation and the extension of findings from founder-centric interviews. Two early-hire employees were selected from primary sample organisations (I7 and I5). Additionally, one participant (EXT-E) was included as a case representing the medical equipment manufacturing sector, which presented distinct regulatory and operational HR demands. Interviews lasting 30–60 min followed a semi-structured protocol (see Appendix 1) combining questions addressing core HRM dimensions with open-ended exploration of participants' experiences. Tables 1 and 2 present descriptive characteristics of participants.

3.3 Data analysis

Our analysis followed Gioia *et al.*'s (2013) systematic procedures for qualitative data analysis, designed to ensure transparency and enable readers to evaluate the evidentiary basis for our theoretical claims. The procedure progresses through three abstract phases of coding, moving from informant-centric first-order concepts to second-order themes and then to aggregate dimensions, with constant comparison within and across cases at each phase.

Although the procedure identifies themes at the second-order stage, its analytical logic differs from reflexive thematic analysis as articulated by Clarke and Braun (2017). We follow Gioia *et al.*'s (2013) structured, abductive procedure designed for theory building rather than for the interpretive identification of cross-cutting patterns. Consistent with our abductive design, the four core HRM dimensions (hiring, onboarding, development and retention) provided an organising structure for the initial data. However, we remained attentive to unexpected themes and allowed conceptual categories to evolve through iterative engagement with the data, before mapping the emergent patterns back onto the four

Table 1. Descriptive characteristics of start-up founders, Group A ($n = 8$)

Organisation	Current employee (2024)	Founders at the start	Founded year	Industry	Country	Interviewee role
I1	24	2	2017	Software	United Kingdom	CEO
I2	2–5	1	2015	Art and printing	United Kingdom	CEO/Founder
I3	94	2	2014	Software	France	CEO
I4	70	2	2019	Electric mobility and energy	France	President
I5	6	3	2020	Green infrastructure	Tunisia	CEO
I6	10	3	2019	Software	Switzerland	COO and Co-founder
I7	5 (+ 3 seasonal)	1	2022	Food and beverage	Italy	CEO
I8	5	2	2020	Food and beverage	Italy	President/Co-founder

Source(s): Authors' own work

Table 2. Descriptive characteristics of early-hire employees, Group B ($n = 3$)

Organisation	Current position	Entry position	Tenure(years)	Industry sector
I5-E	Ex employee	Sales and marketing intern	1–2	Green infrastructure
I7-E	Sales and marketing manager	Sales and marketing intern	2–3	Food and beverage
EXT-E	Head of manufacturing and operations	VP	2–3	Medical equipment manufacturing

Source(s): Authors' own work

sensitising HRM dimensions drawn from Dess and Lumpkin (2003). The complete data structure tree is provided in Appendix 2.

First-order concepts were identified through close reading of interview transcripts and field notes, grounded in informants' language and experiences. At this stage, we remained close to participants' own terminology rather than imposing theoretical labels prematurely.

Second-order themes involved examining relationships among first-order codes and grouping them into theoretically meaningful themes through the researcher's interpretation. This phase required iterative comparison of emerging patterns with the existing literature, moving from informant-centric descriptions towards more abstract conceptualisations. Through constant comparison within and across cases, we consolidated first-order codes into second-order themes. For example, when a founder stated that "*80% of the initial software developers were sourced from the previous company*" (I1), we coded this as "network-based hiring." Similarly, observations such as "*Initially, I handled everything HR-related myself… it was about survival and getting the basic processes right*" (I3) were coded as "founder-led HR management."

Aggregate dimension construction involved further abstraction to identify overarching theoretical dimensions organising the second-order themes. We identified four aggregate dimensions that capture the essential features of HRM in early-stage start-ups: (1) network-based resource orchestration, capturing how founders leverage relational capital to address HR functions despite formal resource limitations; (2) adaptive practices, reflecting how HR practices evolve in response to organisational growth and environmental feedback; (3) founder-centric knowledge transfer, encompassing how founders serve as primary mechanisms for capability development and organisational learning; and (4) formalisations, representing the ongoing tension between maintaining operational flexibility and introducing structured systems as ventures mature.

After determining the aggregate dimensions, we examined how the emergent dimensions connect to our sensitising theoretical frameworks. From an RBV perspective, the aggregate dimensions illuminate how early-stage start-ups develop and deploy HC to achieve competitive advantage despite lacking the formal HR infrastructure of established organisations. Network-based resource orchestration represents founders' efforts to access valuable HC through social relationships when market-based acquisition proves impractical. Founder-centric knowledge transfer reflects efforts to develop capabilities through experiential learning and direct mentorship that competitors cannot easily replicate. Contingency theory provides complementary explanatory power by highlighting how the effectiveness of specific HR practices depends on alignment with internal organisational characteristics and external environmental conditions. Adaptive practices reflect ventures' ongoing calibration of HR approaches to fit evolving organisational circumstances, while formalisations capture the contingent nature of optimal HR structuring across different growth stages. The cross-case variation in how ventures experienced these dimensions suggests that no universal "best practice" exists; instead, effective HRM in early-stage start-ups requires configuring practices to specific organisational contingencies, including founder experience, industry demands and growth trajectory.

4. Findings

We present our findings organised around the four core HRM dimensions identified in our theoretical framework (hiring, onboarding, development and retention), which served as the sensitising domains within which data were collected. Within each HRM dimension, we trace how the four aggregate dimensions (network-based resource orchestration, adaptive practices, founder-centric knowledge transfer and formalisations) emerged from the data and operated across cases.

4.1 Founders' strategic HR orchestration

4.1.1 Hiring. Early-stage ventures predominantly employ network-based approaches to talent acquisition, with ABH emerging as a strategic response to resource constraints (see Table 3). At I1, "*80% of the initial software developers were sourced from the previous company, with the remaining 20% being recruited through employee referrals*." Their selection criteria required "*high performing people without too much experience in the previous company*," demonstrating how prior organisational relationships influence early hiring decisions. The founder's prior experience emerged as a critical factor in shaping hiring approaches, particularly in overcoming the liabilities of newness. This is demonstrated across ventures. I3 opted for external platforms such as Stack Overflow [1] and Talent.io [2] but faced unique challenges, noting they occasionally felt *"embarrassed when interviewing brilliant candidates"* due to modest initial office conditions, highlighting how resource constraints shape early hiring strategies. Our analysis reveals systematic adaptation in hiring practices as ventures evolve. I5 demonstrates this evolution: after unsuccessful attempts with traditional job boards, they concluded, "*we were not focusing on the correct target audience*". They then shifted to social media channels to reach "*young individuals who are already intrigued by their product*." Table 3 presents a detailed analysis of hiring practices across our sample.

4.1.2 Onboarding. Early-stage start-ups exhibit adaptive integration patterns that differ from traditional approaches. Drawing on Bauer's (2010) framework of the four Cs (Compliance, Clarification, Culture and Connection), we noted that start-ups often prioritise specific components while forgoing others due to immediate operational needs and resource constraints. Founder experience shapes onboarding approaches. Ventures adopting ABH usually demonstrated less formal onboarding processes, as pre-existing social connections facilitated natural integration. As I4 noted, "*After the first employees, we have learned what we needed and changed the structure a bit, for example, moving to the bigger central office*."

Some ventures demonstrated evolution in their onboarding practices as they matured. At I7, the definition of onboarding itself became fluid, often conflating with trial periods that serve both evaluative and integrative functions. This approach manifested in varying trial period lengths: "*a year-long trial term was chosen to assess the new hire's performance and motivation both during periods of increased workload […] and periods of decreased workload*."

Table 4 presents a detailed analysis of onboarding practices across our sample, highlighting how ventures approach each component of Bauer's framework and the adaptations they subsequently make. The effectiveness of these diverse approaches depends on factors such as the venture's growth stage, industry context and the founding team's prior experience, suggesting a more nuanced view of onboarding requirements in entrepreneurial settings than previously acknowledged in the literature.

4.1.3 Development. Development practices in early-stage ventures typically evolve along two primary dimensions: the formalisation of learning processes and the source of knowledge transfer (internal vs external). As articulated by I2's founder, "*I train the employees on the work, and this gives direct hands-on experience*," in a structure where founder availability substitutes for formal training infrastructure. This observation aligns with previous research suggesting that informal learning mechanisms dominate in entrepreneurial settings (Jebali and Meschitti, 2020; Melenchion *et al.*, 2023). It reveals a temporal dimension to development practices, with more mature ventures eventually

Table 3. Cross-case summary for hiring

Hiring	Primary sourcing method	Secondary sourcing method	Decision makers	Interview process	Unique challenges	Adaptations
I1	Internal network	Employee referrals	Founders	Casual, gut feeling	None	None
I2	Internal and external	ABH	Founder	Casual, talent and technical	Location	Freelancing
I3	External platforms	None	Two founders	Two-stage: technical test and face-to-face interview	Resource constraints, losing candidates to larger firms	Focused on candidates aligned with their vision
I4	External and ABH	External platforms	Founders	Various, depending on the position	Fresh graduates and a lack of experience	Focused on the experience
I5	Job board (initially)	ABH	Three founders, advised by an experienced CEO	Structured, advised by an expert	Wasted time, wrong target audience	Shifted to social media channels for future hires
I6	External platforms	Outsourcing	Founders	Two-stage: screening (cultural fit) – technical test	On-demand skills and attracting those employees	Attractive package and flexibility
I7	ABH job board (initially)	Outsourcing ABH	Founder and investor	Two-stage: phone call and face-to-face meeting, structured, advised by an expert	Lack of time, expertise, wasted time, wrong target audience	Used a mixed strategy depending on the role
I8	Internal	Referrals and self-recommendation	Founders	Casual	Experience and cultural/mission fit	Replan of the roles

Source(s): Authors own’ work

Table 4. Cross-case summary for onboarding

Onboarding	Compliance	Clarification	Culture	Connection	Overall strategy	Time to autonomy
I1	N/A	Not required	Yes, pre-established	Yes, pre-established	No formal onboarding; relied on existing mutual understanding among initial employees. Only started focusing on onboarding Six months ago	Immediate
I2	N/A	Yes, developed during the initial months	No, learned via experience	No, developed via challenges	No formal onboarding; relied on existing mutual understanding	Variable
I3	No, intentionally skipped and self-handled	N/A	No, learned via experience	No, developed via challenges	No formal initial setup; used the onboarding as a problem-solving test for new hires	Variable
I4	Yes, included in the first period	Yes, developed during the initial months	Both, pre-established and learned via experience	Yes, introduced via weekly meetings	No formal initial setup; used the onboarding as a problem-solving test for new hires. Forced connection through the need for community assistance	Variable (experienced hires were faster than the new graduates)
I5	Yes, included in the first period	Yes, developed during shadowing	N/A	Yes, introduced via weekly meetings	Comprehensive but informal; involved new hires in meetings and task assignments, achieving full integration in Three months	Within 3 months
I6	Yes, included in the first period	No, gained during trial	Both, pre-established and learned via experience	Yes, daily and weekly meetings	No formal: Previous experience in the corporate sector	Variable (but mostly immediate)
I7	N/A	No, gained during trial	N/A	N/A	No formal onboarding; used trial periods as an evaluation and role-clarification mechanism. Focused on assessing workload handling	After the trial period
I8	N/A	No, gained during the initial months	No, learned via experience	Yes, daily meetings and challenges	No formal onboarding; relied on existing mutual understanding	Variable

Source(s): Authors' own work

adopting more structured approaches. I3 noted, "*There was no incentive for career planning because they did not know if they would be a company after six months*," reflecting the precarious nature of early-stage ventures. This uncertainty creates a development paradox: the need for skill development is highest, yet formal investment in development is lowest due to resource constraints and survival priorities. The evolution of development practices appears to be influenced by both venture maturity and industry context. This manifested in different approaches to formalising training and development processes. As exemplified by I5: "*We plan to invest in the more formal training framework in the future*," highlighting a structured, forward-looking approach to development. This trajectory towards formalisation was approached differently by I4's founder, who implemented an international knowledge-sharing system: "*Experience is important, so as the learning, so we try to peer learn from the international peers in our team overseas*." These contrasting approaches demonstrate how ventures adapt their development practices to their growth stage and available resources, ranging from planning formal structures to leveraging existing international networks for knowledge transfer. This strategic divergence in approaches suggests that start-ups' development practices evolve not just linearly towards formalisation, but rather through distinct pathways shaped by their specific organisational contexts and resource configurations. In technically oriented ventures, this manifestation takes specific forms, as evidenced by I3's "Internal initiative", which began when "*Internal initiative covers a far larger range of issues, such as industry trends or a Lectio magistralis on one of the various internal tools*." Furthermore, the analysis suggests a significant difference between organisations' approaches to skill development and career development. While skill development often emerged organically through peer-to-peer interactions and practical experience, career development remained notably absent from early-stage strategic priorities. I1 reflected, "*We did not prioritise the career development initially, but later introduced structured learning sessions and skill/career development matrix*," indicating how immediate operational needs often supersede long-term development planning. Table 5 presents a detailed analysis of development practices across our sample, highlighting the varying approaches to skill development, knowledge transfer mechanisms and career development initiatives. Our findings indicate that, while early-stage ventures may recognise the importance of development, their approach is typically opportunistic, organised around learning opportunities as they emerge rather than around systematic programs.

4.1.4 Retention. Retention practices in early-stage ventures combined monetary and non-monetary mechanisms, with cultural alignment emerging as a critical determinant of employee retention. While existing literature emphasises compensation and job security as primary retention drivers (Rangrez *et al.*, 2022), our findings suggest a more nuanced reality in entrepreneurial settings, where mission alignment and cultural fit often overtake traditional retention mechanisms. Analysis demonstrates that retention strategies in early-stage ventures operate through distinct reward mechanisms, with both monetary and non-financial factors working in tandem but with varying emphasis across different organisational contexts. I6 emphasised attractive packages and flexibility: "*Everyone can be happy with bringing the results and getting paid for those works*," while I1 emphasised an emotional strategy: "*A co-worker was not someone to spend your time with only during office hours, but someone that you considered as one of your best friends, and that you would want to meet also outside of work*." Our data reveals a strong connection between hiring practices and retention outcomes. At I1's experience, since its foundation, it has placed greater emphasis on community development, and the initial selection of culturally aligned employees has significantly influenced long-term retention. This observation extends previous theoretical frameworks by highlighting how early-stage ventures leverage cultural

Table 5. Cross-case summary for development

Development	Skill development	External vs internal learning	Career development	Changes after the early stage
I1	Formal (internal learning sessions)	Internal (employee-led sessions)	Not prioritised	Introduced structured learning sessions and skill/career development matrix
I2	Informal, hands-on working experience with the founder	None	Not prioritised	Plans to take the lead by the employees and their initiatives
I3	Informal, done through exchanges between employees	None	Not prioritised	Introduced "internal initiative" and expanded it to include diverse topics
I4	Informal, project-based, formal, international teams	New CEO, and both internal and external learning	Prioritised	Structural change and structured international peer-to-peer training
I5	Formal, participation in community workshops	External (community workshops)	Not prioritised	Plans to invest in formal training in the future
I6	Informal, sales department, formal, technical	None	Not prioritised	Plans to have a structured peer learning approach in the future
I7	Formal, training on machinery. Informal for the sales department	External (technician-led training)	Not prioritised	Nothing planned in the future
I8	Informal, hands-on working experience with the founders	Internal (done through the founder)	Not prioritised	Planned change of positions and introduction of new ways of working

Source(s): Authors' own work

fit as both a selection criterion and retention mechanism. The evolution of retention strategies appears to follow distinct patterns based on venture maturity and founding context. I3's approach to retention was deeply rooted in what one founder described as "*a small tech company trying to find its place in a niche market*." Similarly, I5's experience demonstrates how mission-driven motivation can serve as a powerful retention tool, with them noting, "*The primary driver for employee motivation lies in the start-up's future potential*."

Furthermore, our analysis revealed varying approaches to equity compensation across ventures. While some, like I1, evolved from simple hourly compensation to include equity options, others maintained a focus on competitive salaries or impact-based motivation. As I4 reflected, "*We used to offer the stock options at our initial stage, but employees want something other than the stock options, so we restructured that approach when we grew*," indicating how compensation strategies mature with venture growth. Table 6 presents a detailed analysis of retention practices across our sample, highlighting the varying approaches to core motivational factors, key retention strategies and compensation approaches. The data suggests that successful retention in early-stage ventures often results from aligning three key elements: cultural fit, mission engagement and appropriate compensation structures.

Table 6. Cross-case summary for retention

Retention	Core motivational factor	Key retention strategies	Other factors	Compensation strategy
I1	Sense of community	Company getaways, social rituals, and the founder's influence	Emotional investment, strong founder presence	Initially hourly, now includes equity options for senior employees
I2	Products and the experience	Learning experience	Emotional investment, strong founder presence	Fair compensation, independent schedules
I3	Innovation and competition	Product allure, challenging larger competitors	Product-centric, early employee alignment	Typical entry-level salaries, equity introduced later as a recognition
I4	Scalable industry and pride	High growth, founders' view	Stock options, central office, funding rounds	Competitive salary, shares, and stock options
I5	Impact	Focus on scaling impact, positive work environment	Environmental relevance, small but committed team	Fair compensation, no formal structure yet
I6	Understanding the needs of the employees' working preferences	Competitive salaries, impact, and product	Flexibility	Competitive salary, stock options
I7	Financial compensation	Competitive salaries, trial periods for capability assessment	Individual responsibility, potential for shares in future	High salaries for the local area, considering equity after fundraising
I8	Sustainable impact and "game-changer mindset"	Start-up hustle culture, sustainability focus	Stock options, learning experience	Various types of contracts, share and stock options, paid and unpaid internships

Source(s): Authors' own work

4.2 Early-hire employee perspectives: supplementary interviews

To assess the validity of founder-reported practices and to explore employees' experiences with these approaches, we conducted supplementary interviews with three early-hire employees (see Table 7). Two were selected from primary sample organisations (I7 and I5) to enable triangulation of founder accounts. One participant from EXT-E, a medical equipment manufacturing start-up outside our primary sample, was purposefully included to probe whether emerging patterns regarding HR support needs extended beyond our sampled contexts (Yin, 2009). We emphasise that these employee perspectives serve a triangulating and probing function rather than constituting a separate analytical strand; the limited employee sample size precludes systematic employee-level analysis, which we identify as a priority for future research.

Early-hire employees' perspectives confirmed three distinct patterns in their experiences of HR practices in early-stage ventures. First, legitimacy-building occurs primarily through network-based mechanisms, in which founder expertise compensates for formal structural deficiencies. Second, capability transfer emerges through direct founder–employee interactions, creating an apprenticeship model of skill development. Third, resource needs evolve from informal to structured support systems as ventures grow. Network-based recruitment with informal assessment procedures proved effective despite the lack of structured protocols, as demonstrated at I7. The structured trial period, with clear performance metrics, provided mechanisms for evaluation. Retention was supported by attractive compensation and close connections with founders. At I5, affiliate-network recruitment led to intensive mentorship through daily interactions with founders, enabling

Table 7. Cross-case summary for early-hire employees

Early-hire employees	Recruitment	Onboarding and professional development	Retention	HR need
I7-E	Network-based recruitment with informal assessment procedures; demonstrated effectiveness despite lack of a structured protocol	Structured trial period with clear performance metrics and deliverable comprehension	Attractive compensation, the company culture, a close network, and a connection with the founders	Current HR needs minimal post-integration; potential value in systematising founder-level recruitment processes
I5-E	Affiliate-network recruitment; informal selection process	Intensive mentorship model via daily founder interactions; hands-on skill development	Career advancement opportunities are available but lacking formal structure; emphasis on experiential learning	HR support is critically needed during the onboarding and development phases, despite the part-time status
EXT-E	Informal recruitment process; structured assessment criteria were not in place at the time of the interview	N/A	N/A	External HR consultation is explicitly recommended for optimising the recruitment phase

Source(s): Authors' own work

hands-on skill development despite HR support being part-time. Career advancement opportunities existed but lacked formal structure, emphasising experiential learning. The employee identified specific challenges, including a lack of HR expertise within hiring teams and bureaucratic complexity, indicating areas where external HR expertise could add value, particularly during recruitment phase optimisation. Across the three cases, the employee accounts converge on a single observation that founder accounts alone could not establish: the absence of formal HR support is experienced not as an organisational limitation but as a developmental opportunity at the early-employee level, until the volume or technical complexity of HR-relevant decisions exceeds founder capacity.

5. Discussion

5.1 General discussion

In this study, we investigated HC and HRM practices in early-stage start-ups, yielding several important theoretical and empirical insights. Our findings confirm previous research indicating that resource constraints significantly impact HR practices in start-ups (Bamberger *et al.*, 1989; Cardon and Stevens, 2004; Messersmith and Wales, 2011; Brymer and Rocha, 2024; Roach and Sauermann, 2024; Rocha and Grilli, 2024). Specifically, we found that early-stage start-ups face consistent resource constraints (Davila and Foster, 2007; Barrett and Mayson, 2008), particularly in investing in full-time HR personnel. We propose fractional HRM as an alternative approach to managing this constraint. The theoretical contribution of this study lies in establishing the necessity of HC for start-ups in their formative stages (Ulvenblad and Barth, 2021) and showing how this necessity creates fundamental organisational tensions. From an RBV perspective, our findings demonstrate that HC constitutes the most VRIN resource available to nascent ventures. The four aggregate dimensions we identified (network-based resource orchestration, adaptive practices, founder-centric knowledge transfer and formalisations) collectively illustrate that without effective HC development, early-stage start-ups cannot execute their strategies, build sustainable competitive advantages or navigate the uncertainties inherent in nascent organisational contexts. The resource constraints these ventures face do not diminish the strategic importance of HC; rather, they amplify it, as the consequences of talent acquisition failures, integration difficulties and retention challenges are absorbed by a workforce so small that single departures function as systemic shocks rather than routine turnover.

Complementarily, contingency theory illuminates why these ventures require expertise from HR professionals despite their resource constraints. Our empirical evidence reveals that the effectiveness of HR practices in early-stage start-ups depends critically on alignment with evolving internal organisational characteristics and external environmental conditions. The four aggregate dimensions demonstrate that founders consistently encounter HR challenges that exceed their functional expertise: network-based hiring eventually reaches network saturation, adaptive practices require systematic evaluation to distinguish productive adaptations from reactive improvisation, founder-led knowledge transfer creates bottlenecks as organisations scale and formalisation decisions demand expertise in balancing flexibility with structure. These contingency-dependent challenges establish the theoretical foundation for why specialised HR professionals become necessary, not merely beneficial, as ventures mature beyond their earliest stages.

5.2 Theoretical contributions and boundary conditions

5.2.1 HRM theory in early-stage firms. First, it advances HRM theory in early-stage firms by providing a concept-grounded account of how nascent ventures develop and adapt people-management practices in domains where the established-firm HRM literature has limited explanatory reach. The four aggregate dimensions identified through our analysis (network-based resource orchestration, adaptive practices, founder-centric knowledge transfer and formalisations) collectively characterise a mode of HRM that is recognisably distinct from the practice configurations documented in mature organisations, and they specify what early-stage HRM theory must explain rather than assume (Cardon and Stevens, 2004; Van Lancker *et al.*, 2022).

5.2.2 Extensions to the RBV and contingency theory. Second, the study extends RBV and contingency theory by showing that their recognised assumptions operate differently in early-stage settings. The RBV's implicit assumption that HC is acquired through market transactions is empirically displaced by acquisition through relational and affiliation-based mechanisms (Leung *et al.*, 2006; Brymer and Rocha, 2024), with consequences for how the durability and inimitability of that capital should be theorised in nascent firms. Contingency theory's logic of strategic fit between practice and context operates reactively in our cases, through external feedback and post-hoc adaptation, rather than through pre-configured alignment. These departures are not refutations of either framework; they specify the conditions under which each requires modification.

5.2.3 Fractional HRM as an emergent theoretical approach. Third, it contributes to the emerging literature on outsourced, fractional and non-traditional executive roles by proposing fractional HRM as a new theoretical approach. While the primary aim of this study was to understand existing HR practice development in early-stage start-ups, a consistent theme emerged from participants' accounts: the recognition of capability gaps, coupled with resource constraints, that precluded the use of conventional solutions. Founders described the need for specialised HR expertise while acknowledging their inability to employ full-time HR personnel. This tension surfaced repeatedly across our sample, with multiple participants independently suggesting flexible, part-time outsourced HR support models.

We theorise this emergent concept, fractional HRM, drawing on established literature on fractional executive models (Birnie *et al.*, 2005; So and Teckchandani, 2023) and identifying characteristics specific to the HRM domain. Fractional management has been conceptualised as a cost-sharing arrangement that enables organisations to access high-level expertise through flexible, part-time engagement. Unlike traditional consulting, which typically involves project-based interventions, fractional arrangements emphasise ongoing organisational development and integration.

Our findings suggest several mechanisms through which fractional HRM might address capability gaps in early-stage ventures. Targeted expertise can be deployed during critical transitions, such as scaling from founder-only hiring to systematic recruitment, without requiring full-time employment commitment. The scalability of fractional arrangements aligns with the irregular growth patterns and cash flow fluctuations characteristic of start-up environments. Fractional HRM also offers a route to bridge the gap between informal founder-driven practices and formal systems without imposing the rigidity that founders in our sample feared.

5.2.4 Boundary conditions. We advance fractional HRM as an alternative approach that warrants further investigation rather than as an empirically validated solution. Our findings suggest that successful fractional HR practitioners would need tolerance for ambiguity, appreciation of resource constraints and ability to balance structure with flexibility, although these competencies require systematic testing. Moreover, our cases empirically sharpen the boundaries of the proposed approach. Three HRM domains emerge as well suited to fractional engagement. The first is hiring, where misdirected sourcing, discomfort in interviewing strong candidates from a position of resource modesty and reliance on external advisory input for role-specific recruitment all point to a function in which episodic expert engagement maps readily onto the work to be done. The second is onboarding, where ventures in our sample showed a recurring shift from idiosyncratic founder-led integration towards more deliberate architectures of induction and trial-period evaluation as growth pressures accumulated. The third is development, marked by the later introduction of skill and career development matrices, the construction of structured peer-learning systems across international teams and the anticipated investment in formal training frameworks. These three domains share a common structural feature: the senior expertise required is substantively advisory, design-oriented and bounded in time, and the part-time presence of an experienced practitioner is sufficient to add value.

The same cases delimit the domains in which fractional engagement is less likely to be viable yet. Retention in our sample was tightly bound up with founder presence, mission identity and the daily organisational life, and the relational continuity these elements require is not easily produced by an externally retained practitioner. Continuous employee-relations work and the regulatory attention required in technically specialised settings present a similar pattern, as confirmed by our supplementary employee interviews. These domains call for embedded, ongoing presence rather than retained advisory access, and the fractional HRM approach should not be extended to them without qualification. These patterns align with earlier research showing that transactional and project-bounded HR activities are more readily externalised than relational and continuous ones (Cooke *et al.*, 2005; Abdul-Halim *et al.*, 2016; Xiao *et al.*, 2024).

5.3 Practical implications

The findings carry several implications for practitioners. For founders and managers at early-stage ventures, our analysis suggests that network-based hiring approaches, while effective initially, may create limitations that become apparent only as ventures grow. Deliberate attention to diversifying talent pipelines, even before resource constraints ease, could mitigate later scaling challenges.

The formalisations we documented suggest that founders need not view the informal–formal transition as an all-or-nothing choice. Selective formalisation, introducing structure in some HRM dimensions while maintaining flexibility in others, may represent a viable middle path. Founders might consider which specific HR functions most benefit from systematisation vs which derive value from continued founder involvement.

For HR professionals seeking to serve start-up clients, our findings indicate that conventional HR frameworks require substantial adaptation for early-stage contexts. The assumption that greater formalisation corresponds to better practice, common in established-firm HR thinking, does not hold uniformly in resource-constrained environments. Adequate HR support for start-ups likely requires comfort with ambiguity and willingness to co-create practices alongside founders rather than implementing pre-existing solutions.

5.4 Limitations and future directions

Several limitations warrant acknowledgement. First, our sample size, although appropriate for exploratory qualitative research, limits the generalisability of the findings. The eight primary cases and three supplementary employee interviews provide depth but not breadth. Future research should test whether the patterns we identified replicate across larger and more diverse samples.

Second, the geographical scope of our study, encompassing France, Italy, Switzerland, Tunisia and the UK, may not capture HRM dynamics in other major start-up ecosystems. Asian and North American start-up environments, with their distinct institutional contexts and cultural orientations, represent important settings for comparative investigation.

Relatedly, although our sample captures variation across sectors, industries, regulatory contexts and founder experience profiles, the boundary conditions specified in the discussions are proposals whose validity beyond our sample requires further empirical testing.

Third, the cross-sectional nature of our data collection limits our ability to observe how HR practices evolve as individual ventures mature. Longitudinal designs following start-ups through successive growth stages would illuminate the temporal dynamics of practice development and formalisation.

Fourth, we acknowledge our positionality as researchers with prior exposure to fractional management concepts. While systematic analytical procedures were designed to guard against confirmation bias, our theoretical sensitisation may have influenced pattern recognition. Replication by researchers approaching the phenomenon from alternative theoretical vantage points would strengthen confidence in the findings.

Given these limitations, we propose several directions for future research. Longitudinal studies should examine the impact of fractional HRM on organisational outcomes, including financial performance, employee retention and innovation metrics. Implementation challenges across diverse contexts, including both organisational requirements and employee experiences, warrant investigation. The sustainability of fractional arrangements over time and their effectiveness from multiple stakeholder perspectives remain open questions.

Future work should expand the unit of analysis beyond the founder, examine how the boundary conditions hold across institutional contexts not represented in our sample (notably Asian and North American start-up ecosystems), and test the fractional HRM approach across HR domains we have not been able to examine in depth, including employee relations, organisational development and international HRM. Whether and how AI-mediated HR tools alter the cost-capability calculus that motivates the fractional HRM approach is a further question that the next generation of empirical work in this area will need to address. A parallel line of inquiry should investigate how team compositions and HR requirements co-evolve across growth stages, with particular attention to turnover rates and role transitions, since these dynamics determine when the fractional configuration ceases to be sufficient and an internalised HR function becomes warranted.

6. Conclusion

This study has addressed a significant gap in HRM studies regarding practices in early-stage start-ups. Through systematic qualitative analysis, we identified four aggregate dimensions that characterise how nascent ventures develop and adapt their human resource practices under resource constraints. These dimensions, which include network-based resource orchestration, adaptive practices, founder-centric knowledge transfer and formalisations, operated across the core HRM domains of hiring, onboarding, development and retention in ways that depart from patterns documented in established organisations.

Three theoretical contributions follow from this analysis. First, the four aggregate dimensions provide a concept-grounded characterisation of HRM in early-stage firms that does not reduce to a downward extension of established-firm theory. Second, the empirical patterns extend the RBV and contingency theory by specifying the conditions under which their canonical assumptions require modification: HC acquisition operates through relational mechanisms rather than market transactions, and practice-context fit emerges reactively through environmental feedback rather than through pre-configured alignment. Third, the recurrent identification of capability gaps that conventional HR solutions cannot address motivates the adoption of fractional HRM as an empirically grounded theoretical approach.

The emergence of fractional HRM as a potential alternative to conventional HR approaches addresses the tension between capability needs and resource constraints that founders and early-hire employees consistently identified. While this approach requires further empirical validation across settings, it offers a promising avenue for both scholarship and practice to address the distinctive HRM challenges that ventures face at the early stages.

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Ethics statement

Data were collected through semi-structured interviews conducted in 2023–2024 with consenting adult professionals (founders, CEOs and early-hire employees) regarding their workplace practices. At the time data collection commenced, Politecnico di Torino had not yet established a formal Research Ethics Committee, which was constituted by Rectoral Decree No. 90 on 30 January 2024. As such, no institutional ethics review was required or available at the outset of this study. All participants provided informed verbal consent prior to the interview, were advised of their right to withdraw at any time and were assured of anonymity. Data were anonymised throughout analysis and reporting, with participants identified only by coded references. Procedures were conducted in accordance with applicable data protection standards for research purposes.

Declaration of generative AI and AI-assisted technologies in the writing process

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Notes

[1.] https://stackoverflow.com/

[2.] www.talent.io/

References

Abdul-Halim, H., Che-Ha, N., Geare, A. and Ramayah, T. (2016), “The pursuit of HR outsourcing in an emerging economy: the effects of HRM strategy on HR labour costs”, *Canadian Journal of Administrative Sciences / Revue Canadienne Des Sciences de L’Administration*, Vol. 33 No. 2, pp. 153-168, doi: 10.1002/cjas.1370.

Antcliff, V., Lupton, B. and Atkinson, C. (2021), “Why do small businesses seek support for managing people? Implications for theory and policy from an analysis of UK small business survey data”, *International Small Business Journal: Researching Entrepreneurship*, Vol. 39 No. 6, pp. 532-553, doi: 10.1177/0266242620974586.

Atkinson, C. (2007), “Building high performance employment relationships in small firms”, *Employee Relations*, Vol. 29 No. 5, pp. 506-519, doi: 10.1108/01425450710776317.

Bamberger, P., Bacharach, S. and Dyer, L. (1989), “Human resources management and organizational effectiveness: High technology entrepreneurial startup firms in Israel”, *Human Resource Management*, Vol. 28 No. 3, pp. 349-366, doi: 10.1002/hrm.3930280305.

Barney, J. (1991), “Firm resources and sustained competitive advantage”, *Journal of Management*, Vol. 17 No. 1, pp. 99-120, doi: 10.1177/014920639101700108.

Baron, R.A. (2003), “Human resource management and entrepreneurship: some reciprocal benefits of closer links”, *Human Resource Management Review*, Vol. 13 No. 2, pp. 253-256, doi: 10.1016/S1053-4822(03)00016-0.

Barrett, R., and Mayson, S. (2008), “The formality and informality of HRM practices in small firms”, in R. Barrett and S. Mayson (eds.) *International Handbook of Entrepreneurship and HRM*, Edward Elgar Publishing Ltd, pp. 111-136, doi: 10.4337/9781848441224.00013.

Barrett, R. and Meyer, M. (2010), “Correlates of perceiving human resource management as a ‘problem’ in smaller firms”, *Asia Pacific Journal of Human Resources*, Vol. 48 No. 2, pp. 133-150, doi: 10.1177/1038411110368464.

Bauer, T.N. (2010), “Maximizing success”, *SHRM Foundation’s Effective Practice Guidelines Series*,

Beach, D., and Pedersen, R.B. (2016), “Causal case study methods: foundations and guidelines for comparing, matching, and tracing”, *Ann Arbor*, doi: 10.3998/mpub.6576809.

Beckman, C.M. (2006), “The influence of founding team company affiliations on firm behavior”, *Academy of Management Journal*, Vol. 49 No. 4, pp. 741-758, doi: 10.5465/amj.2006.22083030.

Birnie, J., Madge, C., Pain, R., Raghuram, P. and Rose, G. (2005), “Working a fraction and making a fraction work: a rough guide for geographers in the academy”, *Area*, Vol. 37 No. 3, pp. 251-259, doi: 10.1111/j.1475-4762.2005.00628.x.

Boon, C., Den Hartog, D.N. and Lepak, D.P. (2019), “A systematic review of human resource management systems and their measurement”, *Journal of Management*, Vol. 45 No. 6, pp. 2498-2537, doi: 10.1177/0149206318818718.

Boxall, P. (1996), “The strategic HRM debate and the resource-based view of the firm”, *Human Resource Management Journal*, Vol. 6 No. 3, pp. 59-75, doi: 10.1111/j.1748-8583.1996.tb00412.x.

Boxall, P., and Purcell, J. (2022), *Strategy and Human Resource Management*, Bloomsbury Publishing.

Brymer, R.A. and Rocha, V. (2024), “Affiliation-based hiring in startups and the origins of organizational diversity”, *Personnel Psychology*, Vol. 77 No. 1, pp. 23-52, doi: 10.1111/peps.12612.

Cardon, M.S. and Stevens, C.E. (2004), “Managing human resources in small organizations: what do we know?”, *Human Resource Management Review*, Vol. 14 No. 3, pp. 295-323, doi: 10.1016/j.hrmr.2004.06.001.

CB Insights (2021), “Why startups fail: top 12 reasons l CB insights”, CB Insights Research, available at: https://www.cbinsights.com/research/report/startup-failure-reasons-top/ (accessed 15 January 2024).

Chatterji, A., Delecourt, S., Hasan, S. and Koning, R. (2019), “When does advice impact startup performance?”, *Strategic Management Journal*, Vol. 40 No. 3, pp. 331-356, doi: 10.1002/smj.2987.

Choi, J., Goldschlag, N., Haltiwanger, J. and Kim, J.D. (2023), “Early joiners and startup performance”, *Finance and Economics Discussion Series*, No. 2023-012, pp. 1-70, doi: 10.17016/feds.2023.012.

Clarke, V. and Braun, V. (2017), “Thematic analysis”, *The Journal of Positive Psychology*, Vol. 12 No. 3, pp. 297-298, doi: 10.1080/17439760.2016.1262613.

Colombo, M.G. and Grilli, L. (2005), "Founders' human capital and the growth of new technology-based firms: a competence-based view", *Research Policy*, Vol. 34 No. 6, pp. 795-816, doi: 10.1016/j.respol.2005.03.010.

Colombo, M.G. and Grilli, L. (2010), "On growth drivers of high-tech start-ups: exploring the role of founders' human capital and venture capital", *Journal of Business Venturing*, Vol. 25 No. 6, pp. 610-626, doi: 10.1016/j.jbusvent.2009.01.005.

Cooke, F.L., Earnshaw, J., Marchington, M. and Rubery, J. (2004), "For better and for worse: transfer of undertakings and the reshaping of employment relations", *The International Journal of Human Resource Management*, Vol. 15 No. 2, pp. 276-294, doi: 10.1080/0958519032000158518.

Cooke, F.L., Shen, J. and McBride, A. (2005), "Outsourcing HR as a competitive strategy? A literature review and an assessment of implications", *Human Resource Management*, Vol. 44 No. 4, pp. 413-432, doi: 10.1002/hrm.20082.

Davila, A. and Foster, G. (2007), "Management control systems in early-stage startup companies", *The Accounting Review*, Vol. 82 No. 4, pp. 907-937, doi: 10.2308/ACCR.2007.82.4.907.

Davila, T. (2005), "An exploratory study on the emergence of management control systems: formalizing human resources in small growing firms", *Accounting, Organizations and Society*, Vol. 30 No. 3, pp. 223-248, doi: 10.1016/j.aos.2004.05.006.

Delery, J.E. and Doty, D.H. (1996), "Modes of theorizing in strategic human resource management: tests of universalistic, contingency, and configurational performance predictions", *Academy of Management Journal*, Vol. 39 No. 4, pp. 802-835, doi: 10.2307/256713.

Delery, J.E. and Roumpi, D. (2017), "Strategic human resource management, human capital and competitive advantage: is the field going in circles?", *Human Resource Management Journal*, Vol. 27 No. 1, pp. 1-21, doi: 10.1111/1748-8583.12137.

Dess, G.G., and Lumpkin, G.T. (2003), *Strategic Management: Creating Competitive Advantages*, McGraw-Hill/Irwin.

Dubois, A. and Gadde, L.-E. (2002), "Systematic combining: an abductive approach to case research", *Journal of Business Research*, Vol. 55 No. 7, pp. 553-560, doi: 10.1016/S0148-2963(00)00195-8.

Dyer, L. and Reeves, T. (1995), "Human resource strategies and firm performance: what do we know and where do we need to go?", *The International Journal of Human Resource Management*, Vol. 6 No. 3, pp. 656-670, doi: 10.1080/09585199500000041.

Eisenhardt, K.M. and Schoonhoven, C.B. (1990), "Organizational growth: linking founding team, strategy, environment, and growth among U.S. Semiconductor ventures, 1978-1988", *Administrative Science Quarterly*, Vol. 35 No. 3, pp. 504-529, doi: 10.2307/2393315.

Eisenmann, T.R. (2020), "Determinants of early-stage startup performance: survey results." rochester, NY: Social science research network", *SSRN Electronic Journal*, doi: 10.2139/ssrn.3725023.

Eisenmann, T.R. (2021), *The Fail-Safe Startup: Your Roadmap for Entrepreneurial Success*, Penguin UK.

Gatrell, C. (2007), "A fractional commitment? Part-time work and the maternal body", *The International Journal of Human Resource Management*, Vol. 18 No. 3, pp. 462-475, doi: 10.1080/09585190601167813.

Gerhart, B. and Feng, J. (2021), "The Resource-Based view of the firm, human resources, and human capital: Progress and prospects", *Journal of Management*, Vol. 47 No. 7, pp. 1796-1819, doi: 10.1177/0149206320978799.

Gioia, D.A., Corley, K.G. and Hamilton, A.L. (2013), "Seeking qualitative rigor in inductive research: notes on the Gioia methodology", *Organizational Research Methods*, Vol. 16 No. 1, pp. 15-31, doi: 10.1177/1094428112452151.

Gjerløv-Juel, P. and Guenther, C. (2019), "Early employment expansion and long-run survival", *Journal of Business Venturing*, Vol. 34 No. 1, pp. 80-102, doi: 10.1016/j.jbusvent.2018.05.005.

Guest, D.E. (2011), "Human resource management and performance: still searching for some answers", *Human Resource Management Journal*, Vol. 21 No. 1, pp. 3-13, doi: 10.1111/j.1748-8583.2010.00164.x.

Harney, B. and Alkhalaf, H. (2021), "A quarter-century review of HRM in small and medium-sized enterprises: capturing what we know, exploring where we need to go", *Human Resource Management*, Vol. 60 No. 1, pp. 5-29, doi: 10.1002/hrm.22010.

Howell, T., Bingham, C. and Hendricks, B. (2022), "Going alone or together? A configurational analysis of solo founding vs. cofounding", *Organization Science*, Vol. 33 No. 6, pp. 2421-2450, doi: 10.1287/orsc.2021.1548.

Huselid, M.A. (1995), "The impact of human resource management practices on turnover, productivity, and corporate financial performance", *Academy of Management Journal*, Vol. 38 No. 3, pp. 635-672, doi: 10.2307/256741.

Hutchings, K., Michailova, S., and Wilkinson, A. (2024), (eds.) *A Guide to Key Theories for Human Resource Management Research*, Edward Elgar Publishing, doi: 10.4337/9781035308767.

Jebali, D. and Meschitti, V. (2020), "HRM as a catalyst for innovation in start-ups", *Employee Relations: The International Journal*, Vol. 43 No. 2, pp. 555-570, doi: 10.1108/ER-03-2020-0140.

Jiang, K., Lepak, D.P., Hu, J. and Baer, J.C. (2012), "How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms", *Academy of Management Journal*, Vol. 55 No. 6, pp. 1264-1294, doi: 10.5465/amj.2011.0088.

Katz, J.A., Aldrich, H.E., Welbourne, T.M. and Wiliams, P.M. (2000), "Guest editor's comments special issue on human resource management and the SME: toward a new synthesis", *Entrepreneurship Theory and Practice*, Vol. 25 No. 1, pp. 7-10, doi: 10.1177/104225870002500102.

Klaas, B.S., McClendon, J. and Gainey, T.W. (1999), "HR outsourcing and its impact: the role of transaction costs", *Personnel Psychology*, Vol. 52 No. 1, pp. 113-136, doi: 10.1111/j.1744-6570.1999.tb01816.x.

Klotz, A.C., Hmieleski, K.M., Bradley, B.H. and Busenitz, L.W. (2014), "New venture teams: a review of the literature and roadmap for future research", *Journal of Management*, Vol. 40 No. 1, pp. 226-255, doi: 10.1177/0149206313493325.

Kratzer, S., Drechsler, A., Westner, M. and Strahringer, S. (2022), "The fractional CIO in SMEs: conceptualization and research agenda", *Information Systems and e-Business Management*, Vol. 20 No. 3, pp. 581-611, doi: 10.1007/s10257-022-00557-4.

Lai, Y., Saridakis, G., Blackburn, R. and Johnstone, S. (2016), "Are the HR responses of small firms different from large firms in times of recession?", *Journal of Business Venturing*, Vol. 31 No. 1, pp. 113-131, doi: 10.1016/j.jbusvent.2015.04.005.

Lengnick-Hall, M.L., Lengnick-Hal, C.A., Andrade, L.S. and Drake, B. (2009), "Strategic human resource management: the evolution of the field", *Human Resource Management Review*, Vol. 19 No. 2, pp. 64-85, doi: 10.1016/j.hrmr.2009.01.002.

Leung, A., Zhang, J., Wong, P.K. and Foo, M.D. (2006), "The use of networks in human resource acquisition for entrepreneurial firms: multiple 'fit' considerations", *Journal of Business Venturing*, Vol. 21 No. 5, pp. 664-686, doi: 10.1016/j.jbusvent.2005.04.010.

McClean, E. and Collins, C.J. (2019), "Expanding the concept of fit in strategic human resource management: an examination of the relationship between human resource practices and charismatic leadership on organizational outcomes", *Human Resource Management*, Vol. 58 No. 2, pp. 187-202, doi: 10.1002/hrm.21945.

Marmer, M., Herrmann, B.L., Dogrultan, E., Berman, R., Eesley, C. and Blank, S. (2011), "Startup genome report extra: premature scaling", *Startup Genome Report Extra: Premature Scaling*, pp. 1-56.

Melenchion, J.R., Kubo, E.K.M., Oliva, E.C. and Cohen, E.D. (2023), "People development in startups", *RAM. Revista de Administração Mackenzie*, Vol. 24 No. 2, doi: 10.1590/1678-6971/eramg230116.en.

Messersmith, J.G. and Wales, W.J. (2011), “Entrepreneurial orientation and performance in young firms: the role of human resource management”, *International Small Business Journal: Researching Entrepreneurship*, Vol. 31 No. 2, pp. 115-136, doi: 10.1177/0266242611416141.

Meurs, D., Born, M., Grift, Y., Lycklama à Nijeholt, M. and Schippers, J. (2025), “Informal human resource management and innovation: insights from European SMEs”, *International Small Business Journal: Researching Entrepreneurship*, Vol. 43 No. 2, pp. 128-151, doi: 10.1177/02662426241288719.

Miles, M.B., Huberman, A.M., and Saldaña, J. (2014), *Qualitative Data Analysis: A Methods Sourcebook*, Edition 3 Sage, Los Angeles, London, New Delhi, Singapore, Washington, DC.

Morgan, G. (1999), *Images of the Organization*, Presses Université Laval.

Muñoz-Bullon, F., Sanchez-Bueno, M.J. and Vos-Saz, A. (2015), “Startup team contributions and new firm creation: the role of founding team experience”, *Entrepreneurship and Regional Development*, Vol. 27 Nos 1-2, pp. 80-105, doi: 10.1080/08985626.2014.999719.

Nason, R.S. and Wiklund, J. (2018), “An assessment of resource-based theorizing on firm growth and suggestions for the future”, *Journal of Management*, Vol. 44 No. 1, pp. 32-60, doi: 10.1177/0149206315610635.

Nyström, K. (2021), “Working for an entrepreneur: heaven or hell?”, *Small Business Economics*, Vol. 56 No. 2, pp. 919-931, doi: 10.1007/s11187-019-00276-0.

Patton, M.Q. (2015), *Qualitative Research and Evaluation Methods: Integrating Theory and Practice*, 4th edn, SAGE, Los Angeles, London, New Delhi, Singapore, Washington, DC.

Pfeifer, M.R. (2022), “Human resources in start-ups: expert interviews with managers on the transition of start-ups from academic to private”, *Merits*, Vol. 2 No. 2, pp. 81-100, doi: 10.3390/merits2020008.

Pratiwi, P.Y., Ferdiana, R. and Hartanto, R. (2018), “An analysis of the new employee onboarding process in startup”, 2018 10th International Conference on Information Technology and Electrical Engineering (ICITEE). *IEEE*, pp. 603-608. 10.1109/ICITEED.2018.8534884.

Rangrez, S.N., Amin, F. and Dixit, S. (2022), “Influence of role stressors and job insecurity on turnover intentions in start-ups: mediating role of job stress”, *Management and Labour Studies*, Vol. 47 No. 2, pp. 199-215, doi: 10.1177/0258042X221074757.

Roach, M. and Sauermann, H. (2024), “Can technology startups hire talented early employees? Ability, preferences, and employee first job choice”, *Management Science*, Vol. 70 No. 6, pp. 3619-3644, doi: 10.1287/mnsc.2023.4868.

Rocha, V. and Grilli, L. (2024), “Early-stage start-up hiring: the interplay between start-ups’ initial resources and innovation orientation”, *Small Business Economics*, Vol. 62 No. 4, pp. 1641-1668, doi: 10.1007/s11187-023-00818-7.

Rutherford, M.W., Buller, P.F. and McMullen, P.R. (2003), “Human resource management problems over the life cycle of small to medium-sized firms”, *Human Resource Management*, Vol. 42 No. 4, pp. 321-335, doi: 10.1002/hrm.10093.

Santarelli, E. and Vivarelli, M. (2007), “Entrepreneurship and the process of firms’ entry, survival and growth”, *Industrial and Corporate Change*, Vol. 16 No. 3, pp. 455-488, doi: 10.1093/icc/dtm010.

Sheehan, M. (2014), “Human resource management and performance: evidence from small and medium-sized firms”, *International Small Business Journal: Researching Entrepreneurship*, Vol. 32 No. 5, pp. 545-570, doi: 10.1177/0266242612465454.

Sim, S.-C., Mohan, A.V., Kaliannan, M., Vinayan, G. and Harikirishanan, D. (2023), “Benchmarking HR outsourcing literature: a critical literature review”, *International Journal of Learning and Intellectual Capital*, Vol. 20 No. 1, pp. 91-122, doi: 10.1504/IJLIC.2023.127709.

So, M. and Teckchandani, A. (2023), “A fraction of an executive: new ways to save and compete”, *Journal of Business Strategy*, Vol. 44 No. 4, pp. 211-218, doi: 10.1108/JBS-02-2022-0024.

Tocher, N. and Rutherford, M.W. (2009), "Perceived acute human resource management problems in small and medium firms: an empirical examination", *Entrepreneurship Theory and Practice*, Vol. 33 No. 2, pp. 455-479, doi: 10.1111/j.1540-6520.2009.00299.x.

Tripathi, N., Seppänen, P., Boominathan, G., Oivo, M. and Liukkunen, K. (2019), "Insights into startup ecosystems through exploration of multi-vocal literature", *Information and Software Technology*, Vol. 105, pp. 56-77, doi: 10.1016/j.infsof.2018.08.005.

Ucbasaran, D., Westhead, P. and Wright, M. (2008), "Opportunity identification and pursuit: does an entrepreneur's human capital matter?", *Small Business Economics*, Vol. 30 No. 2, pp. 153-173, doi: 10.1007/s11187-006-9020-3.

Ulrich, D. (1996), *Human Resource Champions: The Next Agenda for Adding Value and Delivering Results*, Harvard Business Press.

Ulvenblad, P. and Barth, H. (2021), "Liability of smallness in SMEs – using co-creation as a method for the 'fuzzy front end' of HRM practices in the forest industry", *Scandinavian Journal of Management*, Vol. 37 No. 3, p. 101159, doi: 10.1016/j.scaman.2021.101159.

Unger, J.M., Rauch, A., Frese, M. and Rosenbusch, N. (2011), "Human capital and entrepreneurial success: a meta-analytical review", *Journal of Business Venturing*, Vol. 26 No. 3, pp. 341-358, doi: 10.1016/j.jbusvent.2009.09.004.

Van Lancker, E., Knockaert, M., Audenaert, M. and Cardon, M. (2022), "HRM in entrepreneurial firms: a systematic review and research agenda", *Human Resource Management Review*, Vol. 32 No. 3, doi: 10.1016/j.hrmr.2021.100850.

Wood, S. (1999), "Human resource management and performance", *International Journal of Management Reviews*, Vol. 1 No. 4, pp. 367-413, doi: 10.1111/1468-2370.00020.

Xiao, Q., Cooke, F.L. and Xiao, M. (2024), "In search of organizational strategic competitiveness? A systematic review of human resource outsourcing literature (1999–2022)", *The International Journal of Human Resource Management*, Vol. 35 No. 6, pp. 1088-1131, doi: 10.1080/09585192.2023.2258360.

Yi, H.-T., Amenuvor, F.E. and Boateng, H. (2021), "The impact of entrepreneurial orientation on new product creativity, competitive advantage and new product performance in SMEs: the moderating role of corporate life cycle", *Sustainability*, Vol. 13 No. 6, p. 3586, doi: 10.3390/su13063586.

Yin, R.K. (2009), *Case Study Research: Design and Methods*, SAGE.

Zacharakis, A.L., Meyer, G.D. and DeCastro, J. (1999), "Differing perceptions of new venture failure: a matched exploratory study of venture capitalists and entrepreneurs", *Journal of Small Business Management*, Vol. 37 No. 3, pp. 1-14.

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Appendix 1

Table A1. Interview protocol

Question category	Founder/CEO	Early-hire employee	Purpose/theoretical grounding
Organizational context	- Could you describe your start-up's business model, growth stage and current organisational structure? - Please include any relevant previous start-up or corporate experience - What specific resource constraints influence your HR decision-making processes?	- Could you describe your role and how it has evolved since joining? - What was the organisational structure when you joined? - How would you characterise the resource environment?	Establish organisational contingencies (contingency theory); understand resource constraints (RBV); contextualise HR practices within venture stage
Hiring (recruitment)	- How does your organisation identify and attract talent given resource limitations? - What criteria guide your early talent selection decisions? - How do candidate skills align with strategic organisational objectives? - How has your recruitment approach evolved?	- Could you describe your recruitment experience? - What factors influenced your decision to join this start-up? - How did the recruitment process reflect the organisation's values and constraints?	Explore hiring patterns; understand selection criteria evolution; identify resource orchestration strategies (RBV)
Onboarding and integration	- What are the strategic objectives of your onboarding process? - How do you facilitate rapid integration of new hires into organisational culture? - What mechanisms ensure effective knowledge transfer and role clarity? - How has this evolved from your first hire?	- Please describe your onboarding experience. - How effectively did you develop understanding of your role and expectations? - What factors facilitated or impeded your integration process? - What was missing that would have helped?	Assess application of integration frameworks (Bauer's 4C's); identify informal vs formal mechanisms; understand capability transfer processes
Development and retention	- How does your organisation approach human capital development within resource constraints? - What formal and informal development strategies have you implemented? - How do compensation and motivation strategies reflect existing constraints? - What retention challenges have you faced?	- How do you perceive professional growth opportunities? - What motivational factors influence your engagement? - How do informal development mechanism's function? - What would make you stay long-term or consider leaving?	Evaluate development paradox in resource-constrained settings; understand retention mechanisms beyond compensation; identify critical retention factors
Alternative HR solutions	- Have you considered external HR support or consulting? - What HR functions would benefit most from external expertise? - What would be your ideal solution for HR management given your constraints? - How would you evaluate cost–benefit of part-time vs full-time HR support?	- What HR support would have improved your experience? - Which HR functions seem most lacking or challenging? - Would external/part-time HR support have been valuable? In what ways? - What specific expertise gaps have you observed?	Explore openness to alternative models; identify specific capability gaps; understand perceived value of fractional/external HR support

Note(s): Interview questions were designed to obtain detailed responses while maintaining flexibility for follow-up analysis based on participant responses in line with mapping the research questions. All interviews were conducted in compliance with GDPR for research purposes and anonymized

Appendix 2

Table A2. Data structure

First-Order Concepts	Second-Order Themes	Aggregate dimensions	HRM dimensions
"80% of the initial software developers were sourced from the previous company, with the remaining 20% being recruited through employee referrals" [I1] *"we were not focusing on the correct target audience"* [I5] *"young individuals who are already intrigued by their product"* [I5] *"We focused on finding people who share our vision for sustainable innovation, often through referrals from our existing network and particularly from the sustainable food industry."* [I8]	→ Network-based hiring	→ Network-based Resource Orchestration	Hiring
"high performing people without too much experience in the previous company" [I1] *"embarrassed when interviewing brilliant candidates"* [I3]	→ Affiliation-based selection		
"After the first employees, we have learned what we needed and changed the structure a bit, for example, moving to the bigger central office" [I4] *"a year-long trial term was chosen to assess the new hire's performance and motivation both during periods of increased workload... and periods of decreased workload"* [I7]	→ Experiential process refinement	→ Adaptive Practices	Onboarding
"We used to offer the stock options at our initial stage, but employees want other than the stock options, so we restructured that approach when we grew" [I4] *"We did not prioritize the career development initially but later introduced structured learning sessions and skill/career development matrix"* [I1]	→ Growth-contingent adaptation		
"I train the employees on the work, and this gives direct hands-on experience" [I2] *"Initially, I handled everything HR-related myself... it was about survival and getting the basic processes right"* [I3]	→ Founder-led HR management	→ Founder-centric Knowledge Transfer	Development
"Experience is important, so as the learning, so we try to peer learn from the international peers in our team overseas" [I4] *"Internal initiatives covers a far larger range of issues such as industry trends or a Lectio magistralis on one of the various internal tools"* [I3] *"We plan to invest in the more formal training framework in the future"* [I5]	→ Opportunistic learning mechanisms		
"There was no incentive for career planning because they did not know if they would be a company after six months" [I3] *"a small tech company trying to find its place in a niche market"* [I3]	→ Survival-oriented prioritization	→ Formalizations	Retention
"A coworker was not someone to spend your time with only during office hours, but someone that you considered as one of your best friends, and that you would want to meet also outside of work" [I1] *"The primary driver for employee motivation lies in the startup's future potential"* [I5] *"Everyone can be happy with bringing the results and getting paid for those works"* [I6]	→ Mission-culture retention		