HUMAN CAPITAL AND TEAM PERFORMANCE: EVIDENCE FROM ORGANIZATIONAL TEAMS

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Abstract. *This study explores the factors influencing team performance from a Human Resource Management and organizational perspective. Focusing on human capital, leadership, and team processes, the research examines how employees' knowledge, skills, competencies, and experience contribute to effective team outcomes. Team performance is analyzed in terms of productivity, coordination, work quality, and collaboration. By integrating insights from human capital theory and organizational behavior literature, the study highlights the importance of strategic HRM practices in enhancing team effectiveness. The findings provide theoretical and practical implications for HR managers and organizational leaders seeking to develop and sustain high-performing teams.*

Keywords: *Team Performance; Human Resource Management; Human Capital; Leadership; Team Processes; Organizational Effectiveness.*

1. Introduction

The development of organizational teams, defined as relatively small groups of individuals with complementary skills, knowledge, experience, and competencies who work jointly toward a common goal, is widely regarded as one of the most significant phenomena in contemporary organizational life (O'Connor, 2016). The related field of team science has burgeoned with the expansion of the industrial domain of teamwork to educational, health care, sports, and other settings (D Ulrich, 2016). Yet despite the widespread acknowledgment of the importance of teams, there remains a disconcerting paucity of research that examines how the human capital embodied by team members serves to influence the effectiveness, output, and many other performance-related metrics of the team as a group.

Human capital, the productive attributes of the workforce, has a well-established impact on organizational performance. Despite the extensive examination of these issues, work assessing how the human capital of team members relates to team performance remains scarce. A number of human capital components appear particularly relevant to team performance. Clearly identifiable, operationally defined, and capturing widely acknowledged aspects of teams, these components help to elucidate how and why human capital matters to teams. Team performance itself can also be specified in ways that are similar in spirit to models of organizational performance. All of this lends itself to the definition of organizational teams, the clarification of important boundaries, the appropriate unit of analysis, necessary contextual factors, and hypothesized direction of causation.

2. Theoretical foundations

Human capital—a term that incorporates education, work experience, behavior, and knowledge—forms the foundation of what a team can achieve (O'Connor, 2016). The knowledge

that each member brings to the team is critical since teams are advised to seek wider social capital to facilitate knowledge transfer (D Ulrich, 2016). A knowledge transfer flows among team members through graphic, modeling, coding, or verbalization techniques, where knowledge becomes easier to share after codification—such as work-flow diagrams, programming code, and verbal stories—these "elements are then available for broader review."

Human capital is widely acknowledged as a major factor in competitive advantage. While the concept of human capital has been successful at the individual and organizational levels, it has not been conceptually or empirically examined at the team-level. Some research suggests, for instance, that the more human capital a team has, the more collective efficacy it develops and when individuals bring rich experience to a team, those gains are likely to occur in innovation, quality, and productivity.

2.1. Defining human capital in organizational teams

The term "human capital" generally denotes "knowledge, skills and expertise that individuals accumulate through education and training" (D Ulrich, 2016). In teams it reflects "collectively they possess high skills," and thus enhances team performance (O'Connor, 2016). Yet, the absence of operational definitions makes it hard to specify measurement strategies. In teams, human capital can comprise four components: technical skills and knowledge, task-specific team competencies, core competencies, and collective experience acquired from past projects. Team performance may concern efficiency and output, product development cycle time, and adherence to master schedules. Additionally, cross-team collaboration is essential for knowledge transfer and limiting isolated learning; wider team-outcome scope could therefore include the amount of collaboration with other teams in the organization, as well as a formal assessment of the quality of said collaboration and the integration of knowledge produced by other teams into the projects.

2.2. Mechanisms linking human capital to team performance

Teams are often viewed as complementary working groups. Followers of the Complementary Leadership Perspective propose a facilitative leadership approach when human capital is perceived as a complement of the team in project-centered settings. Organizational teams are complex adaptive systems that evolve through multiple episodes over time, evolving as they progressively change their collective identity as a result of social learning and environmental interactions. At the team level, there is still no general agreement on what constitutes human capital. The definition nevertheless employed in numerous empirical studies is human capital as team members' knowledge and skills.

Repeated studies indicate that team processes mediate the relationship between member human capital and team performance in many settings. Team processes consist of three types: coordination, collaboration, and communication. HR bundles that encourage knowledge flows, networking, and collaboration link member human capital to performance indirectly through the mediation of social capital. Team-directed supportive leadership and social activity patterns further strengthen these indirect links by promoting an internal social-capital-generating mechanism, enhancing the value of member human capital for team functioning (D Ulrich, 2016).

3. Methodological approaches

Human capital represents a collection of knowledge, capabilities and competencies possessed by individual employees in an organization (O'Connor, 2016). All of these attributes acquired by team members form the human capital stock of a team. Employee experience—incorporating years in the organization, time served within the team and the number of prior teams

held by the members—is an important dimension of human capital (D Ulrich, 2016). Each of the attributes above is recognized as contributing to the quality of a team and can therefore be categorized as a contributor to team performance. Subsequently, the theory suggests that human capital positively affects team performance via various mechanisms.

3.1. Measurement of human capital components

The measurement of different human capital components in organizational teams can be conducted through multiple strategies, including proxies, surveys, and archival information. The employed approach to each human capital component can also differ, giving rise to composite indices based on multiple proxies or indicators for one component or a few selected indicators covering all components in human capital. Regardless of the specific component examined, scholars face the fundamental requirement of establishing validity and reliability in both the employed indicators and the datasets involving these indicators (O'Connor, 2016).

Regarding proxies for human-capital components, proficiency in external and internal competencies needed for team tasks is quoted as a skill indicator. Team-data archival-survey-based composite-indicator-individual-component-focussed theoretical models have relied on ratios between self-reported team-component- or "capability"-proficiency indicators and broader individual-skill profiles (D Ulrich, 2016). Other operationalizations for the same component are based on ordinal indicators of the perceived requirement level of different team competencies compared to individual profiles, backed by team-profiles' absence of influence on creativity-control structures. Team experience is measured in accumulative total years related to processes and formal involvement across all current and initial members collectively. The practice of estimating composite-indicator values from individual-context-wide archived databases has been reported but eludes exploration of the underlying context-specific industrial context.

The assessment of team performance has typically drawn on various objective-size–content–form–order–source-time–indicator features through a mix of overall-outcome conveyance and members-team-interactivity formalization. The combined general-form–general–individual–content specificity, task variety, and mean-embeddedness of selected skill-complementarity construction, design, and engineering elaborate meeting and coordination have been proposed to engage coordination in architectural building. Team indicators remain available to assess organizational-level governance-sharing structure and style-locus synchronizations, performance criteria, training-exclusivity space, verification-inputs levels, formalization–complexity–time combination, and remuneration-incentive condition. Other proposals envisage linking stability of event-preceding combinations of previously unconnected resources to capacity re-engagement for-the-organization flexible medium-speed parameter infrastructures.

3.2. Metrics of team performance

Teams are characterized by shared goals, mutual interdependence, and the need for coordinated activity for engagement (D Ulrich, 2016). Considerations include perceived teamwork efficacy, product or service quality, collaborative climate, and learning action capabilities. Team performance indicates a multidimensional concept, encompassing organizational learning, strategic human resource systems, and the impact of team characteristics. Proposed indicators for evaluation include meeting client requirements, schedule adherence, budget compliance, customer satisfaction, and knowledge transfer among members. Performance ratings are influenced by trait and rater effects; referees occupy positions within an organization and may deliver higher evaluations closer to project completion. The sheer complexity and challenge of characterization underscore the

centrality of the issue. Team member competencies are linked to collective confidence, self-motivation, and task engagement (O'Connor, 2016).

3.3. Research designs and analytical methods

The analysis of human capital–team performance linkages can rely on a range of research designs and analytical methods. Most studies use cross-sectional field surveys and rely on ordinary least squares (OLS) regression with estimation techniques such as robust standard errors, bootstrapping (D Ulrich, 2016) , or clustered standard errors (O'Connor, 2016). Some studies focus on industry teams within the same organization and use multisource data to address common method bias and isolate the effect of human capital on team performance. Others exploit longitudinal field data from multiple organizations to investigate team-level changes in human capital more directly or to explore human capital dynamics. The links between individual member skills and team collective efficacy have been tested through an experiment using vignettes that capture the actions of peers.

Experimental or quasi-experimental designs offer further opportunities to study human capital in teams. Examples include random assignment of teams to varying degrees of interaction opportunity, recruitment of new team members with or without specific training, and interventions that facilitate knowledge sharing through structured workflow arrangements or innovative information systems. econometric techniques suitable for non-experimental data include both simultaneous equations models, difference-in-differences estimation, and systems GMM. Social capital and horizontal supervisory leadership have respectively been analyzed by means of spatial Durbin models and random-effects Poisson regression. Such methodologies open avenues for further research on the coevolution of team composition and performance through clustered network models.

4. Implications for practice

Investment in human capital at the team level is more than a matter of training and talent acquisition; it requires careful consideration of capacity and fit. Engaging a diverse applicant pool will expand and enrich the talent pool, but the potential for misfit and onboarding challenges—exacerbated in remote and hybrid settings—should guide selection, socialization design, and succession planning (D Ulrich, 2016). Wherever possible, recruiting objectives should be captured in precise, measurable, and temporally bounded metrics to motivate teams and signal fit among candidates.

Whether capitalizing on collective human capital at formation or developing it over time, organizations benefit from equipping teams with candidate and successor data to anticipate future composition, capacity, and fit. Employers and employees alike remain limited by the clarity and confidence with which teams articulate candidate and succession needs, though inter-organizational equipment of individuals and teams is emerging.

Acquisition and development of capital that remains relevant and impactful at the team level depend on establishing measurement systems and feedback loops that connect external changes in a member’s profile or experience to internal changes in collective capacity. Productivity, quality, innovation, and coordination emerge as focal performance needs. The introduction of clear, non-competitive, and relevant metrics to complement rather than eclipse capacity-based incentives marks another move towards more inclusive and enabling systems.

4.1. Talent development and training design

Two complementary aspects emerge when considering talent development and training design for teams. First, an assessment of team members' human-capital needs is a prerequisite for formulating effective training and development strategies (Sofia Sebastião Canha, 2015). This entails understanding which skills, abilities, and knowledge are necessary for optimal collaboration and performance within the team (O'Connor, 2016). Second, with the proper human-capital features identified, training-design questions arise: What is the best content to enhance the desired attributes? When and how should delivery occur? A view of training as an organizational investment implies measurement of effectiveness, that is, the transfer of knowledge, skills, or learning acquired during training to the workplace (H. Johnston et al., 2019).

4.2. Recruitment, onboarding, and succession planning

During developing human capital through recruitment and onboarding, organizational teams should consider two key practices. First, fit between the candidates and the existing team members is crucial. Proactive psychological research has shown that organizational culture fit, person–job fit, and person–organization fit positively affect candidates' job satisfaction, job involvement, and commitment (Karl Wardlaw, 2019). Culture fit within a team incubates its culture and enforces social interaction while encouraging new approaches for both the team and organization.

Second, socialization processes act as two-way linkages where existing team members also learn from newcomers. Within existing team structures, developing a leadership pipeline is crucial for associating inexperienced leadership with existing team members.

4.3. Performance management and incentive alignment

Teams often treat particular aspects of performance as strategic priorities, so performance management involves periodic measurement and systems that provide a clear understanding of achievement. Regardless of the chosen measures, feedback loops must be maintained: circulating performance reports, conducting assessments and reviews, or establishing appraisals. Consequently, an effective performance management structure must encompass not only performance metrics but also multidisciplinary evaluation, communication, and reward mechanisms that can exploit, amplify, encourage, and propagate over time (Kim and Sly, 2010). Granting rewards based on collective performance repair the detrimental effects of team members pursuing selfish interests (Di Pietrantonio, 2018). Nevertheless, the longing for praise from supervisors, or the aspiration to outshine rivals, might constrict the sharing of information that external teammates contribute, despite all parties benefitting from such exchanges. To overcome the issue, a framework is thus presented in which players maintain their drives, yet stimulating cooperation remains feasible, alongside any complementarity in the inputs that multiple teams exogenously furnish (Drouvelis et al., 1970).

5. Gaps in the literature and future research

The literature on human capital and team performance is still developing and presents various challenges and opportunities. First, measurement error poses a severe problem. Given that human capital is rarely measured directly, the accuracy of proxy variables is an ongoing concern that can lead to erroneous conclusions (Totonchyfardmotlagh and Renato Peneluppi, 2017). Causality also remains unclear, especially where human capital endowments may be determined by personal characteristics or situational chance, rather than the deployment of individual or collective capabilities in teams. Furthermore, many studies deal with student or temporary teams in specific

industries or geographical areas. Insights from these narrow contexts do not necessarily generalize to longer-lived, organizational teams in other sectors (O'Connor, 2016).

Second, new data sources and analytical approaches open exciting new avenues of inquiry. Digital traces left during ordinary work practices provide extensive, fine-grained activity datasets on many fundamental constructs, including team composition, leadership, knowledge sharing, social capital, behavioral coordination, and team performance. Real-time sensing of verbal or non-verbal interactions yields rich insights into team dynamics, social networks, and other parameters relevant to human capital theory. Social media and other technologies facilitate information flow across internal or external organizational boundaries, and the structure of these interaction networks influences team productivity and innovation. Advanced econometric, statistical, and machine-learning techniques enable increasingly sophisticated modeling of these complex data sets, including network analysis, dynamic modeling, hidden Markov models, and agent-based simulation.

Significant methodological challenges persist in the examination of human capital and team performance, including measurement error, the establishment of causality, and the generalizability of results beyond particular settings. Human-capital components may be poorly captured when tools such as imperfect proxies, single-item survey questions, archives of dubious value, or composite indices with low reliability are employed. Many studies further assume a direct link from those components to team performance, neglecting the necessity of establishing that members share a given capability in order for it to influence collective functioning (D Ulrich, 2016). This oversight often arises from reliance on aggregate-level data to characterize organizational teams (O'Connor, 2016), despite broader interpretations being at odds with the prevailing focus on the detailed dynamics of human-capital creation, retention, and deployment within them. Such examinations have become increasingly pertinent due to the escalating importance of these teams in initiating new ventures, managing projects, and responding effectively to rapidly changing environments.

6. Conclusion

Human-capital endowments within organizational teams can be expected to exert a significant influence on team performance across multiple dimensions. Such endowments encompass member skills, knowledge, competencies, and experience. In turn, team performance may be assessed in terms of productivity, quality, coordination, and innovation. The aforementioned channels mediate the relationship between human capital and team performance. The first channel pertains to knowledge sharing and transfer, which can be affected by social-capital endowments and networks within the team. Such knowledge flows promote team-mate coordination and enhance overall team performance. The second channel involves skill and knowledge complementarities among team members. Teams comprising members with diverse and complementary yet relevant human-capital profiles are able to execute more complex tasks and achieve superior outcomes. Social-capital formation among team members can further augment complementarities. A third channel refers to leadership, coordination, and decision quality. Team leaders with substantial human-capital endowments are more proficient at directing member activities toward goal attainment. They are also better equipped to establish coordination mechanisms or escalation procedures among members engaged in interdependent activities. When coordination challenges arise, teams with leaders possessing deep relevant expertise can continue functioning smoothly. Furthermore, decisions taken by teams whose members command extensive experience or knowledge have a higher probability of being appropriate and innovative. Finally, a fourth, indirect

channel pertains to learning dynamics. Broadly, a team's human capital may enable a learning process characterized by continuous adaptation, improvement, and knowledge deepening.

Ten theoretical mechanisms spell out how human capital may influence team performance (O'Connor, 2016); (D Ulrich, 2016); (Totonchyfardmotlagh and Renato Peneluppi, 2017). Knowledge sharing and transfer within teams hinges on the knowledge possessed by individual members. Relevant knowledge can flow among members and be coordinated through social-capital networks. Mentoring by more knowledgeable members enhances knowledge acquisition and lowers the effective expertise level required for undertaking complex tasks. Network topologies and the cohesiveness of tacit-knowledge appropriation.

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