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HPWS effectiveness via perceived team work engagement: A focus on the team culture as a boundary condition

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October, 2024

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Acknowledgments

It’s remarkable how this achievement reflects the power of a true team. A team made up of individuals who, with their unique qualities and in their own ways, have guided, supported, and inspired me throughout this journey. Each person played a crucial role not just in reaching this goal, but more importantly, in shaping me into the person I am today, capable of achieving it.

To my supervisor, professor Nelson, I extend my heartfelt thanks for your support, understanding, and wise guidance. It wasn’t at the “right” time, but it was in my time, and for that, I am deeply grateful.

To my parents, Ana and João, I offer a special thank you. Your unconditional love, trust, and ongoing support made this journey possible. To my extended family and friends, thank you for always being there, bringing balance and joy into my life.

To Rovensa, I am thankful for the first opportunity in the professional world, which allowed me to grow both personally and professionally. I also appreciate your support and willingness to help make this study successful. A special thanks to my team, who turned this experience into a cherished memory, providing plenty of room for growth and mutual support.

I am profoundly grateful to everyone, proud of the relationships I’ve built, and amazed at how far I’ve come! Now I feel ready to embrace new challenges, with the confidence and enthusiasm of someone eager to continue growing and improving, surrounded by wonderful people.

Abstract

High-Performance Work Systems (HPWS) are exactly what its name entail: a set of human resources (HR) practices that is expected to foster performance. This has been mostly studied from a universalistic view, but it may be beneficial to frame it within a contextual approach that brings into the equation boundary conditions such as team culture. This study was designed to capture the moderation effect of team culture upon a process linking HPWS to perceived team performance via perceived team work engagement (TWE). With a sample of 127 individuals, the hypothesis testing using PROCESS Macro (Hayes, 2017) showed HPWS positively associates to team performance and TWE. However, the indirect effect was not supported, except when team culture as a moderator was considered. Findings show that the indirect effect of HPWS on team performance emerges when interacting with Clan or Market culture only. Overall, these findings highlight the significant moderating role of team culture on the perceived performance outcomes of HPWS.

Keywords: High-Performance Work Systems, Strategic Human Resource Management, Team Performance, Team Work Engagement, Team Culture

JEL Codes: M12 Personnel Management, M14 Corporate Culture

Resumo

Os Sistemas de Trabalho de Alto Desempenho (HPWS, na sigla em inglês) são exatamente o que o nome sugere: um conjunto de práticas de recursos humanos (RH) que se espera que promovam o desempenho. Este tema tem sido maioritariamente estudado a partir de uma perspetiva universalista, mas poderá ser benéfico enquadrá-lo numa abordagem contextual, que introduza na equação condições-limite, como a cultura de equipa. Este estudo foi concebido para captar o efeito moderador da cultura de equipa num processo que liga os HPWS ao desempenho percebido da equipa, através do envolvimento percebido no trabalho em equipa. Com uma amostra de 127 indivíduos, o teste de hipóteses utilizando o PROCESS Macro (Hayes, 2017) mostrou que os HPWS estão positivamente associados ao desempenho da equipa e ao envolvimento no trabalho em equipa (TWE, na sigla em inglês). No entanto, o efeito indireto não foi suportado, exceto quando se considerou a cultura de equipa como moderadora. Os resultados mostram que o efeito indireto dos HPWS no desempenho da equipa surge apenas quando interage com uma cultura de Clã ou de Mercado. No geral, estes resultados destacam o papel moderador significativo da cultura de equipa nos resultados percebidos de desempenho dos HPWS.

Palavras-chave: Sistemas de Trabalho de Alto Desempenho, Gestão Estratégica de Recursos Humanos, Desempenho da Equipa, Envolvimento no Trabalho em Equipa, Cultura de Equipa

Classificação JEL: M12 Gestão de pessoal, M14 Cultura organizacional

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Chapter 1. Introduction

Strategic Human Resources Management (SHRM) has asserted itself within the contemporary landscape of Human Resources Management (HRM) studies as an attractive approach to demonstrating the added value that employees represent. By emphasizing the alignment of human resources (HR) practices with organizational strategy, SHRM aims to harness human capital to drive competitive advantage and achieve superior performance outcomes (Kaufman, 2015; Jiang & Messersmith, 2018). Amidst the research endeavors that have populated the literature over the past decades, significant strides have been made in uncovering the "black box"—the intricate mechanisms that connect HR practices to organizational performance. This progress includes the identification of critical intervening constructs such as profitability, team performance, competitiveness, and work engagement (Wright & Ulrich, 2017).

Within this framework, High-Performance Work Systems (HPWS) have emerged as a cornerstone in the pursuit of organizational excellence. These systems, comprising a comprehensive set of HR practices, are designed to enhance employee performance by improving skills, motivation, and opportunities to contribute to organizational goals (Messersmith et al., 2011; Han et al., 2020). The ultimate goal of HPWS is to develop a workforce that is not only highly competent but also deeply engaged and committed to achieving their highest potential (Simbula & Guglielmi, 2013; Cesário & Chambel, 2017).

HPWS tend to be taken as universally effective, reflecting a universalistic approach to HRM. However, theory has evolved to conceive it at a more complex level by positing their effects must be at least contingent upon certain variables, sensitive to the context, and operating as a configuration and not so much as a sum of isolated HR practices effects (Martín-Alcázar et al., 2005).

Recognizing that organizational effectiveness is deeply influenced by its surrounding environment, SHRM literature has increasingly emphasized the importance of adopting a contextual approach. This perspective acknowledges that the success of HR practices, including HPWS, is inherently influenced by the broader context in which they operate, including the social and cultural dynamics that shape organizational life - particularly team interactions - and affect the

implementation and perception of these systems (Brewster, 2012). Such an approach challenges the notion of universally applicable HR practices, highlighting instead that their impact is often contingent upon the specific context in which they are implemented.

Despite significant advances in SHRM research, a critical gap remains in understanding how HPWS interact with team culture to influence team performance (Takeuchi et al., 2009). Specifically, there is a need to explore how these systems can be effectively leveraged through Team Work Engagement (TWE), particularly within diverse cultural contexts. As teams become increasingly central to organizational success, understanding the interplay between HPWS and team culture is essential. In today's complex and rapidly evolving business environment, teams are not merely units within organizations but they are integral to their overall success (Salas et al., 2008). The emphasis on collaborative work, innovation, and agility means that how teams function and interact can significantly impact organizational performance (Salas et al., 2008; Katzenbach & Smith, 2015).

Team culture, which encompasses shared values, norms, and behaviors, profoundly influences how team members interpret and respond to organizational practices, including those embedded in HPWS (Adkins & Caldwell, 2004; Shin et al., 2016; Cabana & Kaptein, 2021). Whether oriented towards innovation, control, collaboration, or competition, team culture can significantly affect the effectiveness of HPWS in fostering engagement and performance (Costa et al., 2014; Shin et al., 2016). Additionally, team culture is shaped by broader organizational and societal influences, which further complicates the dynamics between HPWS and team outcomes.

Moreover, the relationship between HPWS and team performance is often mediated by TWE, a collective psychological state characterized by vigor, dedication, and absorption in work (Costa et al., 2014). While HPWS are designed to enhance engagement, their success may depend on the prevailing team culture (Zhang & Morris, 2014). In some cultural contexts, the link between engagement and performance may be strong, while in others, conflicting values or priorities might weaken it.

Therefore, to fully leverage the potential of HPWS, this study aims to address this gap by investigating how HPWS enhances perceived team performance, through the mediation of perceived TWE, while being moderated by team culture. Specifically, it seeks to determine whether employees' perceptions of HPWS implementation correlate with improved team

performance through enhanced TWE and how team culture might moderate this relationship. This conceptual model is all approached via individual perceptions due to their role in determining behavior. By doing so, this research contributes to the ongoing discourse in SHRM, offering insights that are both theoretically significant and practically relevant, emphasizing the need for organizations to consider team culture when implementing HPWS.

Chapter 2. Literature Review

Literature review starts by introducing HPWS within the framework of SHRM and Team Performance, as the main factor of higher performance, particularly in team contexts, where values and norms shared create micro-realities capable of surpassing the individual potential of its members (van den Hout et al., 2018). Within this context, TWE emerges as an intangible asset that, aligned with commitment-oriented HRM, promotes emotional contagion and hence more vigorous, dedicated and absorbed teams (Motyka, 2018). Furthermore, the review delves into Team Culture, pointing out that to fully understand the effectiveness of HPWS one has to consider context (e.g. culture of the teams) that, through social influence and continuous interaction, shape employee's understanding of their HR practices experiences and produces the intended organizational climate and behaviors (Shin et al., 2016; Schreuder et al., 2020). The hypotheses are motivated by literature and shown in sequence along the text.

2.1. High Performance Work Systems and Team Performance

In the 1980s, a profound shift occurred in HRM research, driven by the global evolution of markets and labor relations, alongside with the imperative of organizational development that was emerging in an increasingly volatile, uncertain, complex and ambiguous world (Kaufman, 2015; Shin et al., 2016). This era saw the conceptualization of "human capital", as the "productive knowledge, skills and abilities embedded in organizations" (Kaufman, 2015, p.400), elevating the status of workers to strategic assets whose optimization became the key to sustainable strategic success (Kaufman, 2015; Jiang & Messersmith, 2018). This transformation laid the foundation for SHRM, emphasizing the essential alignment of HR practices with the organization's objectives, vision, requirements, and strategies to enhance overall performance (Wright & Ulrich, 2017).

Within this strategic approach, HPWS emerged as a pivotal framework, that demonstrates the strong correlation between the effective human capital management and organizational performance outcomes such as talent retention, productivity and profitability (Huselid, 1995; Garg, 2019; Schreuder et al., 2020).

HPWS refer to a comprehensive framework of interrelated HR policies, procedures and practices designed to enhance employee capabilities, motivation, and opportunities for contribution (Huselid, 1995; Messersmith et al., 2011; Miao et al., 2021). This framework operates on the premise that high levels of employee engagement, supported by effective monitoring and recognition, foster a strong sense of organizational commitment and reciprocity, which in turn positively affects performance (Tregaskis et al., 2013; Schreuder et al., 2020). Key elements of HPWS include selective recruitment, extensive training (both general and specific to the organization), performance-based rewards, employee participation, and avenues for skill development and career progression (Pfeffer, 1998; Messersmith et al., 2011; Han et al., 2020).

Given the intrinsic value of human capital, high performance relies on nurturing employees who are skilled, dedicated, and empowered (Kaufman, 2015). It is also crucial to safeguard their interests through organizational bonds and characteristics that address their attitudes and overall well-being (Birasnav et al., 2011; Kaufman, 2015). This requires establishing a supportive work environment that promotes talent development and autonomy, encourages involvement in decision-making, fosters a sense of ownership, and motivates commitment across the workforce (Xi et al., 2021).

These factors promote innovation, flexibility, responsibility and teamwork needed for the desired dynamic: the level of workforce satisfaction is boosted, enhancing its potential as a predictor of productivity and, ultimately, better performance (Tawk, 2021).

A deep understanding of the strategic significance of internal resources and the positive effect of Ability, Motivation and Opportunity (AMO) framework, guarantees the win-win strategy predicted in HPWS “not only enhances well-being [but] also improve[s] performance through the enhancement of well-being” (Miao et al., 2021, p.444).

Nevertheless, despite the evidence that HPWS positively impact job satisfaction and affective commitment, West and Petterson's research (1998) observed that individual satisfaction may not be a reliable predictor of performance, as it primarily reflects personal experience and perception of HPWS (Beech & Crane, 1999; Schreuder et al., 2020). In light of this observation, a new hypothesis was developed: the overall climate of collective satisfaction could play a mediating role in the relationship between HPWS and performance, as shared perceptions can strengthen peer

support and create performance-related pressure (Beech & Crane, 1999; Takeuchi et al., 2009; Xi et al., 2021).

Thus, the effect of HPWS on performance is particularly pronounced when evaluated within the team context, which serves as a fundamental element of organizations (Shin et al., 2016; Schreuder et al., 2020). With the triumph of globalization, organizational workflows have become increasingly intricate, leading to a greater reliance on teams. This shift has enhanced both their autonomy and identity. To effectively respond with agility and flexibility, organizations have recognized the importance of having a varied skill set and diverse expertise within teams (Shin et al., 2016). As a result, SHRM has increasingly focused on grasping the complexities of team dynamics and leveraging them to boost organizational performance (Salas et al., 2008).

The option to invest in HPWS cannot be taken without considering the social nature of work, namely the influence of teams. Teams consist of individuals with complementary skills, connected by a shared purpose, goals, and approach, for which they hold each other mutually accountable, working together to generate outcomes valuable to the organization (Katzenbach & Smith, 2015). Fundamental to teamwork is the understanding that teams function as systems, where the collective output surpasses the sum of individual contributions (van den Hout et al., 2018). Teams receive inputs such as information, resources, and skills, which they transform into enhanced outcomes (Salas et al., 2008; van den Hout et al., 2018). Moreover, teams operate within a broader system, interacting with other teams and structures, which underscores their importance in influencing overall organizational performance (Scholtes, 1995; Katzenbach & Smith, 2015).

Given this characteristics, Team Performance is conceptualized as a dynamic, multilevel process rather than a static outcome. It develops through the engagement of team members in both individual and collective tasks, emerging in a complex, non-additive manner (Salas et al., 2008; Boon et al., 2018). Moreover, team performance acts as a key metric for evaluating team effectiveness, reflecting how well team meet or exceed performance standards in both quantity and quality (Patel et al., 2012).

According to Katzenbach and Smith (1993), the effectiveness of a team is fundamentally linked to its commitment to common goals and strategies, mutual accountability for outcomes, and a well-rounded mix of both technical and interpersonal skills among members. Based on these principles, three dimensions of effective team performance have been identified. The first

dimension, collective work products, assesses how well the team's output meets the needs and expectations of clients (De Meuse, 2009). The second dimension, performance results, evaluates how the team's processes contribute to future collaboration and enhance its overall capabilities. The third dimension, personal growth, measures how the team experience supports the personal development and achievement of individual goals (De Meuse, 2009). When a team's performance surpasses the combined efforts of its members, who are deeply invested in each other's growth and success, it exemplifies a High Performance Team (De Meuse, 2009; van den Hout et al., 2018).

Thus, by fostering a supportive and motivated work environment, providing spaces for skill enhancement and promoting opportunities for growth, HPWS contributes to the creation of high-performance teams. Considering this we hypothesize that:

H1: *HPWS is positively associated with Team Performance.*

This hypothesis is overviewing the plausible psychological dimension that links managerial practices, such as HWPS, to work outcomes, namely team performance. These psychological variables are commonly treated as intervening variables, i.e., latent factors that explain how individuals' reaction to managerial practices, translate into specific behavior that leads to work outcomes. By considering literature akin to HPWS and team performance, we highlight TWE as a plausible intervening variable in this path.

2.2. Team Work Engagement and Team Performance

In today's complex and evolving work environments, adopting commitment-oriented HR practices and recognizing employees' perceptions of these practices are crucial for fostering positive attitudes and behavior (Cesário & Chambel, 2017). When there is a clear alignment between employees' personal values and career goals with the organization's objectives, employees are more likely to exhibit higher levels of physical engagement and demonstrate both cognitive and emotional commitment to their work (Simbula & Guglielmi, 2013; Cesário & Chambel, 2017).

This effect becomes even more powerful when it is perceived not only with their own tasks, but also with the goals and tasks of their team, since the synergy created, based on the influence of the interactive nature of the process and the emotional contagion experienced between people who work together, significantly far outweigh their work, collaboration, motivation and resilience placing their perception of engagement in the in the overall and unique entity they form (Torrente et al., 2012; Costa et al., 2014).

A construct that captures well these psychological dynamics is TWE, which describes “a positive, fulfilling, work-related and shared psychological state” (Costa et al., 2014, p.4) that arises from team interactions and shared experiences. To the example of the work engagement construct, TWE also entails three dimensions: team vigor, team dedication, and team absorption.

Team Vigor describes the high levels of energy and mental resilience demonstrated by team members in their collective tasks. It encompasses their willingness to invest extra efforts, go beyond individual roles for the team's success and also the persistence and maintain a positive outlook to uphold morale and performance, even during challenging periods (Cesário & Chambel, 2017).

Team Dedication is characterized by feelings of importance, pride, excitement and challenge at work. Engaged teams foster a collaborative atmosphere, where communication and collaboration flow seamlessly and respect and admiration are extended to all voices (Macey & Schneider, 2008; Bakker, 2022). This environment supports mutual assistance, leverages individual strengths, and promotes knowledge sharing, leading to enhanced performance and innovation. The collective enthusiasm within the team fosters a culture where new ideas are welcomed and explored, contributing to improved solutions and overall team effectiveness (Bakker, 2022).

Team Absorption consists of team members being fully concentrated, happy and deeply engrossed in their collective tasks, where time passes quickly, while experiencing difficulty in detaching themselves from their work and even from their interpersonal relationships. This shared positive scenario, where employees interact both consciously and unconsciously and influence each other, promote a climate of psychological safety that proves to be the most efficient management behavior and a unique competitive advantage for the organization (Beech & Crane, 1999; Cooke et al., 2019; Bakker, 2022).

Therefore, building more vigorous, dedicated, and absorbed teams, as suggested by Mäkikangas et al. (2016), is crucial, making the strategic integration of TWE essential for achieving high team performance. Considering this, we hypothesize that:

H2: *Team Work Engagement is positively associated to Team Performance.*

2.3. High Performance Work Systems and Team Work Engagement

According to Husin et al. (2021), employees reveal themselves as more effective performers if they are content, motivated and committed, leveraging their inner resources, time and energy to their roles, strengthening their emotional bond with the organization, management and their peers (Teo et al. 2020).

This phenomenon aligns with the Social Exchange Theory (Homans, 1958) that posits individuals in a social exchange relationship are emotional decision-makers who assess their interactions with organizations, generating emotions that influence their engagement and commitment, particularly within team dynamics (Schreuder et al., 2020; Teo et al., 2020; Al-Abbadi et al., 2021).

Since HPWS focus on providing consistent messages and cues to employees with the objective of creating favorable interpretations of HR practices, their effective implementation leads not only to enhancing employees' engagement towards their organization, but particularly to their team, that serves as information gatekeepers and provide shared validation, leveraging the synergistic environment established to achieve greater collaboration, communication and cohesion (Guzzo & Noonan, 1994; Schreuder et al., 2020).

Thus, selective hiring ensures new team members fit culturally, enhancing cohesion and smoother integration. Effective training develops team members' skills, encourages them to take full advantage of training opportunities, share knowledge, and support each other’s growth. Decentralization in decision-making empowers teams to take initiative and fosters a sense of accountability. Clear job descriptions promote role clarity, reduce ambiguity, and improve coordination. Efficient performance evaluations foster a positive attitude towards continuous

feedback, helping teams set realistic goals and track progress and job security reduces stress and creates a stable environment where long-term planning can thrive (Schreuder et al., 2020).

This synergy translates into a workplace where team members' collective enthusiasm and dedication towards shared goals thrive, i.e. where TWE is expected to be strong. Considering this we hypothesize that:

H3: *HPWS is positively associated with Team Work Engagement.*

As a consequence of the previous couple hypotheses, TWE is a suitable intervening process variable that helps explaining why HWPS is effective in promoting team performance. Considering this we hypothesize that:

H4: *HPWS is positively associated with Team Performance via Team Work Engagement.*

This process that connects HPWS to team performance via TWE does not evolve in a social void. It is fundamentally a process that is embedded in meaning making and inferred the intentions and values of managers that opted to invest in HPWS. Therefore, the effectiveness of such values inferences must depend on the context, namely on how much organizational culture goes in line or against the grain of such HR policies.

2.4. Team Culture as a context

These HR practices and its consequences cannot ignore the organizational and team context where they operate. An important differentiator between organizations and a critical factor in HRM is culture. At an early stage, the perception of culture focused on organizational reality, with organizational culture being valued for its impact on strategic alignment and employee retention (Cabana & Kaptein, 2021). However, as organizational boundaries become less defined and self-directed teams gain prominence and autonomy, the values and norms within these teams—referred to as team cultures or subcultures—have become increasingly significant for comprehending team behaviors, processes and outcomes (Adkins & Caldwell, 2004; Shin et al., 2016).

Team culture encompasses shared values, beliefs, assumptions, norms and roles that influence individual team member and collective behaviors with the team environment (Shin et al., 2016). This culture is built on several key elements that together create a cohesive and high-performing unit.

A successful team develops a strong collective identity that is positively perceived both within the team, promoting behavioral consistency, meaning and connectedness (Ashforth & Mael, 1989; Shin et al., 2016) and by the broader organization, enhancing the team's reputation and coherence. By developing shared mental models regarding goals, success, and influence, the team perceives and interprets organizational events similarly, reducing ambiguities and frictions in work processes, articulating expectations, and, ultimately, ensuring commitment and collective efficacy (O'Reilly et al., 1991; Shin et al., 2016).

Under the impetus of team autonomy, it is imperative to recognize the emergence of different subcultures with the same organizations depending on factors such as location, functional focus, and professional background (Bloor & Dawson, 1994; Shin et al., 2016). Understanding these variations is crucial, as they influence organizational behaviors and facilitate the implementation of customized management approaches that address specific group needs and challenges (Schreuder et al., 2020). Since employees often identify more with their immediate work group than the broader organization, collective sense-making within teams may diverge from the overarching organizational culture (Adkins & Caldwell, 2004; Lok et al., 2005; Shin et al., 2016). As a result, the overall organizational culture is shaped by the coexistence of the central organizational values and the peripheral team-specific values (Adkins & Caldwell, 2004).

Developed by Robert Quinn and John Rohrbaugh (1983) and widely supported as one noticeable model, the Competing Values Framework (CVF) recognizes how organizations face conflicting demands and priorities. This framework identifies four key cultural types, each distinguished by specific values and norms. In CVF, cultural values are arranged along two intersecting dimensions: flexibility versus control, and internal versus external focus (Quinn et al., 2020). These two axes produce the following quadrants:

Human Relations Culture (also known as Clan culture) is characterized by its internal orientation and emphasis on flexibility. It fosters collaboration, team cohesion, employee engagement, and strong interpersonal relationships. In contrast, Open System Culture (or Innovation culture) also promotes flexibility but with an external focus, encouraging entrepreneurial thinking, adaptability, and risk-taking. On the other hand, Internal Procedures Culture (also known as Rules or Hierarchy culture) prioritizes control and stability with an internal focus. This culture values efficiency, consistency, adherence to rules, and the use of formal

processes and hierarchies. Lastly, Rational Goal Culture (or Market culture), has a strong emphasis on external control, focusing on achieving measurable outcomes, competitiveness, and customer satisfaction (Shin et al., 2016).

The CVF offers a structured lens to explore how different team cultures shape different team behaviors and outcomes, arguing that no single team culture is superior and that the most successful organizations often benefit from elements of multiple types, albeit in different proportions (Quinn et al., 2020).

A rules-based culture within teams can cultivate an environment where members have a clear understanding of role expectations, therefore enhancing task performance through precise and efficient task completion. This type of culture emphasizes predictable work procedures and processes, which supports accuracy and efficiency in executing tasks. Additionally, a strong sense of mission and clarity in roles contributes to team dedication, a key element of TWE (Costa et al., 2014; Shin et al., 2016). The focus on rules, efficiency, and responsibility within this culture directs team efforts towards reliable task execution, reducing errors and improving overall performance.

Similarly, Clan Culture emphasizes teamwork, cohesion, consensus, and sense of unity. In this environment, team members often prioritize collective goals over individual dissent or risk-taking, which can sometimes limit creative input. However, it focus on collaboration and mutual support fosters high performance and strengthens interpersonal relationships, reflecting strong team absorption (Costa et al., 2014; Shin et al., 2016). Members in a Clan Culture are motivated to maintain harmony and align with group norms to avoid conflicts and preserve social security, which positively impacts team vigor and performance (Shin et al., 2016). Their commitment to avoiding disruptions and focusing on collective success enhances their overall engagement and effectiveness within the team (Costa et al., 2014).

Market Culture focuses on enhancing task performance through a strong emphasis on profitability, competitive advantage, and achieving market dominance (Cameron & Quinn, 2006; Costa et al., 2014). Similar to the Rules Culture, this approach directs team members' efforts towards competitiveness, driven by a clear sense of mission, which serves as a predictor of team dedication. The results-oriented nature of the Market Culture encourages members to prioritize high-quality outputs. In recent decades, many organizations have adopted team-based work

structures to remain agile and responsive to changing market conditions (Costa et al., 2014; Shin et al., 2016).

In contrast, Innovation Culture is geared towards enhancing creative performance within teams by promoting risk-taking, experimentation, and a dynamic entrepreneurial mindset (Shalley & Gilson, 2004; Shin et al., 2016). In this culture, team members are encouraged to challenge conventional approaches and engage in innovative thinking, which leads to significant creative outputs (Cameron & Quinn, 2006; Costa et al., 2014). Research supports the positive impact of Innovation Culture on creative and innovative performance at the organizational level (Büschgens et al., 2013; Shin et al., 2016). By fostering an environment that supports experimentation and challenges norms, this culture aligns with promoting TWE, particularly through enhancing team dedication and embracing the sense of challenge in tasks (Costa et al., 2014; Shin et al., 2016).

Considering the unique characteristics and values of each team culture, it becomes clear that each type of culture plays a pivotal role in shaping how HPWS initiatives are perceived and implemented within the team. This symbiotic interaction has distinct influences on team engagement and performance depending on the team culture they are part of. These differences are particularly obvious in cultures that have inner tensions (Clan Culture Vs. Market Culture and Rules Culture Vs. Innovation Culture) (Costa et al., 2014; Shin et al., 2016).

By cultivating a team culture that aligns with the principles of HPWS, managers can create an environment where all team members are fully engaged, motivated and committed to achieving shared goals. Conversely, the effectiveness of HPWS may be hampered if it is implemented alongside a team culture that is averse to its foundations. Considering this we hypothesize that:

H5: *Team culture interacts with HPWS in explaining work engagement.*

Detailing the four cultural quadrants, this hypothesis is further divided into four sub-hypotheses as follows:

H5a: Team culture interacts with HPWS in such a way that when Innovation culture is high the relation is stronger

H5b: Team culture interacts with HPWS in such a way that when Clan culture is high the relation is stronger.

H5c: Team culture interacts with HPWS in such a way that when Rules culture is high the relation is weaker.

H5d: Team culture interacts with HPWS in such a way that when Market culture is high the relation is weaker.

The same rationale applies between HPWS and Team performance.

H6: *Team culture interacts with HPWS in explaining Team Performance*

Detailing the four cultural quadrants this hypothesis is further divided into four sub-hypotheses as follows:

H6a: Team culture interacts with HPWS in such a way that when Innovation culture is high the relation with Team Performance is stronger.

H6b: Team culture interacts with HPWS in such a way that when Clan culture is high the relation with Team Performance is stronger.

H6c: Team culture interacts with HPWS in such a way that when Rules culture is high the relation with Team Performance is weaker.

H6d: Team culture interacts with HPWS in such a way that when Market culture is high the relation with Team Performance is weaker.

Overall, team culture is expected to play a significant role in shaping TWE, which in turn influences team performance. This is expected to occur at the true team level but also as regards the individual perceptions of these variables. By fostering a positive and supportive team culture that values communication, recognition, purpose and development, organizations can create an environment where team members are highly engaged and motivated to achieve their collective goals, ultimately driving improved team performance and organizational success. Considering this we hypothesize that:

H7: *Team culture interacts with Team Work Engagement in explaining Team Performance.*

Detailing the four cultural quadrants this hypothesis is further divided into four sub-hypotheses as follows:

H7a: Team culture interacts with Team Work Engagement in such a way that when Innovation culture is high the relation with Team Performance is stronger.

H7b: Team culture interacts with Team Work Engagement in such a way that when Clan culture is high the relation with Team Performance is stronger.

H7c: Team culture interacts with Team Work Engagement in such a way that when Rules culture is high the relation with Team Performance is weaker.

H7d: Team culture interacts with Team Work Engagement in such a way that when Market culture is high the relation with Team Performance is weaker.

As a consequence of the previous hypotheses, and joining all the variables in the conceptual model, we propose the mediation is moderated by culture in such a way that:

H8: Team culture interacts with the indirect effect of HPWS in explaining Team Performance.

Detailing the four cultural quadrants this hypothesis is further divided into four sub-hypotheses as follows:

H8a: Team culture interacts with the indirect effect of HPWS in explaining team performance in such a way that when Innovation culture is high the indirect effect is stronger

H8b: Team culture interacts with the indirect effect of HPWS in explaining team performance in such a way that when Clan culture is high the indirect effect is stronger.

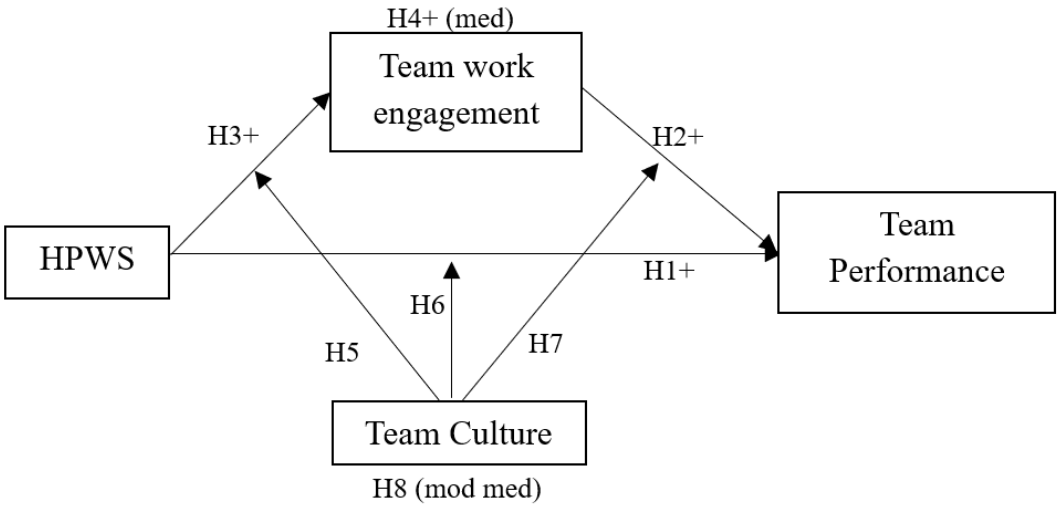
H8c: Team culture interacts with the indirect effect of HPWS in explaining team performance in such a way that when Rules culture is high the indirect effect is weaker.

H8d: Team culture interacts with the indirect effect of HPWS in explaining team performance in such a way that when Market culture is high the indirect effect is weaker.

Chapter 3. Conceptual Model

To illustrate the relationships between the variables, outcomes, and control variables, a comprehensive conceptual model was developed and is presented in Figure 3.1.

Figure 3.1 - Conceptual model and respective hypotheses



H1: HPWS is positively associated with Team Performance.

H2: Team Work Engagement is positively associated to Team Performance.

H3: HPWS is positively associated with Team Work Engagement.

H4: HPWS is positively associated with Team Performance via Team Work Engagement.

H5: Team culture interacts with HPWS in explaining work engagement.

H5a: Team culture interacts with HPWS in such a way that when Innovation culture is high the relation is stronger.

H5b: Team culture interacts with HPWS in such a way that when Clan culture is high the relation is stronger.

H5c: Team culture interacts with HPWS in such a way that when Rules culture is high the relation is weaker.

H5d: Team culture interacts with HPWS in such a way that when Market culture is high the relation is weaker.

H6: Team culture interacts with HPWS in explaining Team Performance.

H6a: Team culture interacts with HPWS in such a way that when Innovation culture is high the relation with Team Performance is stronger.

H6b: Team culture interacts with HPWS in such a way that when Clan culture is high the relation with Team Performance is stronger.

H6c: Team culture interacts with HPWS in such a way that when Rules culture is high the relation with Team Performance is weaker.

H6d: Team culture interacts with HPWS in such a way that when Market culture is high the relation with Team Performance is weaker.

H7: Team culture interacts with Team Work Engagement in explaining Team Performance.

H7a: Team culture interacts with Team Work Engagement in such a way that when Innovation culture is high the relation with Team Performance is stronger.

H7b: Team culture interacts with Team Work Engagement in such a way that when Clan culture is high the relation with Team Performance is stronger.

H7c: Team culture interacts with Team Work Engagement in such a way that when Rules culture is high the relation with Team Performance is weaker.

H7d: Team culture interacts with Team Work Engagement in such a way that when Market culture is high the relation with Team Performance is weaker.

H8: Team culture interacts with the indirect effect of HPWS in explaining Team Performance.

H8a: Team culture interacts with the indirect effect of HPWS in explaining team performance in such a way that when Innovation culture is high the indirect effect is stronger.

H8b: Team culture interacts with the indirect effect of HPWS in explaining team performance in such a way that when Clan culture is high the indirect effect is stronger.

H8c: Team culture interacts with the indirect effect of HPWS in explaining team performance in such a way that when Rules culture is high the indirect effect is weaker.

H8d: Team culture interacts with the indirect effect of HPWS in explaining team performance in such a way that when Market culture is high the indirect effect is weaker.

The rationale behind the hypotheses pertaining to the interaction effect between team culture and HPWS is based on the inference that HPWS is more prone to leverage a focus on flexibility rather than a focus on control. Actually, the HR literature that highlights the emphasis on practices such as those comprehended in HPWS names them as “Commitment HR”, contrasting with “Control HR” (Peccei & Van de Voorde, 2019).

Chapter 4. Method

This chapter outlines the methodology employed in the study, detailing the procedural steps, sample characteristics, data analysis techniques, and measurement tools utilized.

4.1. Procedures

After obtaining the required authorization from the HR department to deploy the survey, an email was sent by a manager inviting employees to participate in the survey. This email contained a brief description of the study as well as the informed consent stating it is anonymous, voluntary and that all data was treated in aggregated way to test the hypothesis. Likewise, that all the demographic data asked for sample description purposes is not mandatory. We took care into providing the conditions so to effectively guarantee full anonymity of participation. The email also included an expectation as regards the time it takes to complete the survey and the university email from the researcher to offer availability to clarify any doubt or any issue the survey may raise.

The email contained an online link to a Qualtrics software questionnaire that provided access in three languages (Portuguese, English, and Spanish) due to the many nationalities of individuals within the organization.

After two weeks a reminder was sent to encourage the participation of those that did not have the opportunity to do so.

4.2. Sample

Of 136 participants that answered the questionnaire, nine were excluded due to missing values; thus we received 127 valid responses. This sample is mostly feminine (54.3%), although 6.3% opted not to disclose their gender. The mean age falls within the 35 to 39 years-old interval with 58.6% respondents being younger than 40 years-old. About one third of respondents (30.7%) reported to be integrated in teams up to five members; 49.6% in teams from 6 to 10 members, 11% in teams with 11 to 20 members, and the remaining in larger than 20 members teams. The average organizational tenure is 2.82 which corresponds to the 3 to 6 years tenure but 36.2% reported up to 2 years working tenure in the organization. About 10% of the sample reported being working in the organization for 11 or more years.

4.3. Data Analysis Strategy

Data was first screened for missing values and monotonous responses, after which a workable 127 cases were tested for psychometric quality. Namely we applied a principal component analysis to test construct validity where a valid solution is indicated by KMO (above .500) concomitant to a Bartlet's X2 statistic that reject the null hypothesis (p<.01). A solution should also account for at least 60% of variance after rotation and all items have commonality of at least .500. We opted for varimax rotation because it is orthogonal and offers a clearer view on the items shared variance. We opted to run PCA instead of confirmatory factor analysis (CFA) due to the small sample size. Still, we kept this choice open in case the PCA solution strongly differs from the theoretical measure. In such case a CFA is considered valid if a set of fit indices attain determined thresholds. According to Hair et al. (2019) these are: $X^2/df<3$, and non-significant X^2 statistics (p<.05); Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI) both above .95. The Root Mean Squared Error of Approximation (RMSEA) and Standardized Root Mean Square Residuals (SRMR) both below .08. Such a solution has construct validity. Additionally, measures should be reliable, i.e. they should be consistent in their values which is indicated by Cronbach alpha. This reliability indicator of internal consistency states a measure is reliable when the 0.70 is achieved.

The hypotheses are tested with PROCESS Macro (Hayes, 2017), which is an add-on to SPSS that is able to simultaneously test multiple direct, indirect and interaction effects according to pre-establish conceptual models. By default, this program generates path coefficients and a bootstrapping procedure on 5000 repetitions that produces lower and upper bounds for a 90% confidence interval, which is the recommended procedure to control against data variations, which p-value alone does not do. If the interval comprehended between the lower bound and the upper bound does not include the value zero, then the coefficient can be considered significant with 90% confidence. Still, the program generates the p-value for each effect. Lastly, the program also computed moderated mediation effects, which is suitable for our conceptual model.

As a caveat in cross-sectional research (i.e. when data for the variables in the conceptual model is perceptual in nature and is collected from the same source at the same time) it is advisable to test for common method bias. This is conducted with Harman's test which involves a PCA with all the items from all the variables in the conceptual model where the first component should not

be simultaneously: 1) mixed with items from difference constructs, and 2) explain more than 50% variance accounted by the solution before rotation.

4.4. Measures

HPWS was measured with Tamkin (2004) scale that operationally defines nine dimensions closely related to Pfeffer (1998), with two items each. These are: job security, generous compensation, rigorous recruitment and selection, generalized training, transparent information on the financial status of the company, and low social status differences within the organization. Participants answered on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

A principal component analysis with Kaiser criterion, extracted a valid (KMO=.847, Bartlett $X^2(153)=872.440$, $p<.001$) five components solution that accounted for 66.6% of variance after rotation (Varimax) but one item (Auto1 - In my team everyone has work autonomy) had unacceptable commonality and was thus removed. After its removal the valid five component solution remained stable (KMO) accounting for 68% total variance (same rotation). This solution does not match the original proposed structure of eight components, but its qualitative interpretation and internal reliability indicates it is meaningful (Table 4.1). Thus, a first component comprehends open communication, performance management and extensive training and development which we interpret as a cluster of performance-oriented practices which has good reliability (Cronbach alpha=.827). The second component comprehends four items and is centered around status equality to which one item from autonomy and another from career opportunities join. We interpret this component as expressing proximity between team members and openness for communication which link to career opportunities. This component also shows good reliability (Cronbach alpha=.794). The third component comprises three items from compensation and career, and we interpret these as clustering around the idea that compensation and career opportunities are merit-based (Cronbach alpha=.794). The fourth component comprises both items from extensive recruitment and selection and has good reliability (r_{SB}=.743). The last component comprises also both items from job security and has a reliability index just slightly below the threshold (r_{SB}=.690). The overall scale (with the exclusion of the first item from autonomy has good reliability (Cronbach alpha=.880).

Table 4.1 - PCA for HPWS

	Component				
In my team everyone…	Perf.	Status	Merit	R&S	JobSec
OpCom2 …is aware of the team's financial performance.	**.761**	.187	.107	-.185	.193
Perf1 …receives formal performance appraisals on a routine basis.	**.710**	.297	.258	-.080	-.102
Perf2 …receives performance feedback from more than one source.	**.689**	.357	.242	.046	-.067
OpCom1 ..is aware of the team's operational performance.	**.684**	.244	-.022	.185	.189
TD2 ...receives intensive/extensive training in technical and soft skills.	**.674**	-.145	.284	.404	.173
TD1 …is committed to training and development.	**.485**	.215	.015	.413	.282
Status1_My team leader communicates openly with us.	.201	**.796**	-.082	.084	.075
Status2_In my team, there is a culture of equal treatment for everyone regardless of hierarchy.	.235	**.780**	.095	.102	.180
Auto2_In my team, we are involved in programs designed to encourage participation.	.415	**.614**	.160	.146	.137
Career2_My team provides many opportunities for career development	.110	**.586**	.466	.186	.265
Comp1 …receives above market average compensation and benefits.	.042	-.073	**.819**	.139	-.108
Comp2_In my team, we are paid primarily based on our competency and also our team performance.	.227	.130	**.777**	.140	.115
Career1_In my team the opportunities to have a promotion in the career are based upon merit or performance.	.243	.181	**.699**	-.002	.303
RS2_In my team, new colleagues are selected based on rigorous tests or interview panels.	.002	.138	.073	**.857**	-.007
RS1_All my team colleagues were hired based on intensive recruiting efforts.	.056	.127	.200	**.791**	.216
JSec1_In my team new colleagues are usually offered stable employment contracts.	.096	.118	.024	.103	**.840**
JSec2_Job security is part of my team culture.	.115	.194	.161	.119	**.789**
Cronbach alpha / r_{SB}	.827	.794	.733	.743	.691

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Because theoretically, HPWP can be conceived under an overall system (HPWS) we computed the overall index for all the practices, which has also showed acceptable reliability (Cronbach alpha=.844).

Team Work Engagement was measured with nine items from the TWE Scale (Costa et al., 2014) based on Schaufeli et al. (2002) with a collective reference-shift to capture the team-level (e.g. As a team, (1) "We feel bursting with energy", (2) "We are proud of the work that we do", (3) "We are enthusiastic about our job", and (4) "We feel happy when we are working intensively"). Participants answered on a 5-point Likert scale ranging (1 - strongly disagree; 5 - strongly agree).

A PCA with Kaiser criterion extracted a valid (KMO=.895, Bartlett $X^2(36)=811.708$, $p<.001$) single component solution that accounted only for 62.5% of variance after rotation (Varimax). This component has acceptable reliability (Cronbach alpha=.924) with all items showing strong loadings (Table 4.2).

Table 4.2 - PCA for TWE

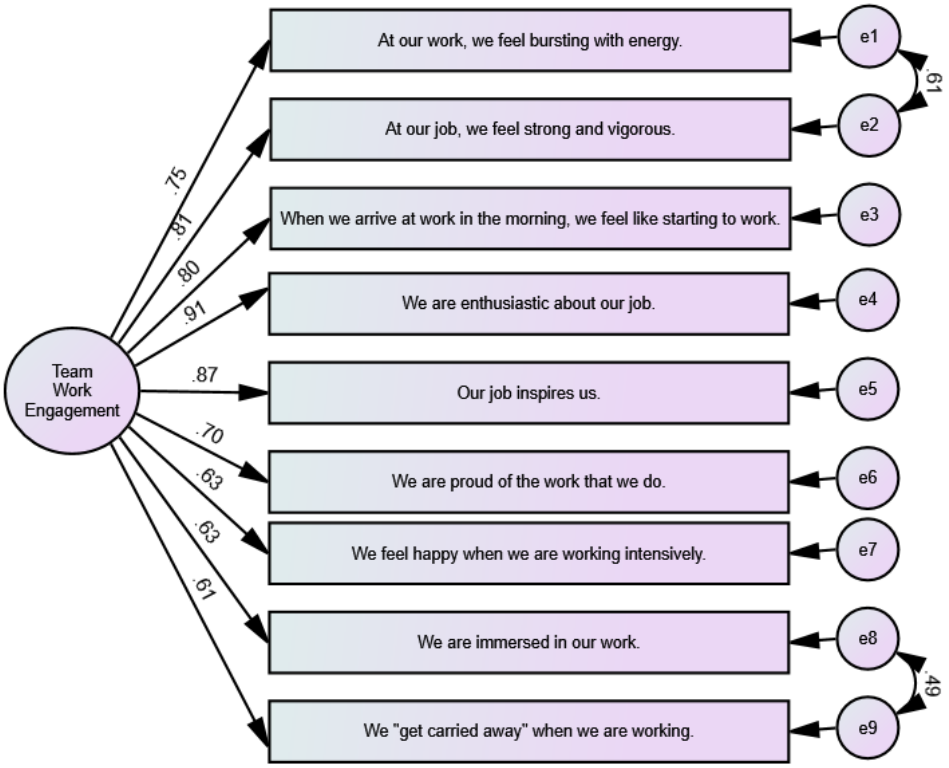
	TeamWork Engagement
D1_We are enthusiastic about our job.	**.885**
V3_When we arrive at work in the morning, we feel like starting to work.	**.850**
D2_Our job inspires us.	**.850**
V2_At our job, we feel strong and vigorous.	**.849**
V1_At our work, we feel bursting with energy.	**.803**
D3_We are proud of the work that we do.	**.754**
A2_We are immersed in our work.	**.720**
A3_We "get carried away" when we are working.	**.690**
A1_We feel happy when we are working intensively.	**.683**
Cronbach alpha	.924

Extraction Method: Principal Component Analysis.
a. 1 components extracted.

Because this solution differs from the one expected (three-factor vigor, dedication, and absorption as theorized by Schaufeli et al., 2002) we ran a confirmatory factor analysis similarly to Costa et al. (2014) keeping in mind the small sample size. The CFA for the original three-actor

solution has an unacceptable fit ($X^2(24)=87.118$, $p<.001$; Normed $X^2=3.630$; CFI=.921; TLI=.882; RMSEA=0.144 CI90 [0.113; 0.178] PClose<.001; SRMR=0.0929). A single factor solution has worse fit indices ($X^2(27)=129.813$, $p<.001$; Normed $X^2=4.808$; CFI=.872; TLI=.829; RMSEA=0.174 CI90 [0.144; 0.204] PClose<.001; SRMR=0.067) but with Lagrange Multipliers suggesting covariances between two couples of errors to improve the fit. Incidentally these are the exact covariances stated in Costa et al. (2014) paper. After adding these covariances the fit greatly improved ($X^2(25)=46.273$, $p=.006$; Normed $X^2=1.851$; CFI=.973; TLI=.962; RMSEA=0.082 CI90 [0.043; 0.119] PClose=0.079; SRMR=0.041). Based on these findings, we opted to keep the single-factor solution in this study (Figure 4.1).

Figure 4.1- CFA for single-factor TWE



Perceived team performance was measured with three items from Pearce and Sims' (2002) scale measured on a 5-point Likert scale (1-strongly disagree, 5-strongly agree), as follows: "My team does a very good work (high quality)", "My team is highly effective", and "My team does a very good job".

A PCA with Kaiser criterion extracted a valid (KMO=.753, Bartlett $X^2(3)=247.675$, $p<.001$) single component solution that accounted for 84.4% of variance after rotation (Varimax). This component has acceptable reliability (Cronbach alpha=.904) with all items showing strong loadings (Table 4.3).

Table 4.3 - PCA for Team Performance

	Team Performance
My team does a very good work (high quality).	**.930**
My team is highly effective.	**.914**
My team does a very good job.	**.913**
Cronbach alpha / r_{SB}	.904

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Team culture was measured based on Shin et al. (2016) scale based on the competing values model (Quinn et al., 2020) which comprises four quadrants measured with 4 items each: support / clan driven culture, rules / hierarchy driven culture, market / objectives driven culture, and innovation driven culture. Participants answered on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

A PCA with a theoretically driven decision to extract four components showed a valid solution (KMO=.847, Bartlett $X^2(153)=872.440$, $p<.001$) that exactly matched the expected association pattern of the items, e.g. all the four components have unique and higher loadings on consistent items (Table 4.4). This solution accounted for 78.2% of variance after rotation (Varimax) and all components have good reliability ($Cronbach\_alpha_{Clan}=.888$; $Cronbach\_alpha_{Innovation}=.880$; $Cronbach\_alpha_{Rules}=.842$; $Cronbach\_alpha_{Market}=.724$). The overall scale reliability is also good (Cronbach alpha=.895).

Table 4.4 - PCA for Team Culture

	Component			
	1	2	3	4
	Innov.	Clan	Rules	Markt.
Innov2_My team colleagues are innovative and accept new challenges.	**.846**	.303	.241	.054
Innov3_The environment in my team is characterized by change, creativity and facing new challenges.	**.829**	.326	.244	.083
Innov1_My team is dynamic and inclined towards risk-taking.	**.741**	.285	.191	.222
Clan1_In my team there is room to share problems of a personal nature.	.222	**.875**	.064	.057
Clan2_My team emphasizes human development, mutual trust, and participation.	.358	**.794**	.282	.041
Clan2_My team is characterized by personal cohesiveness and team-work.	.394	**.764**	.255	.075
Rules2_In my team we value formal rules and procedures.	.220	.230	**.819**	.152
Rules3_In my team, the work environment is characterized by rigorous and clear procedures.	.174	.099	**.782**	.325
Rules1_In my team we value efficiency, planning, and control.	.536	.249	**.684**	.079
Mkt1_My team is mainly focused on results and number of customers.	.103	.194	.051	**.819**
Mkt3_In my team, the work environment is competitive and emphasizes results obtained.	-.009	-.167	.166	**.808**
Mkt2_The principles governing my team are concerned with productivity and attainment of objectives.	.259	.171	.357	**.660**
Cronbach alpha	.888	.880	.842	.724

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

4.5. Common Method Bias

Due to the cross-sectional data collection design, it is possible that much of the shared variance among variables in the conceptual model are attributable to the implicit theories of respondents on the relationship between variables (e.g. TWE and Team Performance) which harms interpretability. To test this possibility that common method variance permeates the data, we ran Harman test. In the case of this study, we included all the items from HPWS, TWE, Team Performance, and Team

Culture in a single PCA to find a total variance explained by the first component of 35.32% from a total of 71.27% in nine components, which means it barely falls below the half accounted. As the HPWS is mostly dispersed in the remaining eight components, we reason that any common variance does not affect the most significant variable in the model (the HPWS as predictor) and technically it does not inflate the explained variation.

Chapter 5. Results

This section will start with the descriptive statistics (namely scale range, means, standard deviations) and bivariate correlations, so to gain an insight into the magnitude and patterns of association between the variables (both control and those that are comprised in the conceptual model).

5.1. Descriptive and bivariate statistics

Participants perceive their work team performance as being substantially high (M=4.17, SD=.73) while TWE is depicted as moderate (M=3.68, SD=.71) and HPWS are perceived also as being moderately present (M=3.57, SD=.53). Among the team culture dimensions, it is clan culture, the one that is perceived as stronger (M=4.01, SD=.81) as against market culture which is the least present (M=3.45, SD=.76). It is important to highlight that in all of these cultural dimensions some participants gave the maximum value to each dimension which means they experience a strong sense of cultural values present in their daily work lives. Although not depicted, frequency analyses on these cultural dimensions indicate that the percentage of respondents that gave extreme values (above 4.5) to cultural dimensions were: clan (29.9%), innovation (24.1%), rules (22.8%), and market (8.7%).

The bivariate statistics (Table 5.1) indicate that among the sociodemographic variables, only two weak correlations were found between age and perceived team performance (r=-.211, p<.05) and organizational tenure and rules culture (r=.206, p<.05). This suggests that older employees tend to report lower perceived team performance and higher rules culture. Therefore, the likelihood that results are accounted for by sociodemographic variables is weak. Conversely, the correlation patterns between HPWS and the remaining variables in the conceptual model is strong and transversal. HPWS is both positively associated with TWE (r=.558, p<.01) and team performance (r=.562, p<.01). Another informative association is found between TWE and team performance (r=.418, p<.01) which encourages the proposed conceptual model.

Additionally, HPWS and TWE are both associated with all team cultural dimensions (ranging from r=.333 to r=.658, p<.01) which stresses the possible theoretical status of culture as a predictor.

Table 5.1 - Descriptive and bivariate statistics

	Min-Max	Mean	S.D.	1	2	3	4	5	10	11	12	13	14
1. Gender	1-4	54.3%F	.76	1									
2. Age	1-9	4.14	1.75	-.092	1								
3. Team size	1-7	2.11	1.29	-.019	.196*	1							
4. Organizational tenure	1-6	2.82	1.23	-.026	.464**	.148	1						
5. HPWS	1.73-4.80	3.57	.53	-.061	.016	-.037	-.016	1					
6. Team Work Engagement	1-5	3.68	.71	-.010	.061	-.122	-.085	.558**	1				
7. Team Performance	1.67-5	4.17	.73	.052	-.211*	-.088	-.139	.562**	.418**	1			
8. Team Culture Innovation	1-5	3.82	.86	.012	-.095	-.111	-.029	.658**	.617**	.643**	1		
9. Team Culture Clan	1.33-5	4.01	.81	-.015	-.093	-.061	-.017	.588**	.363**	.581**	.678**	1	
10. Team Culture Rules	1.33-5	3.86	.78	.041	.040	-.099	.206*	.530**	.416**	.632**	.642**	.508**	1
11. Team Culture Market	1-5	3.45	.76	-.081	.111	.029	-.015	.506**	.333**	.397**	.341**	.234**	.488**

*p<.05; **p<.01

5.2. Hypotheses Testing

The ***first hypothesis*** posits that HPWS is positively associated with Team Performance. After controlling gender, age, team size, and organizational tenure, findings show a significant positive coefficient (B=.536, p<.01 90% CI [.326; .746] thus ***supporting H1***. Table 5.2 presents a detailed summary of the path coefficients for these effects.

The **second hypothesis** posits that TWE is positively associated to Team Performance. Findings show a non-significant coefficient (B=.137, p=.116 90% CI [-.006; .281]) thus ***rejecting H2*** (Table 5.2).

The **third hypothesis** posits that HPWS is positively associated to TWE. Findings show a significant coefficient (B=.706, p<.01 90% CI [.513; .900]) thus ***supporting H3*** (Table 5.2).

The **fourth hypothesis** posits an indirect positive effect of HPWS on Team Performance via TWE. Findings show a non-significant effect (.056 90% CI [-.043; .189]) thus ***rejecting H4*** (Table 5.2).

Bringing in the stated boundary condition of team culture, the ***fifth hypothesis*** states that that team culture interacts with HPWS in explaining work engagement. This hypothesis entails complex sub-hypotheses in the sense that the specific type of team culture determines whether the direct effect of HPWS on TWE is stronger or weaker. Therefore, findings are reported to the sub-hypotheses level. Table 5.3 presents the coefficients associated with these interaction effects. As regards H5a (Team culture interacts with HPWS in such a way that when ***Innovation culture*** is high the relation with TWE is stronger), the interaction term has a non-significant coefficient (B=.102, p=.146 90% CI [-.0138; .219]) thus rejecting H5a. The same occurs for H5b (Team culture interacts with HPWS in such a way that when Clan culture is high the relation with TWE is stronger) with a non-significant coefficient (B=.015, p=.866 90% CI [-.135; .166]) thus rejecting H5b. H5c (Team culture interacts with HPWS in such a way that when Rules culture is high the relation with TWE is weaker) has also a non-significant coefficient (B=.032, p=.754, 90% CI [-.138; .202]) thus rejecting H5c. Lastly, H5d (Team culture interacts with HPWS in such a way that when Market culture is high the relation with TWE is weaker) has also a non-significant coefficient (B=.058, p=.623, 90% CI [-.138; .255]) thus rejecting H5d. This ***fully rejects H5*** indicating that team culture does not modulate the effect of HPWS on TWE.

Table 5.2 - Path coefficients for direct and indirect effects

Variables	Team Work Engagement						Team Performance					
	B	se	t	*p*-value	90% CI LB-UP	HH	B	se	t	*p*-value	90% CI LB-UB	HH
Control variables												
Gender	.030	.070	0.434	.664	[-.0865; .1478]		.082	.067	1.228	.221	[-.0288; .1934]	
Age	.045	.034	1.302	.195	[-.0123; .1027]		-.092	.033	-2.799	.006	[-.1477; -.0378]	
TeamSize	-.062	.042	-1.464	.145	[-.1331; .0082]		-.017	.040	-.439	.661	[-.0856; .0480]	
OrgTenure	-.065	.053	-1.239	.217	[-.1538; .0222]		-.012	.050	-.254	.799	[-.0967; .0710]	
Direct effects												
HPWS	.706	.116	6.050	.001	[.5132; .9006]	H3_sup	.536	.126	4.239	.001	[.3266; .7461]	H1_sup
TWE							.137	.086	1.582	.116	[-.0065; .2813]	H2_ns
Indirect effects												
HPWS							.056	.071			[-.0438; .1897]	H4_ns

Hypothesis 6 also posits such interaction effect but on the relationship between HPWS and Team Performance. The sub-hypotheses mirror those established in the previous hypothesis five with cultural dimensions closer to the control pole weakening the direct effect while those closer to the flexibility pole strengthens it. Conversely to the previous hypothesis, only one interaction effect is non-significant (clan culture, B=.380 (p=.702) 90% CI [-.126; .202] thus rejecting H6b. As regards H6a (Team culture interacts with HPWS in such a way that when Innovation culture is high the relation with Team Performance is stronger) we found a coefficient of -.171 which, albeit having a p-value that indicates not being significant (p=.066) the 90% confidence interval shows otherwise ([-.324; -.018]), as shown in Figure 5.1. As scholars value more the bootstrapped intervals (Cumming, 2008), we opted to consider this a significant effect thus supporting H6a. H6c (Team culture interacts with HPWS in such a way that when Rules culture is high the relation with Team Performance is weaker) is also significant (B=-.213, p<.05 90% CI [-.384; -.042]), as Figure 5.2 shows, supporting this sub-hypothesis. Likewise, H6d is also supported (B=.299, p<.05; 90% CI [.077; .521]), as demonstrated in Figure 5.3. This offers ***partial support for H6***.

Figure 5.1 - Innovation Subculture * HPWS on Team Performance

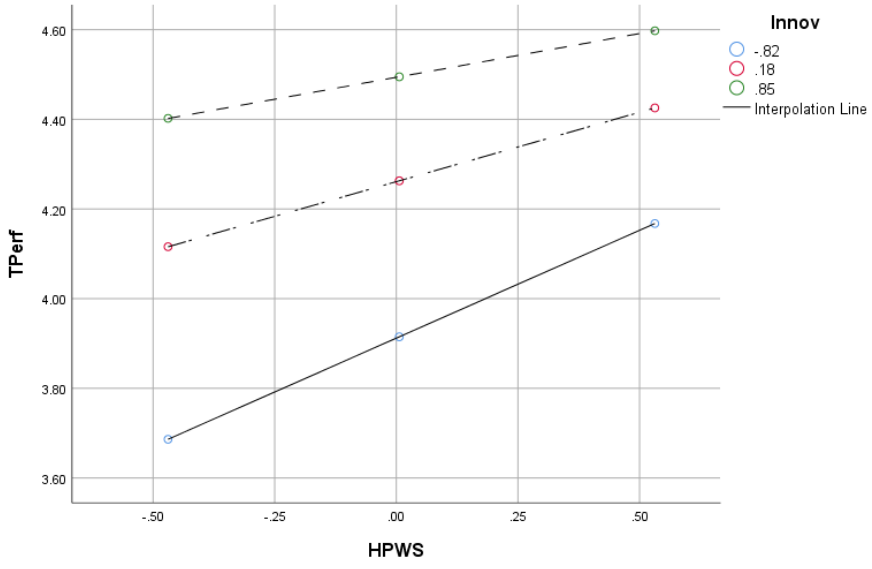


Figure 5.2 - Rules Subculture * HPWS on Team Performance

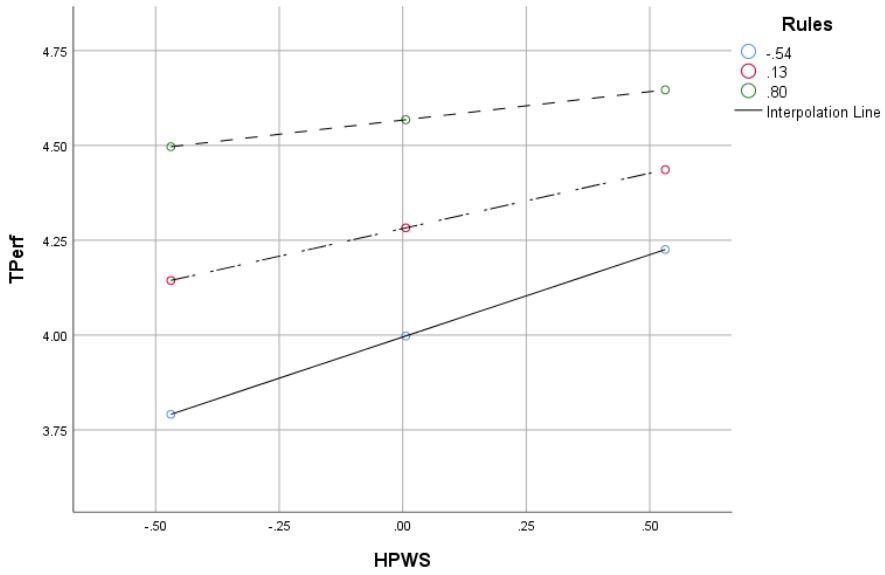
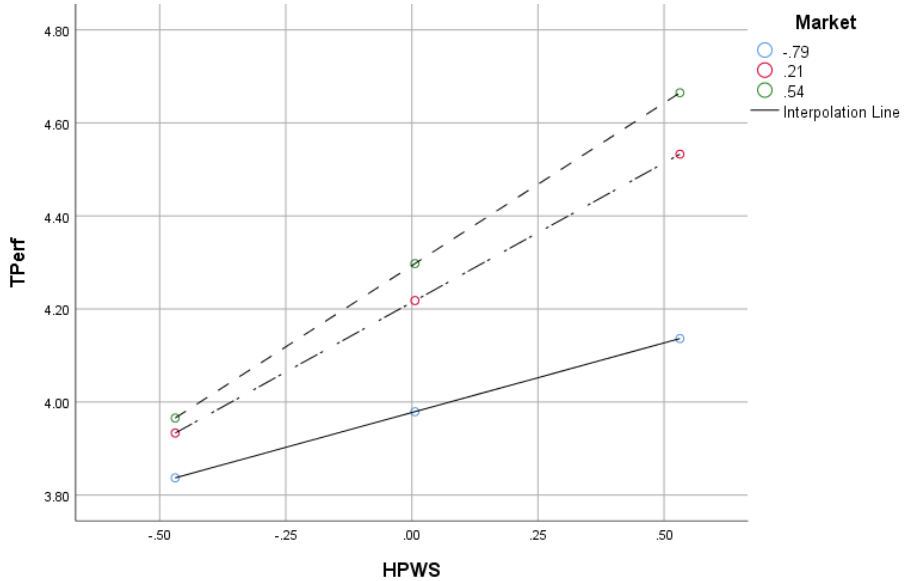
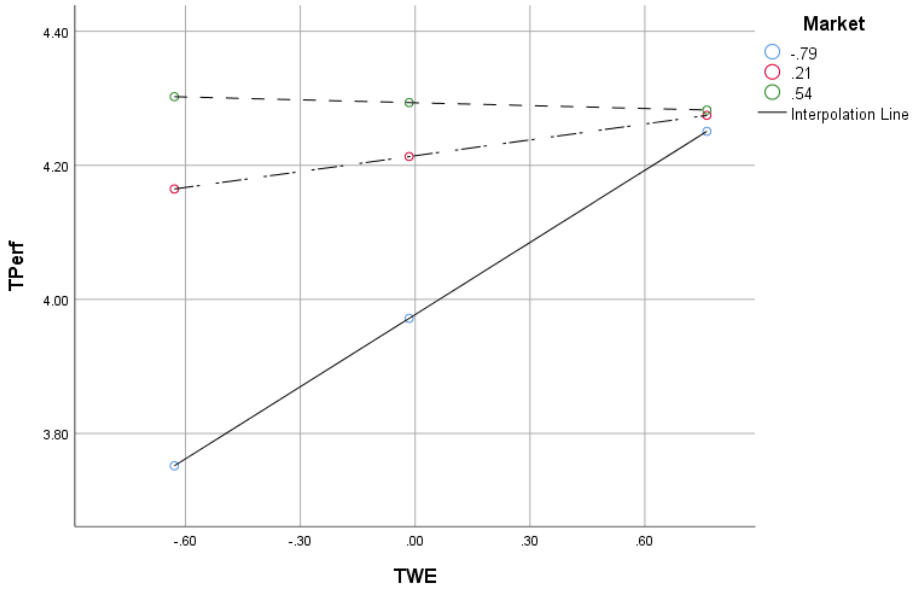


Figure 5.3 - Market Subculture * HPWS on Team Performance



The seventh hypothesis also states an interaction effect between team culture and TWE in explaining Team Performance. The respective sub-hypotheses follow the same logic (strengthen the direct effect towards the flexibility pole, and weaken towards the control pole). In this case, only one type of culture exerts this interaction effect. It is market culture that negatively affects the direct effect (-.279, p<.01 90% CI [-.440; -.118]), as shown in Table 5.3 and Figure 5.4, thus supporting this sub-hypothesis H7d.

Figure 5.4 - Market Subculture * TWE on Team Performance



The last hypothesis joins the boundary condition to the indirect effect stated in H4 thus positing that Team culture interacts with the indirect effect of HPWS in explaining Team Performance. The same pole-reasoning applies. As for H8a (Team culture interacts with the indirect effect of HPWS in explaining team performance in such a way that when Innovation culture is high the indirect effect is stronger), the indirect effect is always non-significant irrespective of the innovation culture level thus ***rejecting H8a***. As regards H8b, the indirect effect is significant only when clan culture is low (-1SD) thus ***supporting H8b***. H8c has a similar pattern than H8a with none of the levels of rules culture showing significant interaction on the indirect effect, thus ***rejecting H8c***. As per H8d (Team culture interacts with the indirect effect of HPWS in explaining team performance in such a

way that when Market culture is high the indirect effect is weaker), market culture does modulate the indirect effect of HPWS on Team Performance via TWE, in such a way that when the culture is weaker there is an indirect effect (.237 90% CI [.034; .406]). However, when it reaches or overpasses the mean level is becomes non-significant (.056 90% CI [-.043; .189] for means level, and -.010 90% CI [-.114; .142] for +1SD) which **supports H8d**. This ***partially supports H8***.

Table 5.3 - Path coefficients for interaction effects

Variables	Team Work Engagement						Team Performance					
	B	se	t	*p*-value	90% CI LB-UP	HH	B	se	t	*p*- value	90% CI LB-UB	HH
Interaction direct effects												
HPWS*Innov	.102	.070	1.46	.146	[-.0138; .2195]	H5a_ns	-.171	.092	-1.85	.066	[-.3246; -.0180]	H6a_sup
HPWS*Clan	.015	.091	.168	.866	[-.1358; .1664]	H5b_ns	.380	.099	.383	.702	[-.1264; .2023]	H6b_ns
HPWS* Rules	.032	.102	.314	.754	[-.1381; .2027]	H5c_ns	-.213	.103	-2.065	.041	[-.3846; -.0421]	H6c_sup
HPWS* Market	.058	.118	.491	.623	[-.1383; .2550]	H5d_ns	.299	.133	2.238	.027	[.0777; .5216]	H6d_sup
TWE*Innov							.076	.080	0.949	.344	[-.0567; .2087]	H7a_ns
TWE *Clan							-.109	.086	-1.256	.211	[-.2533; .0349]	H7b_ns
TWE * Rules							-.010	.082	-.125	.900	[-.1473; .1266]	H7c_ns
TWE * Market							-.279	.097	-2.882	.004	[-.4406; -.1188]	H7d_sup
Interaction indirect effects												
HPWS*Innov						-1SD	-.011	.051			[-.0704; .0882]	H8a_ns
						Mean	.012	.043			[-.0457; .0966]	
						+1SD	.037	.065			[-.0702; .1456]	
HPWS*Clan						-1SD	.148	.134			[.0126; .4514]	H8b_sup
						Mean	.100	.077			[-.0028; .2544]	
						+1SD	.025	.114			[-.1700; .2018]	
HPWS* Rules						-1SD	.051	.086			[-.0363; .2394]	H8c_ns
						Mean	.049	.061			[-.0282; .1692]	
						+1SD	.046	.075			[-.0716; .1736]	
HPWS* Market						-1SD	.237	.114			[.0340; .4069]	H8d_sup
						Mean	.056	.071			[-.0438; .1897]	
						+1SD	-.010	.079			[-.1144; .1421]	

Chapter 6. Discussion and Conclusion

Research in HRM has been producing a set of practices that, as a whole, establish HPWS, which is considered a positive driver of organizations. This is assumedly occurring at individual and collective levels, but it is reasonable to state that the joint effects are most likely occurring via team members interactions. Alongside, literature has been calling attention to the context where the so-called best practices are researched, because, from a contextual viewpoint (Martín-Alcázar et al., 2005), macro level drivers, such as organizational culture, are known to modulate perceptions about practices, to influence attitudes and the ensuing actions individuals take.

Therefore, it may add value to integrate both a team focus and the contextual dependencies of teams, e.g. team culture, into the research of HWPS effects on team level. Thus, this study was designed to test what the HPWS contribution to team performance is with a particular emphasis on the mediating role of TWE under the boundary condition of team culture. By examining these dynamics, the study provides valuable insights into optimizing HPWS across diverse team cultural contexts, highlighting the importance of aligning engagement strategies with cultural and contextual factors to enhance the effectiveness of SHRM and fully realize the potential of high-performance teams. To achieve these objectives, eight hypotheses were tested, exploring both direct and indirect relationships within the conceptual framework.

The first hypothesis posits a positive relationship between HPWS and team performance (H1), a hypothesis that was strongly supported by the findings. This outcome aligns with broader SHRM literature, which consistently demonstrates that well-implemented HPWS enhances employee skills, motivation, and opportunities, fostering higher team performance (Xi et al., 2021). The AMO framework underpins this result, suggesting that HPWS systematically empower employees to reach their highest potential (Zhang & Morris, 2014; Diogo & Costa, 2019). Key practices such as selective hiring, ongoing training, and performance-based rewards align employee objectives with organizational goals, fostering ownership and accountability (Xi et al., 2021).

Contrary to expectations, hypothesis 2 (H2), which has established a positive relationship between TWE and team performance, was not supported. This finding seems to challenge the prevailing assumption that engaged teams typically perform better due to higher levels of energy, commitment, and focus (Cesário & Chambel, 2017) but this direct relationship between TWE and

team performance is most likely more nuanced than previously thought, with several factors potentially contributing to this unexpected outcome. First, the moderate magnitude of TWE (as expressed by its means) may be too low to produce noticeable performance gains. Engagement's impact might be more pronounced at the individual level, but it may become diluted when aggregated at the team level (Cesário & Chambel, 2017). Although the measures in this study were not truly aggregated at team level, they do take the team as the reference instead of the individual themselves. Additionally, the effect of TWE on performance might be influenced by other variables, such as team culture and organizational factors (Bakker & Demerouti, 2007) which encourages the plausible moderating effect of context, such as the one expected for team culture. In highly structured or rule-oriented team cultures, the flexibility and dynamism that engagement brings might be constrained, reducing its impact on performance. Similarly, organizational factors like available resources and external pressures could also overshadow engagement effects (Salanova et al., 2010; Schaufeli et al., 2014). Even a highly engaged team may underperform if it lacks adequate resources or faces significant external challenges. This suggests that while engagement is important, its effectiveness may be context-dependent, requiring alignment with other team or organizational factors to fully translate into performance improvements (Taylor & Taylor, 2014). Thus, a broader context significantly influences performance outcomes, and the lack of support found to this hypothesis does not truly discourage the conceptual model. Furthermore, the complexity of team dynamics and performance metrics must be acknowledged. Team performance is shaped by various elements, including cohesion, leadership, and goal clarity. TWE may interact with these factors in complex ways, potentially influencing or moderating its direct impact on performance (Salas et al., 2008; Boon et al., 2018).

The third hypothesis (H3) proposes a positive relationship between HPWS and TWE, connection that the findings indeed supported. This outcome aligns with Social Exchange Theory, which suggests that when organizations invest in their employees through HPWS, employees respond with heightened engagement (Blau, 1964). HPWS foster TWE by creating a sense of psychological safety and a shared purpose within teams, both essential for driving engagement (Beech & Crane, 1999; Cooke et al., 2019; Bakker, 2022).

By logically linking HPWS to TWE and TWE to team performance, the fourth hypothesis (H4) proposed a mediating role of TWE mediates in this relationship. Findings did not support this

contention, suggesting that the positive impact of HPWS on team performance may be more direct and substantial, enhancing team capabilities such as skills and coordination, without requiring engagement as an intermediary (Han et al., 2020). Still, the rationale developed to discuss the second hypothesis lack of support is also valid in discussing this finding concerning the fourth hypothesis. To avoid redundancy, we do not repeat it, but again, the direct effect between TWE and team performance might be oversimplifying reality and context should be considered.

In line with literature that highlights contingencies and contextual dependencies (Martín-Alcázar et al., 2005) we have also considered the moderating role of team culture in this HPWS-performance relationship. This was firstly expressed with Hypothesis 5 (H5) that posits an interaction effect of team culture (Innovation, Clan, Rules, and Market) with HPWS in accounting for TWE. The overall rejection of H5 and its sub-hypotheses indicates that HPWS effectively promotes engagement across different team cultural contexts, by providing clear goals, support, and resources that transcend cultural variations within teams (Kramar, 2014). For example, while an Innovation culture encourages creativity and risk-taking, HPWS might still promote engagement through structured practices like selective hiring and continuous training, equipping employees with the necessary tools to thrive in any environment (Boon et al., 2018; Schreuder et al., 2020). Similarly, the universal value of HPWS elements like performance-based rewards and development opportunities likely contributes to consistent engagement levels, potentially overshadowing any cultural effects (Kramar, 2014). However, the study indicates that while HPWS are robust in driving engagement, team culture might still affect other team dynamics not captured by this analysis, warranting further research.

Extending this contingent and contextual approach to other paths in the conceptual model, this study proposed a sixth hypothesis (H6) that posited the team culture moderation effect upon the relationship between HPWS and team performance. Indeed, findings supported such interaction but only concerning determined types of team subculture. Namely, significant effects were observed in Innovation (H6a) and Market (H6d) cultures, but not in Clan (H6b) and Rules (H6c) cultures. The discussion of these findings must highlight that in innovation-oriented cultures, there was marginal support for the hypothesis that HPWS strengthens the relationship between HPWS and team performance (H6a). This is likely due to some tension between the innovative goals and the standardized nature of HPWS (Messersmith & Guthrie, 2010). In market-driven cultures, the

analysis revealed that the impact of HPWS on performance was somewhat enhanced (H6d), suggesting that where efficiency and outcomes are prioritized, HPWS more effectively boosted performance (Pfeffer, 1998; Kramar, 2014).

Conversely, in clan cultures, the hypothesis that HPWS would strengthen the performance link was not supported. This implies that in environments already characterized by high support and cohesion, the additional impact of the dynamic and employee-centered practices that HPWS aims to promote, might be minimal. Clan cultures, which already emphasize support and cohesion, may not see much added benefit from HPWS, while in Rules cultures, the rigid structure and controlled environment may limit the effectiveness of HPWS practices.

Further extending the contingency and contextual approach to our conceptual model, the seventh hypothesis proposed that team culture moderates the relationship between TWE and team performance, with a focus on how different cultural dimensions might impact this relationship. At the light of the findings concerning the second and fourth hypothesis, this is an import test for our previous reasoning. Findings do support our reasoning that the direct effect between TWE and team performance is oversimplistic as in market culture, the emphasis on short-term outcomes and efficiency was found to weaken the TWE-performance link, likely because the focus on immediate results and high stress levels undermines the long-term benefits of engagement (Costa et al., 2014; Shin et al., 2016). Resource allocation in these cultures is often directed towards competitive outcomes rather than team engagement, reducing the effectiveness of TWE. This inherent competitive nature may also clash with the collaborative and supportive environment necessary for effective engagement, leading to a misalignment that weakens the main effect.

Still, we would be expecting more interaction effects to occur as those concerning the other three subcultures (innovation, clan, and rules) were not significant, thus leaving out other possible reasons to explain the lack of association between TWE and team performance.

As a result of the integration of the previous hypotheses, we reasoned that team culture would moderate the indirect effect of HPWS on team performance through TWE, as stated in hypothesis 4. The results provided partial support, revealing significant findings in some cultural dimensions—specifically, Clan and Market cultures.

A team clan subculture interaction with HPWS indirect effect on Team performance via TWE (H8b) was found to vary with the levels of clan subculture. However, this is a surprising result when all the previous interactions between clan subculture and both HWS and TWE direct effects are considered because none of these was found to be statistically significant. Still, the consideration of joint effects is not the same as summing those effects because there are shared variances that each one of the partial analyses do not show. Therefore, without over-trusting results, and considering the possibility that there may have occurred some statistical artifact that is not apparent, we conclude that clan subculture does modulate the indirect effect of HPWS on team performance via TWE. Again, HPWS is seemingly built upon values of social cohesion as a requisite for high performing teams. This goes in line with the clan subculture which can make it redundant as patent in the absent indirect effect when clan subculture reaches moderate or high levels. Lastly, in Market subcultures (H8d) the focus on immediate results seems to weaken the indirect effect of HPWS until it becomes null when market subculture gains ground in the teams. This suggests that engagement-driven initiatives have limited impact as they go counter the prevailing team subculture.

In conclusion, this study underscores the effectiveness of HPWS in enhancing team performance, highlighting both their direct impact and the complex interplay with TWE and team culture. The positive relationship between HPWS and team performance supports the notion that well-implemented HPWS can significantly elevate team capabilities and outcomes. However, the anticipated mediating role of TWE was not uniformly supported, indicating that engagement's role as an intermediary may be more context-dependent than initially expected. The moderating effects of team culture reveal that HPWS are most effective in certain cultural contexts, such as Innovation and Market cultures, where their impact on performance is pronounced. Conversely, in Clan and Rules cultures, the direct impact of HPWS on performance may be more relevant, with less emphasis on engagement as a mediating factor. These findings highlight the need for organizations to tailor HPWS implementations according to their cultural contexts to optimize performance outcomes.

6.1. Limitations and Future Research

Several limitations of our study must be acknowledged. First, the cross-sectional design limits our ability to draw causal inferences, as the relationships we observed are based on a single point in time. Future research would benefit from adopting a longitudinal approach to better capture the dynamic interactions between HPWS, TWE, and team culture over time. Additionally, our reliance on self-reported data introduces the possibility of common method bias, despite our efforts to mitigate this through statistical controls. While our sample size was sufficient for the analyses we conducted, it may also limit the generalizability of our findings to other organizational contexts or industries. Furthermore, the moderate levels of engagement reported by our participants may not have been sufficient to produce significant performance outcomes, suggesting a need for more granular measures or a deeper exploration of the engagement-performance link.

Future researchers should consider exploring alternative mediators in the HPWS-performance relationship, such as job satisfaction, organizational commitment, or innovative behaviors, which might offer more insight into the pathways through which HPWS impact performance. Additionally, investigating external factors, such as industry characteristics or economic conditions, could provide a more comprehensive understanding of how these variables influence the effectiveness of HPWS. Longitudinal studies would also be valuable in capturing the evolving nature of the relationships between HPWS, TWE, and team performance, particularly in response to shifts in team culture or organizational strategy. Furthermore, examining the role of different team cultures across various industries could yield more tailored recommendations for organizations looking to implement HPWS effectively. Lastly, these constructs have been measured as individual perceptions, but their true nature positions them at the team level, with the required team-data collection and aggregation measures which were not possible due to constrains. Future research can benefit from treating data at true group level with similar conceptual models so to grasp the team-level effects and eventually some cross-effect upon team members individually.

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Chapter 8. Appendix

8.1. Questionnaire

Dear colleague,

My name is Marta Torre and I'm part of the corporate team as HR & Organizational Development Specialist in Portugal. I'm doing my master's in Human Resources Development Policies at ISCTE - University Institute of Lisbon, and I would like to invite you to participate in an academic study to test the sensitivity of the effectiveness of High Performance Work Systems (i.e. their ability to leverage performance) to team culture.

In the contemporary landscape of Strategic Human Resource Management, where the complexity of organizational life is increasingly influenced by the specialization, autonomy and dynamism of work groups, teams stand out as the closest unit of analysis to reality, questioning and challenging the universality of High Performance Work Systems adopted.

- This study is entirely anonymous and the more sincere your answers are the more valuable and useful they are.
- This survey is only intended for employees working in a team and with at least 6 months of experience in the company.
- Participation is entirely voluntary, and the survey will take only 10 minutes.

If you have any questions, please contact me at mlfte@iscte-iul.pt or marta.torre@rovensa.com and I will be happy to help.

If you accept to participate, please click on the arrow below.

I really appreciate everyone's collaboration!

Marta

Thank you for agreeing to participate.

To keep your answers confidential, I would need you to indicate please a code of your choice in the following terms: the first letter of your first name + the first letter of your family name + the last three numbers of your mobile phone.

For example, my name is Marta Torre and my mobile number ends in 340.

So my code would be MT340. If you are not comfortable with this coding, you may chose any word freely to use as a code as long as you can be able to keep it in your memory.

It is very important that you do not write your name anywhere on the survey.

What is your code?

Q1. High Work Performance Practices

A description of Human Resource Management practices follows. To what extent do you think these practices occur in your team?

Use the scale below to signal how much you agree or disagree that the statements apply to your team.

1	2	3	4	5
Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree

1	In my team new colleagues are usually offered stable employment contracts.
2	Job security is part of my team culture.
3	All my team colleagues were hired based on intensive recruiting efforts.
4	In my team, new colleagues are selected based on rigorous tests or interview panels.
5	In my team everyone has work autonomy.
6	In my team, we are involved in programs designed to encourage participation.
7	In my team everyone receives above market average compensation and benefits.
8	In my team, we are paid primarily based on our competency and also our team performance.
9	In my team everyone receives intensive/extensive training in technical and soft skills.

10	In my team everyone is committed to training and development.
11	My team leader communicates openly with us.
12	In my team, there is a culture of equal treatment for everyone regardless of hierarchy.
13	In my team everyone is aware of the team's operational performance.
14	In my team everyone is aware of the team's financial performance.
15	In my team everyone receives formal performance appraisals on a routine basis.
16	Everyone in my team receives performance feedback from more than one source.
17	My team provides many opportunities for career development.
18	In my team the opportunities to have a promotion in the career are based upon merit or performance.

You have complete 45% of the questionnaire

Q2. Team Culture

And to what extent do the following sentences describe your team?

1	**2**	**3**	**4**	**5**
Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree

1	In my team there is room to share problems of a personal nature.
2	My team is characterized by personal cohesiveness and team-work.
3	My team emphasizes human development, mutual trust, and participation.
4	My team is dynamic and inclined towards risk-taking.
5	My team colleagues are innovative and accept new challenges.
6	The environment in my team is characterized by change, creativity and facing new challenges.
7	In my team we value efficiency, planning, and control.
8	In my team we value formal rules and procedures.
9	In my team, the work environment is characterized by rigorous and clear procedures.
10	My team is mainly focused on results and number of customers.
11	The principles governing my team are concerned with productivity and attainment of objectives.
12	In my team, the work environment is competitive and emphasizes results obtained.

Q3. Team Work Engagement

And to what extent do the following sentences describe your team?

1	2	3	4	5
Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree

1	At our work, we feel bursting with energy.
2	At our job, we feel strong and vigorous.
3	We are enthusiastic about our job.
4	Our job inspires us.
5	When we arrive at work in the morning, we feel like starting to work.
6	We feel happy when we are working intensively.
7	We are proud of the work that we do.
8	We are immersed in our work.
9	We "get carried away" when we are working.

You have complete 90% of the questionnaire

Q4. Team Performance

And, overall, what do you think about your team's performance? Remember that the survey is anonymous and confidential.

1	2	3	4	5
Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree

1	My team does very good work (high quality).
2	My team is highly effective.
3	My team does a very good job.

Q4. Characterization

For the purpose of characterizing the sample as a whole, **could you please indicate your gender?**

◯ Male

◯ Female

◯ Non-binary

◯ Prefer not to indicate

And your age group?

◯ until 25 years

◯ 25 to 29 years

◯ 30 to 34 years

◯ 35 to 39 years

◯ 40 to 44 years

◯ 45 to 49 years

◯ 50 to 54 years

◯ 55 to 59 years

◯ 60 or older

How big is your team?

◯ Up to 5

◯ 6 to 10

◯ 11 to 20

◯ 21 to 30

◯ 31 to 40

◯ 41 to 50

◯ 51 or bigger

How long have you been working at the company?

◯ More than 6 months and less than 1 year

◯ 1 to 2 years

◯ 3 to 6 years

◯ 7 to 10 years

◯ 11 to 20 years

◯ For more than 20 years

You have reached 100% of the survey! Thank you very much!

8.2. Process Outputs

For Open System Culture as moderator

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 59
    Y  : TPerf
    X  : HPWS
    M  : TWE
    W  : Innov

Covariates:
 Gender   Age      TeamSize OrgTen

Sample
Size:  127

**************************************************************************
OUTCOME VARIABLE:
 TWE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6777      .4592      .2942    14.4375     7.0000   119.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     -.0118      .1988     -.0592      .9529     -.3414      .3179
HPWS          .3558      .1214     2.9315      .0040      .1546      .5571
Innov         .4106      .0792     5.1861      .0000      .2793      .5418
Int_1         .1029      .0703     1.4620      .1464     -.0138      .2195
Gender        .0052      .0641      .0809      .9357     -.1011      .1115
Age           .0654      .0314     2.0823      .0395      .0133      .1175
TeamSize     -.0398      .0388    -1.0262      .3069     -.1042      .0245
OrgTen       -.0763      .0480    -1.5912      .1142     -.1558      .0032

Product terms key:
 Int_1    :        HPWS     x        Innov

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0097     2.1375     1.0000   119.0000      .1464
----------
    Focal predict: HPWS     (X)
          Mod var: Innov    (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.
```

```
DATA LIST FREE/
   HPWS       Innov      TWE        .
BEGIN DATA.
     -.4693     -.8213     -.4954
      .0061     -.8213     -.3664
      .5314     -.8213     -.2238
     -.4693      .1787     -.1331
      .0061      .1787      .0448
      .5314      .1787      .2414
     -.4693      .8454      .1085
      .0061      .8454      .3189
      .5314      .8454      .5516
END DATA.
GRAPH/SCATTERPLOT=
 HPWS     WITH     TWE      BY       Innov    .

************************************************************************
OUTCOME VARIABLE:
 TPerf

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .7000      .4900      .2982    12.4927     9.0000   117.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.4588      .2002    22.2722      .0000     4.1269     4.7907
HPWS          .3401      .1282     2.6523      .0091      .1275      .5528
TWE           .0197      .0923      .2136      .8313     -.1333      .1728
Innov         .3490      .0898     3.8865      .0002      .2001      .4979
Int_1        -.1713      .0925    -1.8532      .0664     -.3246     -.0180
Int_2         .0760      .0800      .9498      .3442     -.0567      .2087
Gender        .0455      .0651      .6980      .4866     -.0625      .1534
Age          -.0638      .0324    -1.9684      .0514     -.1175     -.0101
TeamSize      .0025      .0393      .0636      .9494     -.0626      .0676
OrgTen       -.0284      .0491     -.5781      .5643     -.1097      .0530

Product terms key:
 Int_1    :        HPWS     x        Innov
 Int_2    :        TWE      x        Innov

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0150     3.4343     1.0000   117.0000      .0664
M*W      .0039      .9021     1.0000   117.0000      .3442
----------
    Focal predict: HPWS     (X)
          Mod var: Innov    (W)

Conditional effects of the focal predictor at values of the moderator(s):

      Innov     Effect         se          t          p       LLCI       ULCI
     -.8213      .4809      .1357     3.5431      .0006      .2558      .7059
      .1787      .3095      .1325     2.3368      .0212      .0899      .5292
      .8454      .1953      .1627     1.2007      .2323     -.0744      .4650
```

```
Moderator value(s) defining Johnson-Neyman significance region(s):
      Value    % below    % above
      .5595    77.9528    22.0472

Conditional effect of focal predictor at values of the moderator:
      Innov     Effect         se          t          p       LLCI       ULCI
    -2.8213      .8235      .2673     3.0809      .0026      .3803     1.2667
    -2.6213      .7893      .2511     3.1427      .0021      .3729     1.2057
    -2.4213      .7550      .2353     3.2084      .0017      .3648     1.1452
    -2.2213      .7207      .2199     3.2773      .0014      .3561     1.0853
    -2.0213      .6865      .2050     3.3483      .0011      .3465     1.0264
    -1.8213      .6522      .1908     3.4190      .0009      .3359      .9685
    -1.6213      .6179      .1773     3.4857      .0007      .3240      .9119
    -1.4213      .5837      .1648     3.5423      .0006      .3105      .8569
    -1.2213      .5494      .1535     3.5797      .0005      .2949      .8039
    -1.0213      .5151      .1437     3.5851      .0005      .2769      .7534
     -.8213      .4809      .1357     3.5431      .0006      .2558      .7059
     -.6213      .4466      .1299     3.4377      .0008      .2312      .6620
     -.4213      .4123      .1266     3.2579      .0015      .2025      .6222
     -.2213      .3781      .1259     3.0036      .0033      .1694      .5868
     -.0213      .3438      .1279     2.6885      .0082      .1318      .5558
      .1787      .3095      .1325     2.3368      .0212      .0899      .5292
      .3787      .2753      .1394     1.9751      .0506      .0442      .5063
      .5595      .2443      .1473     1.6580      .1000      .0000      .4886
      .5787      .2410      .1483     1.6254      .1068     -.0048      .4868
      .7787      .2067      .1588     1.3016      .1956     -.0566      .4701
      .9787      .1725      .1708     1.0100      .3146     -.1106      .4556
     1.1787      .1382      .1838      .7521      .4535     -.1665      .4429

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   HPWS       Innov      TPerf      .
BEGIN DATA.
     -.4693     -.8213     3.6863
      .0061     -.8213     3.9149
      .5314     -.8213     4.1675
     -.4693      .1787     4.1158
      .0061      .1787     4.2629
      .5314      .1787     4.4255
     -.4693      .8454     4.4021
      .0061      .8454     4.4949
      .5314      .8454     4.5975
END DATA.
GRAPH/SCATTERPLOT=
 HPWS     WITH     TPerf    BY       Innov    .
----------
    Focal predict: TWE      (M)
          Mod var: Innov    (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   TWE        Innov      TPerf      .
BEGIN DATA.
```

```
     -.6291     -.8213     3.9389
     -.0157     -.8213     3.9127
      .7620     -.8213     3.8794
     -.6291      .1787     4.2401
     -.0157      .1787     4.2605
      .7620      .1787     4.2864
     -.6291      .8454     4.4409
     -.0157      .8454     4.4924
      .7620      .8454     4.5577
END DATA.
GRAPH/SCATTERPLOT=
 TWE      WITH     TPerf    BY       Innov    .


****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Conditional direct effects of X on Y
      Innov     Effect         se          t          p       LLCI       ULCI
     -.8213      .4809      .1357     3.5431      .0006      .2558      .7059
      .1787      .3095      .1325     2.3368      .0212      .0899      .5292
      .8454      .1953      .1627     1.2007      .2323     -.0744      .4650

Conditional indirect effects of X on Y:




INDIRECT EFFECT:
 HPWS        ->    TWE         ->    TPerf

      Innov     Effect     BootSE   BootLLCI   BootULCI
     -.8213     -.0116      .0518     -.0704      .0882
      .1787      .0125      .0439     -.0457      .0966
      .8454      .0372      .0655     -.0702      .1456

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  90.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the 16th, 50th, and 84th percentiles.

NOTE: The following variables were mean centered prior to analysis:
          Innov    HPWS     TWE

------ END MATRIX -----
```

For Human Relations as moderator

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 59
    Y  : TPerf
    X  : HPWS
    M  : TWE
    W  : Clan

Covariates:
 Gender   Age      TeamSize OrgTen

Sample
Size:  127

**************************************************************************
OUTCOME VARIABLE:
 TWE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5829      .3398      .3591     8.7510     7.0000   119.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant      .0528      .2196      .2406      .8103     -.3112      .4169
HPWS          .6929      .1267     5.4674      .0000      .4828      .9031
Clan          .0634      .0912      .6953      .4882     -.0878      .2147
Int_1         .0153      .0912      .1681      .8668     -.1358      .1664
Gender        .0276      .0706      .3907      .6967     -.0895      .1447
Age           .0521      .0347     1.5011      .1360     -.0054      .1096
TeamSize     -.0597      .0429    -1.3924      .1664     -.1309      .0114
OrgTen       -.0689      .0531    -1.2981      .1968     -.1569      .0191

Product terms key:
 Int_1    :        HPWS     x        Clan

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0002      .0283     1.0000   119.0000      .8668
----------
    Focal predict: HPWS     (X)
          Mod var: Clan     (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   HPWS       Clan       TWE        .
```

```
BEGIN DATA.
     -.4693     -.6826     -.3675
      .0061     -.6826     -.0431
      .5314     -.6826      .3155
     -.4693     -.0159     -.3300
      .0061     -.0159     -.0007
      .5314     -.0159      .3632
     -.4693      .9841     -.2737
      .0061      .9841      .0628
      .5314      .9841      .4348
END DATA.
GRAPH/SCATTERPLOT=
 HPWS     WITH     TWE      BY       Clan     .

************************************************************************
OUTCOME VARIABLE:
 TPerf

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6865      .4713      .3091    11.5892     9.0000   117.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.4265      .2043    21.6720      .0000     4.0879     4.7652
HPWS          .3961      .1318     3.0041      .0033      .1775      .6147
TWE           .1434      .0851     1.6861      .0944      .0024      .2844
Clan          .2789      .0868     3.2125      .0017      .1350      .4229
Int_1         .0380      .0991      .3832      .7023     -.1264      .2023
Int_2        -.1092      .0869    -1.2560      .2116     -.2533      .0349
Gender        .0685      .0661     1.0361      .3023     -.0411      .1782
Age          -.0660      .0328    -2.0114      .0466     -.1204     -.0116
TeamSize     -.0028      .0401     -.0690      .9451     -.0693      .0638
OrgTen       -.0272      .0498     -.5464      .5858     -.1098      .0554

Product terms key:
 Int_1    :        HPWS     x        Clan
 Int_2    :        TWE      x        Clan

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0007      .1468     1.0000   117.0000      .7023
M*W      .0071     1.5775     1.0000   117.0000      .2116
----------
    Focal predict: HPWS     (X)
          Mod var: Clan     (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   HPWS       Clan       TPerf      .
BEGIN DATA.
     -.4693     -.6826     3.8250
      .0061     -.6826     4.0010
      .5314     -.6826     4.1954
     -.4693     -.0159     3.9991
```

```
      .0061     -.0159     4.1871
      .5314     -.0159     4.3948
     -.4693      .9841     4.2602
      .0061      .9841     4.4662
      .5314      .9841     4.6939
END DATA.
GRAPH/SCATTERPLOT=
 HPWS     WITH     TPerf    BY       Clan     .
----------
    Focal predict: TWE      (M)
          Mod var: Clan     (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   TWE        Clan       TPerf      .
BEGIN DATA.
     -.6291     -.6826     3.8616
     -.0157     -.6826     3.9953
      .7620     -.6826     4.1648
     -.6291     -.0159     4.0934
     -.0157     -.0159     4.1824
      .7620     -.0159     4.2953
     -.6291      .9841     4.4410
     -.0157      .9841     4.4630
      .7620      .9841     4.4910
END DATA.
GRAPH/SCATTERPLOT=
 TWE      WITH     TPerf    BY       Clan     .


****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Conditional direct effects of X on Y
       Clan     Effect         se          t          p       LLCI       ULCI
     -.6826      .3701      .1356     2.7301      .0073      .1454      .5949
     -.0159      .3955      .1315     3.0065      .0032      .1774      .6135
      .9841      .4334      .1791     2.4207      .0170      .1366      .7303

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 HPWS        ->    TWE         ->    TPerf

       Clan     Effect     BootSE   BootLLCI   BootULCI
     -.6826      .1487      .1342      .0126      .4514
     -.0159      .1005      .0777     -.0028      .2544
      .9841      .0255      .1147     -.1700      .2018

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  90.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000
```

```
W values in conditional tables are the 16th, 50th, and 84th percentiles.

NOTE: The following variables were mean centered prior to analysis:
          Clan     HPWS     TWE

------ END MATRIX -----
```

For Internal Procedures Culture as moderator

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 59
    Y  : TPerf
    X  : HPWS
    M  : TWE
    W  : Rules

Covariates:
 Gender   Age      TeamSize OrgTen

Sample
Size:  127

**************************************************************************
OUTCOME VARIABLE:
 TWE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5994      .3593      .3485     9.5349     7.0000   119.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant      .1136      .2213      .5135      .6086     -.2532      .4805
HPWS          .6147      .1190     5.1650      .0000      .4174      .8119
Rules         .1737      .0855     2.0313      .0445      .0319      .3156
Int_1         .0323      .1028      .3141      .7540     -.1381      .2027
Gender        .0184      .0702      .2626      .7933     -.0980      .1349
Age           .0512      .0341     1.4997      .1363     -.0054      .1078
TeamSize     -.0502      .0424    -1.1848      .2385     -.1205      .0200
OrgTen       -.0918      .0541    -1.6971      .0923     -.1815     -.0021

Product terms key:
 Int_1    :        HPWS     x        Rules

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
```

```
X*W      .0005      .0987     1.0000   119.0000      .7540
----------
    Focal predict: HPWS     (X)
          Mod var: Rules    (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   HPWS       Rules      TWE        .
BEGIN DATA.
     -.4693     -.5360     -.3805
      .0061     -.5360     -.0966
      .5314     -.5360      .2172
     -.4693      .1307     -.2748
      .0061      .1307      .0194
      .5314      .1307      .3445
     -.4693      .7973     -.1690
      .0061      .7973      .1354
      .5314      .7973      .4718
END DATA.
GRAPH/SCATTERPLOT=
 HPWS     WITH     TWE      BY       Rules    .

************************************************************************
OUTCOME VARIABLE:
 TPerf

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .7534      .5676      .2528    17.0639     9.0000   117.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.7449      .1888    25.1260      .0000     4.4318     5.0580
HPWS          .3199      .1122     2.8517      .0051      .1339      .5058
TWE           .0814      .0785     1.0369      .3019     -.0487      .2115
Rules         .4291      .0744     5.7675      .0000      .3057      .5524
Int_1        -.2133      .1033    -2.0652      .0411     -.3846     -.0421
Int_2        -.0104      .0826     -.1255      .9003     -.1473      .1266
Gender        .0124      .0598      .2073      .8362     -.0868      .1116
Age          -.0683      .0295    -2.3118      .0225     -.1172     -.0193
TeamSize      .0159      .0363      .4376      .6625     -.0443      .0761
OrgTen       -.1037      .0466    -2.2242      .0281     -.1810     -.0264

Product terms key:
 Int_1    :        HPWS     x        Rules
 Int_2    :        TWE      x        Rules

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0158     4.2649     1.0000   117.0000      .0411
M*W      .0001      .0158     1.0000   117.0000      .9003
----------
    Focal predict: HPWS     (X)
          Mod var: Rules    (W)
```

Conditional effects of the focal predictor at values of the moderator(s):

Rules	Effect	se	t	p	LLCI	ULCI
-.5360	.4342	.1194	3.6356	.0004	.2362	.6322
.1307	.2920	.1145	2.5511	.0120	.1022	.4818
.7973	.1498	.1464	1.0234	.3082	-.0929	.3924

Moderator value(s) defining Johnson-Neyman significance region(s):

Value	% below	% above
.4999	77.1654	22.8346

Conditional effect of focal predictor at values of the moderator:

Rules	Effect	se	t	p	LLCI	ULCI
-2.5360	.8608	.2732	3.1505	.0021	.4078	1.3138
-2.3527	.8217	.2561	3.2091	.0017	.3972	1.2462
-2.1693	.7826	.2392	3.2724	.0014	.3861	1.1791
-1.9860	.7435	.2226	3.3405	.0011	.3745	1.1125
-1.8027	.7044	.2064	3.4127	.0009	.3622	1.0466
-1.6193	.6653	.1907	3.4880	.0007	.3490	.9815
-1.4360	.6262	.1757	3.5635	.0005	.3348	.9175
-1.2527	.5871	.1615	3.6345	.0004	.3193	.8549
-1.0693	.5480	.1484	3.6925	.0003	.3019	.7940
-.8860	.5089	.1366	3.7240	.0003	.2823	.7354
-.7027	.4697	.1266	3.7095	.0003	.2598	.6797
-.5193	.4306	.1188	3.6242	.0004	.2336	.6276
-.3360	.3915	.1137	3.4447	.0008	.2031	.5800
-.1527	.3524	.1115	3.1603	.0020	.1675	.5373
.0307	.3133	.1126	2.7835	.0063	.1267	.4999
.2140	.2742	.1167	2.3495	.0205	.0807	.4677
.3973	.2351	.1237	1.9013	.0597	.0301	.4401
.4999	.2132	.1286	1.6580	.1000	.0000	.4264
.5807	.1960	.1330	1.4742	.1431	-.0244	.4164
.7640	.1569	.1441	1.0884	.2787	-.0821	.3959
.9473	.1178	.1568	.7510	.4542	-.1423	.3778
1.1307	.0787	.1707	.4609	.6457	-.2043	.3617

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

```
DATA LIST FREE/
   HPWS       Rules      TPerf      .
BEGIN DATA.
     -.4693     -.5360     3.7911
      .0061     -.5360     3.9975
      .5314     -.5360     4.2256
     -.4693      .1307     4.1439
      .0061      .1307     4.2827
      .5314      .1307     4.4360
     -.4693      .7973     4.4966
      .0061      .7973     4.5678
      .5314      .7973     4.6465
END DATA.
GRAPH/SCATTERPLOT=
 HPWS     WITH     TPerf    BY       Rules    .
----------
    Focal predict: TWE      (M)
          Mod var: Rules    (W)
```

```
Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   TWE        Rules      TPerf      .
BEGIN DATA.
     -.6291     -.5360     3.9402
     -.0157     -.5360     3.9935
      .7620     -.5360     4.0611
     -.6291      .1307     4.2305
     -.0157      .1307     4.2796
      .7620      .1307     4.3419
     -.6291      .7973     4.5209
     -.0157      .7973     4.5658
      .7620      .7973     4.6226
END DATA.
GRAPH/SCATTERPLOT=
 TWE      WITH     TPerf    BY       Rules    .


****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Conditional direct effects of X on Y
      Rules     Effect         se          t          p       LLCI       ULCI
     -.5360      .4342      .1194     3.6356      .0004      .2362      .6322
      .1307      .2920      .1145     2.5511      .0120      .1022      .4818
      .7973      .1498      .1464     1.0234      .3082     -.0929      .3924

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 HPWS        ->    TWE         ->    TPerf

      Rules     Effect     BootSE   BootLLCI   BootULCI
     -.5360      .0519      .0867     -.0363      .2394
      .1307      .0495      .0611     -.0282      .1692
      .7973      .0468      .0757     -.0716      .1736

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  90.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the 16th, 50th, and 84th percentiles.

NOTE: The following variables were mean centered prior to analysis:
          Rules    HPWS     TWE

------ END MATRIX -----
```

For Rationale Goal Culture as moderator

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 59
    Y  : TPerf
    X  : HPWS
    M  : TWE
    W  : Market

Covariates:
 Gender   Age      TeamSize OrgTen

Sample
Size:  127

**************************************************************************
OUTCOME VARIABLE:
 TWE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5839      .3410      .3585     8.7960     7.0000   119.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant      .0648      .2188      .2963      .7675     -.2978      .4275
HPWS          .7069      .1168     6.0500      .0000      .5132      .9006
Market        .0608      .0827      .7351      .4637     -.0763      .1978
Int_1         .0583      .1186      .4918      .6237     -.1383      .2550
Gender        .0307      .0706      .4349      .6644     -.0864      .1478
Age           .0452      .0347     1.3022      .1954     -.0123      .1027
TeamSize     -.0624      .0426    -1.4644      .1457     -.1331      .0082
OrgTen       -.0658      .0531    -1.2391      .2177     -.1538      .0222

Product terms key:
 Int_1    :        HPWS     x        Market

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0013      .2419     1.0000   119.0000      .6237
----------
    Focal predict: HPWS     (X)
          Mod var: Market   (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   HPWS       Market     TWE        .
BEGIN DATA.
```

```
     -.4693     -.7910     -.3701
      .0061     -.7910     -.0560
      .5314     -.7910      .2911
     -.4693      .2090     -.3367
      .0061      .2090      .0051
      .5314      .2090      .3829
     -.4693      .5423     -.3256
      .0061      .5423      .0255
      .5314      .5423      .4135
END DATA.
GRAPH/SCATTERPLOT=
 HPWS     WITH     TWE      BY       Market   .

************************************************************************
OUTCOME VARIABLE:
 TPerf

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6723      .4520      .3204    10.7241     9.0000   117.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.4808      .2069    21.6540      .0000     4.1377     4.8239
HPWS          .5363      .1265     4.2390      .0000      .3266      .7461
TWE           .1374      .0868     1.5829      .1162     -.0065      .2813
Market        .2370      .0808     2.9327      .0040      .1030      .3710
Int_1         .2996      .1339     2.2380      .0271      .0777      .5216
Int_2        -.2797      .0971    -2.8822      .0047     -.4406     -.1188
Gender        .0823      .0670     1.2282      .2218     -.0288      .1934
Age          -.0928      .0331    -2.7995      .0060     -.1477     -.0378
TeamSize     -.0179      .0408     -.4390      .6615     -.0856      .0498
OrgTen       -.0129      .0506     -.2543      .7997     -.0967      .0710

Product terms key:
 Int_1    :        HPWS     x        Market
 Int_2    :        TWE      x        Market

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0235     5.0085     1.0000   117.0000      .0271
M*W      .0389     8.3069     1.0000   117.0000      .0047
----------
    Focal predict: HPWS     (X)
          Mod var: Market   (W)

Conditional effects of the focal predictor at values of the moderator(s):

     Market     Effect         se          t          p       LLCI       ULCI
     -.7910      .2993      .1577     1.8984      .0601      .0379      .5607
      .2090      .5990      .1320     4.5386      .0000      .3802      .8178
      .5423      .6988      .1513     4.6179      .0000      .4479      .9497

Moderator value(s) defining Johnson-Neyman significance region(s):
      Value    % below    % above
     -.8776    12.5984    87.4016
```

```
Conditional effect of focal predictor at values of the moderator:
     Market     Effect         se          t          p       LLCI       ULCI
    -2.4577     -.2001      .3420     -.5851      .5596     -.7670      .3669
    -2.2577     -.1401      .3172     -.4418      .6595     -.6661      .3858
    -2.0577     -.0802      .2928     -.2739      .7846     -.5657      .4053
    -1.8577     -.0203      .2689     -.0754      .9400     -.4661      .4256
    -1.6577      .0396      .2456      .1614      .8721     -.3675      .4468
    -1.4577      .0996      .2230      .4464      .6561     -.2702      .4693
    -1.2577      .1595      .2015      .7915      .4302     -.1746      .4936
    -1.0577      .2194      .1814     1.2097      .2288     -.0813      .5202
     -.8776      .2734      .1649     1.6580      .1000      .0000      .5468
     -.8577      .2793      .1632     1.7118      .0896      .0088      .5499
     -.6577      .3393      .1476     2.2980      .0233      .0945      .5841
     -.4577      .3992      .1356     2.9433      .0039      .1743      .6241
     -.2577      .4591      .1282     3.5820      .0005      .2466      .6716
     -.0577      .5191      .1261     4.1169      .0001      .3100      .7281
      .1423      .5790      .1296     4.4673      .0000      .3641      .7939
      .3423      .6389      .1383     4.6191      .0000      .4096      .8682
      .5423      .6988      .1513     4.6179      .0000      .4479      .9497
      .7423      .7588      .1676     4.5260      .0000      .4808     1.0367
      .9423      .8187      .1864     4.3923      .0000      .5097     1.1277
     1.1423      .8786      .2069     4.2463      .0000      .5356     1.2217
     1.3423      .9385      .2287     4.1032      .0001      .5593     1.3178
     1.5423      .9985      .2515     3.9699      .0001      .5815     1.4155

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   HPWS       Market     TPerf      .
BEGIN DATA.
     -.4693     -.7910     3.8369
      .0061     -.7910     3.9792
      .5314     -.7910     4.1364
     -.4693      .2090     3.9333
      .0061      .2090     4.2180
      .5314      .2090     4.5327
     -.4693      .5423     3.9655
      .0061      .5423     4.2976
      .5314      .5423     4.6648
END DATA.
GRAPH/SCATTERPLOT=
 HPWS     WITH     TPerf    BY       Market   .
----------
    Focal predict: TWE      (M)
          Mod var: Market   (W)

Conditional effects of the focal predictor at values of the moderator(s):

     Market     Effect         se          t          p       LLCI       ULCI
     -.7910      .3587      .1125     3.1872      .0018      .1721      .5452
      .2090      .0789      .0903      .8745      .3836     -.0707      .2286
      .5423     -.0143      .1041     -.1374      .8910     -.1868      .1582

Moderator value(s) defining Johnson-Neyman significance region(s):
      Value    % below    % above
     -.0227    43.3071    56.6929
```

```
     1.5418    97.6378     2.3622

Conditional effect of focal predictor at values of the moderator:
     Market     Effect         se          t          p       LLCI       ULCI
    -2.4577      .8249      .2491     3.3114      .0012      .4119     1.2379
    -2.2472      .7660      .2301     3.3295      .0012      .3845     1.1474
    -2.0366      .7071      .2113     3.3469      .0011      .3568     1.0574
    -1.8261      .6482      .1928     3.3617      .0010      .3285      .9679
    -1.6156      .5893      .1748     3.3712      .0010      .2995      .8791
    -1.4051      .5304      .1574     3.3702      .0010      .2695      .7914
    -1.1945      .4715      .1408     3.3494      .0011      .2381      .7049
     -.9840      .4126      .1253     3.2929      .0013      .2049      .6204
     -.7735      .3538      .1115     3.1740      .0019      .1690      .5385
     -.5630      .2949      .0999     2.9523      .0038      .1293      .4605
     -.3524      .2360      .0915     2.5803      .0111      .0844      .3876
     -.1419      .1771      .0871     2.0331      .0443      .0327      .3215
     -.0227      .1438      .0867     1.6580      .1000      .0000      .2875
      .0686      .1182      .0874     1.3518      .1790     -.0268      .2632
      .2792      .0593      .0924      .6419      .5222     -.0939      .2125
      .4897      .0004      .1013      .0042      .9967     -.1676      .1684
      .7002     -.0585      .1133     -.5161      .6067     -.2463      .1293
      .9107     -.1174      .1274     -.9212      .3588     -.3286      .0939
     1.1213     -.1762      .1430    -1.2321      .2204     -.4134      .0609
     1.3318     -.2351      .1598    -1.4716      .1438     -.5000      .0298
     1.5418     -.2939      .1772    -1.6580      .1000     -.5877      .0000
     1.5423     -.2940      .1773    -1.6584      .0999     -.5880     -.0001

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   TWE        Market     TPerf      .
BEGIN DATA.
     -.6291     -.7910     3.7517
     -.0157     -.7910     3.9717
      .7620     -.7910     4.2507
     -.6291      .2090     4.1647
     -.0157      .2090     4.2131
      .7620      .2090     4.2745
     -.6291      .5423     4.3024
     -.0157      .5423     4.2936
      .7620      .5423     4.2825
END DATA.
GRAPH/SCATTERPLOT=
 TWE      WITH     TPerf    BY       Market   .


****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Conditional direct effects of X on Y
     Market     Effect         se          t          p       LLCI       ULCI
     -.7910      .2993      .1577     1.8984      .0601      .0379      .5607
      .2090      .5990      .1320     4.5386      .0000      .3802      .8178
      .5423      .6988      .1513     4.6179      .0000      .4479      .9497

Conditional indirect effects of X on Y:
```

```
INDIRECT EFFECT:
 HPWS        ->    TWE         ->    TPerf

     Market     Effect     BootSE   BootLLCI   BootULCI
     -.7910      .2370      .1141      .0340      .4069
      .2090      .0568      .0713     -.0438      .1897
      .5423     -.0106      .0794     -.1144      .1421

************************ ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  90.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the 16th, 50th, and 84th percentiles.

NOTE: The following variables were mean centered prior to analysis:
          Market   HPWS     TWE

------ END MATRIX -----
```

.