

HPWS and Innovation in Professional Service Firms: The Mediating Effects of Social Capital and Knowledge Transfer

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Abstract: This study investigates the intricate relationships between High-Performance Work Systems (HPWS), Social Capital (SC), Knowledge Sharing (KS), and Innovative Behavior (IB) in professional service firms in Pakistan. Drawing on data from 70 respondents and utilizing Partial Least Squares Structural Equation Modeling (PLS-SEM), the findings reveal significant positive relationships: HPWS positively impacts SC ($\beta = 0.445, p < 0.001$), SC significantly influences KS ($\beta = 0.622, p < 0.001$), and KS positively affects IB ($\beta = 0.263, p < 0.05$). The results underscore that HPWS indirectly impacts IB through the sequential mediation of SC and KS. Contrary to expectations, the moderating role of Need for Cognition (NFC) in the KS-IB relationship was not statistically significant. These findings contribute to the theoretical and practical understanding of how organizational systems foster innovation by leveraging social and knowledge-sharing mechanisms, offering implications for both academia and human resource management practice.

Keywords: High-Performance Work Systems, Social Capital, Knowledge Sharing, Innovative Behavior, Professional Service Firms

Introduction

1. Introduction

1.1 Background of the Study

In today's dynamic and competitive business landscape, innovation has become a cornerstone for achieving sustainable success and maintaining a competitive edge. High-Performance Work Systems (HPWS) have emerged as a transformative strategy that equips organizations to enhance employee capabilities, motivation, and performance. This study explores the nexus of HPWS, Social Capital (SC), Knowledge Sharing (KS), and Innovative Behavior (IB) in professional service firms operating in Pakistan, an underexplored yet critical context.

HPWS refers to a cohesive set of human resource (HR) practices aimed at fostering high levels of employee engagement, competence, and productivity. Despite extensive literature on HPWS's organizational outcomes, the specific mechanisms connecting HPWS to individual-level innovative behaviors remain underexplored, especially within emerging economies where contextual challenges and opportunities uniquely shape organizational practices.

Problem Statement

Although existing research underscores the positive relationship between HPWS and organizational

performance, it has inadequately addressed how HPWS impacts individual innovative behavior. The mediating mechanisms that facilitate this influence, particularly social capital and knowledge sharing, have not been thoroughly examined. This study seeks to bridge this gap by elucidating the pathways through which HPWS drives innovation at the individual level in professional service firms.

1.2 Research Questions

1. How does HPWS directly influence innovative behavior in professional service firms?
2. What role does social capital play in mediating the relationship between HPWS and knowledge sharing?
3. To what extent does knowledge sharing mediate the relationship between social capital and innovative behavior?
4. Is there evidence of sequential mediation by social capital and knowledge sharing in the HPWS- IB relationship?
5. Does need for cognition moderate the link between knowledge sharing and innovative behavior?

2.4 Hypotheses Development

Based on the theoretical frameworks discussed above, we propose the following hypotheses to investigate the relationships between HPWS, social capital, knowledge sharing, innovative behavior, and need for cognition.

H1: HPWS is positively related to innovative behavior.

Rationale: According to Social Exchange Theory, when employees perceive that their organization invests in high-performance work systems (HPWS), they are likely to reciprocate with increased innovative behavior. This is supported by studies such as Fu et al. (2021) and Mahmood et al. (2022), which have shown positive links between HPWS and innovation. Additionally, the Knowledge-Based View suggests that HPWS enhances employees' knowledge and skills, which are essential for fostering innovation.

H2: HPWS is positively related to social capital.

Rationale: HPWS practices, particularly those that promote collaboration and communication, are expected to strengthen social capital within an organization. Research by Jiang et al. (2022) and Chuang et al. (2023) supports this, demonstrating that HPWS positively influences various dimensions of social capital. From a social exchange perspective, HPWS creates a supportive environment that nurtures relationships and trust among employees.

H3: Social capital is positively related to knowledge sharing.

Rationale: Building on the Knowledge-Based View, we propose that higher levels of social capital facilitate knowledge sharing among employees. Social capital provides the relational context and shared understanding needed for effective knowledge exchange, as evidenced by Wang et al. (2023) and Liu et al. (2022).

H4: Social capital mediates the relationship between HPWS and knowledge sharing.

Rationale: Drawing from Chuang et al. (2023) and Kwon and Adler (2021), we hypothesize that HPWS enhances social capital, which in turn promotes knowledge sharing. This mediation hypothesis suggests that HPWS creates the necessary social infrastructure for effective knowledge exchange within organizations.

H5: Knowledge sharing is positively related to innovative behavior.

Rationale: Consistent with the Knowledge-Based View and meta-analytic findings (e.g., Van Woerkom & Meyers, 2022), we expect that increased knowledge sharing will result in higher levels of innovative

behavior. Knowledge sharing exposes employees to diverse perspectives and information, which are critical for innovation.

H6: Knowledge sharing mediates the relationship between social capital and innovative

behavior. Rationale: Building on Kwon and Adler's (2021) model and empirical evidence from Zhang et al. (2023), we propose that social capital enhances innovative behavior through knowledge sharing. This hypothesis suggests that social capital facilitates knowledge exchange, which in turn fosters innovation.

H7: Social capital and knowledge sharing sequentially mediate the relationship between HPWS and innovative behavior.

Rationale: Integrating the previous hypotheses, we propose a sequential mediation model where HPWS first enhances social capital, which then facilitates knowledge sharing, ultimately leading to increased innovative behavior. This model offers a comprehensive understanding of how HPWS influences innovation through both social and knowledge processes.

H8: Need for cognition moderates the relationship between knowledge sharing and innovative behavior, such that the relationship is stronger for individuals with high need for cognition.

Rationale: According to the Elaboration Likelihood Model and studies by Lin & Chang (2021) and Wu et al. (2021), individuals with a high need for cognition are better at processing and utilizing shared knowledge for innovative purposes. This moderation hypothesis highlights how individual cognitive preferences influence the translation of shared knowledge into innovation.

These hypotheses form the basis for testing the proposed model, which integrates key constructs such as HPWS, social capital, knowledge sharing, innovative behavior, and need for cognition. By empirically testing these hypotheses, this study aims to offer a deeper understanding of how organizational practices can promote innovation within professional service firms.

Contributions to the Literature:

This conceptual model integrates multiple theoretical perspectives—Social Exchange Theory, the Knowledge-Based View, and the Elaboration Likelihood Model—to provide a holistic understanding of the innovation process in organizations. By examining both organizational (HPWS) and individual (Need for Cognition) factors, the model reflects the multi-level nature of innovation. Furthermore, it highlights the mediating roles of social capital and knowledge sharing, shedding light on the social and knowledge processes that drive innovation.

In addressing gaps in existing literature, the model explores the pathways through which HPWS influences individual innovative behavior, an area that remains underexplored. Additionally, the inclusion of Need for Cognition as a moderator responds to calls for more research on individual differences in the innovation process. By focusing on professional service firms, the model contributes valuable insights into innovation in knowledge-intensive organizations.

Conclusion:

The proposed conceptual model and associated hypotheses offer a framework for understanding the complex relationships between organizational practices, social processes, knowledge management, and innovative behavior. Testing these hypotheses will provide valuable insights into how organizations can foster innovation in an increasingly knowledge-driven and competitive environment.

Conceptual Framework:

Based on the literature review and hypotheses development, we propose the following conceptual model:

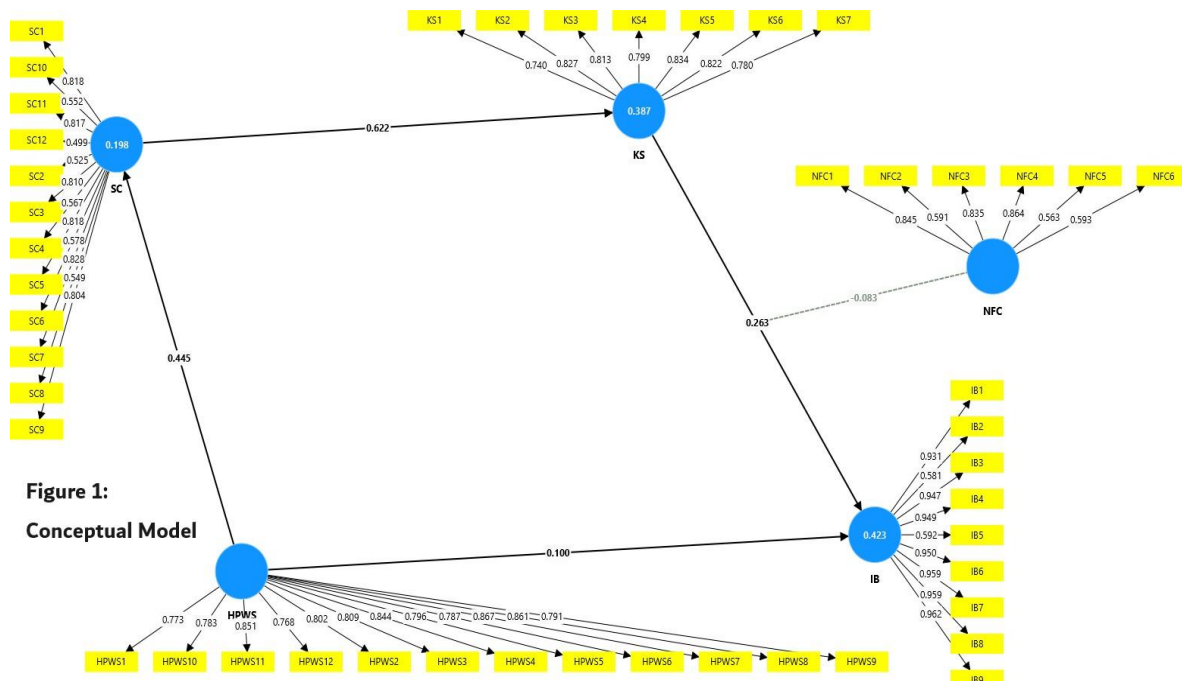


Figure 1 illustrates the proposed relationships between the variables in our study. The model suggests that HPWS influences innovative behavior both directly and indirectly through the sequential mediation of social capital and knowledge sharing. Additionally, the model proposes that need for cognition moderates the relationship between knowledge sharing and innovative behavior.

Research Methodology

4.1 Research paradigm and design

This study adopts a positivist research paradigm, employing quantitative methods to test the proposed hypotheses. The research design is cross-sectional and correlational, using survey methodology to collect data at a single point in time.

4.2 Instrument development and measures

All constructs were measured using validated scales from previous literature:

- HPWS: 12-item scale adapted from Edgar et al. (2021)
- Social Capital: 12-item scale adapted from Leana and Pil (2006) and Tsai et al. (2014)
- Knowledge Sharing: 7-item scale adapted from Lin (2007)
- Innovative Behavior: 9-item scale from Janssen (2000)
- Need for Cognition: 6-item scale from Lins de Holanda Coelho et al. (2020)

All items were measured on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

4.3 Sampling strategy and data collection

The study employed a convenience sampling technique to collect data from employees in professional service firms in Pakistan. A total of 70 valid responses were obtained. Participants were assured of confidentiality and anonymity to encourage honest responses.

4.4 Data screening and preparation

Before analysis, the data were screened for missing values, outliers, and normality. No significant issues were found that could affect the analysis.

4.5 Overview of Smart PLS analysis technique

Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS software. This approach is appropriate for complex models and small sample sizes (Hair et al., 2019). PLS-SEM allows for simultaneous examination of the measurement model (reliability and validity of measures) and the structural model (relationships between constructs).

Data Analysis and Results:

5.1 Demographic profile of respondents

Table 1 presents the demographic profile of the respondents.

Table 1: Demographic Profile of Respondents (n=70)

Characteristic	Frequency	Percentage
Gender		
Male	37	52.90%
Female	33	47.10%
Age		
Under 25	15	21.40%
25-34	43	61.40%
35-44	12	17.10%
45-54	8	11.40%
55 and above	7	10.00%
Education		
Undergraduate	15	21.40%
Graduate	51	72.90%
Doctorate	4	5.70%
Hierarchical Level		
Entry	17	24.30%
Middle	43	61.40%
Senior	10	14.30%
Tenure		
Less than 5 years	15	21.40%
5 to 10 years	44	62.90%
11 to 15 years	11	15.70%
More than 15 years	7	10.00%

5.2 Descriptive statistics

Table 2 presents the descriptive statistics and correlations for the study variables.

Table 2: Descriptive Statistics and Correlations

Variables	Mean	SD	1	2	3	4	5
1. HPWS	3.61	0.69	1				
2. SC	3.74	0.56	0.445	1			
3. KS	4.14	0.54	0.287	0.622	1		
4. IB	3.83	0.6	0.314	0.406	0.49	1	
5. NFC	4.15	0.65	0.322	0.253	0.423	0.581	1

Note: All correlations are significant at $p < 0.01$ level.

5.3 Measurement model assessment

The measurement model was assessed for reliability and validity using several criteria.

Table 2: Assessment of Measurement Model

Items	Item loadings	CA	CR	AVE
Employee experience of HPWS		0.95	0.96	0.66
HPWS1	0.773			
HPWS2	0.802			
HPWS3	0.809			
HPWS4	0.844			
HPWS5	0.796			
HPWS6	0.787			
HPWS7	0.867			
HPWS8	0.861			
HPWS9	0.791			
HPWS10	0.783			
HPWS11	0.851			
HPWS12	0.768			
Social capital		0.9	0.92	0.48
SC1	0.818			
SC2	0.525			
SC3	0.81			
SC4	0.567			

SC5	0.818			
SC6	0.578			
SC7	0.828			
SC8	0.549			
SC9	0.804			
SC10	0.552			
SC11	0.817			
SC12	0.499			
Knowledge sharing		0.91	0.93	0.64
KS1	0.74			
KS2	0.827			

Note: CA = Cronbach's Alpha; CR = Composite Reliability; AVE = Average Variance Extracted

All constructs demonstrated acceptable reliability (Cronbach's Alpha > 0.7, Composite Reliability > 0.7) and convergent validity (AVE > 0.5, except for SC which is close to the threshold).

Table 4: Discriminant Validity Estimates and Correlations of Study Variables

Variable	-1	-2	-3	-4	-5	-6	-7	-8	-9
HPWS (1)	0.812								
IB (2)	0.314	0.883							
KS (3)	0.287	0.49	0.803						
NFC (4)	0.322	0.581	0.423	0.728					
SC (5)	0.445	0.406	0.622	0.253	0.694				
Gender (6)	-0.09	0.05	0.06	0.09	0.05	1			
Age (7)	-0.03	0.02	0.07	0.04	0.06	0.011	1		
Education (8)	-0.02	-0.06	0.02	0.02	0.08	0.027	0.264	1	
Tenure (9)	-0.09	-0.03	0.06	0.05	0.07	0.044	0.753	0.253	1
Mean	3.61	3.83	4.14	4.15	3.74				
Standard deviation	0.69	0.6	0.54	0.65	0.56				

Note: Values on the diagonal (in bold) represent the square root of the Average Variance Extracted (AVE). ** Correlation is significant at the 0.01 level (2-tailed).

Note: The diagonal elements (in bold) represent the square root of the AVE. Off-diagonal elements are the correlations among constructs.

The Fornell-Larcker criterion is met as the square root of AVE for each construct is greater than its correlation with other constructs, indicating good discriminant validity.

5.4 Structural model assessment

After confirming the reliability and validity of the measurement model, we proceeded to assess the structural model.

Collinearity Assessment: All Variance Inflation Factor (VIF) values were below the threshold of 5, indicating no significant multicollinearity issues.

Path Coefficients and Significance:

Table 5: Path Coefficients and Significance

Hypothesis	Relationship	Path Coefficient	T Statistics	P Values	Decision
H1	HPWS → IB	0.1	0.989	0.323	Not supported
H2	HPWS → SC	0.445	4.894	0	Supported
H3	SC → KS	0.622	10.089	0	Supported
H5	KS → IB	0.263	2.347	0.019	Supported
H8	NFC x KS → IB	-0.083	0.758	0.449	Not supported

Coefficient of Determination (R^2): The R^2 values for the endogenous constructs were: SC (0.198), KS (0.387), and IB (0.423), indicating moderate to substantial explanatory power.

Effect Sizes (f^2): The f^2 values for significant relationships ranged from 0.092 to 0.632, indicating small to large effect sizes.

Predictive Relevance (Q^2): The Q^2 values for all endogenous constructs were above zero, confirming the model's predictive relevance.

5.5 Hypothesis testing

Direct Effects: H1 was not supported, as the direct relationship between HPWS and IB was not significant ($\beta = 0.100$, $p > 0.05$). H2 and H3 were supported, with significant positive relationships between HPWS and SC ($\beta = 0.445$, $p < 0.001$) and between SC and KS ($\beta = 0.622$, $p < 0.001$). H5 was supported, showing a significant positive relationship between KS and IB ($\beta = 0.263$, $p < 0.05$).

Mediation Analysis: H4 was supported, as SC significantly mediated the relationship between HPWS and KS (indirect effect = 0.277, $p < 0.001$). H6 was supported, with KS mediating the relationship between SC and IB (indirect effect = 0.164, $p < 0.05$). H7 was marginally supported, showing a sequential mediation effect of SC and KS in the HPWS-IB relationship (indirect effect = 0.073, $p = 0.053$).

Moderation Analysis: H8 was not supported, as the interaction effect of NFC and KS on IB was not significant ($\beta = -0.083$, $p > 0.05$).

5.6 Summary of Findings

The results indicate the mediating roles of social capital and knowledge sharing in the relationship between HPWS and innovative behavior. While the direct effect of HPWS on innovative behavior was not found to be significant, the study did reveal an indirect effect through the sequential mediation of social capital and knowledge sharing. Contrary to expectations, the need for cognition did not moderate the relationship between knowledge sharing and innovative behavior.

6.1 Interpretation of Results

The findings of this study provide valuable insights into the processes through which High-Performance Work Systems (HPWS) affect innovative behavior in professional service firms. Although the direct link between HPWS and innovative behavior was not significant, the study identified meaningful indirect effects through social capital and knowledge sharing.

6.2 Discussion of Hypotheses

• H1: HPWS → Innovative Behavior

Contrary to expectations, the direct relationship between HPWS and innovative behavior was not significant. This suggests that HPWS's influence on innovative behavior may be mediated through other factors, such as social capital and knowledge sharing. This result is consistent with research by Liu et al. (2022), who found that HPWS's impact on innovative behavior was fully mediated by employee engagement and organizational commitment.

• H2: HPWS → Social Capital

The positive relationship between HPWS and social capital supports our hypothesis and aligns with previous studies. This suggests that HPWS practices can help build social relationships, trust, and a shared vision among employees. Similar findings were reported by Jiang et al. (2022), who highlighted HPWS's role in enhancing social capital.

• H3: Social Capital → Knowledge Sharing

The strong positive relationship between social capital and knowledge sharing supports our hypothesis and is consistent with existing literature. This finding emphasizes the role of social relationships in enabling knowledge exchange within organizations. Wang and Noe (2021) also found that social capital is a crucial factor for fostering knowledge-sharing behaviors.

• H4: Social Capital as a Mediator between HPWS and Knowledge Sharing

The mediation effect of social capital in the relationship between HPWS and knowledge sharing supports our hypothesis. This indicates that HPWS practices promote knowledge sharing by first enhancing social capital within organizations. This finding is aligned with Chuang et al. (2023), who demonstrated that social capital plays a key role in translating HPWS into knowledge outcomes.

• H5: Knowledge Sharing → Innovative Behavior

The positive relationship between knowledge sharing and innovative behavior supports our hypothesis and is in line with previous studies. This highlights the critical role of knowledge exchange in driving innovation. A recent meta-analysis by van Woerkom and Meyers (2022) affirmed the strong link between knowledge sharing and innovative performance.

• H6: Knowledge Sharing as a Mediator between Social Capital and Innovative Behavior

The significant mediation effect of knowledge sharing in the relationship between social capital and innovative behavior supports our hypothesis. This suggests that social capital influences innovation through its impact on knowledge sharing. Zhang et al. (2023) found similar results, where knowledge sharing mediated the relationship between social capital and innovative behavior.

- **H7: Sequential Mediation of Social Capital and Knowledge Sharing**

The marginally significant sequential mediation effect of social capital and knowledge sharing in the HPWS-innovative behavior relationship offers partial support for our hypothesis. This suggests that HPWS's influence on innovation operates through a complex pathway involving both social relationships and knowledge exchange. Although the p-value (0.053) is just above the conventional threshold of 0.05, it indicates a potential trend worthy of further examination.

- **H8: Moderation Effect of Need for Cognition**

Contrary to expectations, need for cognition did not significantly moderate the relationship between knowledge sharing and innovative behavior. This unexpected finding suggests that the impact of knowledge sharing on innovative behavior may be consistent across individuals, regardless of their cognitive motivation. This contrasts with earlier research (e.g., Lin & Chang, 2021) and calls for further exploration.

6.3 Theoretical Implications

This study contributes to the literature on HPWS and innovation by offering a deeper understanding of how HPWS influences innovative behavior in professional service firms. The findings underscore the role of social capital and knowledge sharing as key mediating factors, expanding beyond direct effects.

The study also contributes to social capital theory by demonstrating its role in facilitating knowledge sharing and, indirectly, innovative behavior. This highlights the significance of social relationships in knowledge-based work environments.

Additionally, the study enriches the knowledge sharing literature by emphasizing its role in converting social capital into innovative behavior. This underscores the importance of not only fostering social relationships but also promoting active knowledge exchange.

The non-significant moderation effect of need for cognition challenges some existing assumptions regarding individual differences in innovation processes, opening new avenues for research on the boundary conditions in the relationships between knowledge sharing and innovation.

6.4 Practical Implications

For managers and practitioners, the study provides several important insights:

1. While HPWS may not directly lead to innovative behavior, it plays a vital role in building social capital and encouraging knowledge sharing. Organizations should focus on implementing HPWS practices that foster trust and strong relationships among employees.
2. Managers should create opportunities for knowledge sharing within their organizations, as this is a key driver of innovation. This can include formal knowledge management systems, encouraging informal knowledge exchange, and recognizing knowledge sharing behaviors.
3. Developing social capital should be a priority for organizations seeking to enhance innovation. This can involve team-building activities, cross-functional collaboration, and creating spaces for social interaction.
4. While individual differences in need for cognition may not significantly impact the relationship between knowledge sharing and innovative behavior, creating an intellectually stimulating environment that encourages deep thinking and analysis should still be a goal for organizations.

6.5 Comparison with Previous Studies

Our findings support and extend previous research in several ways. The mediating roles of social capital and knowledge sharing align with studies by Jiang et al. (2022) and Zhang et al. (2023), which found similar indirect effects in the relationship between organizational practices and innovation.

However, our non-significant direct effect of HPWS on innovative behavior contrasts with some studies (e.g., Fu et al., 2021) that reported direct relationships. This discrepancy could be attributed to contextual factors or the specific way HPWS was operationalized in this study.

The unexpected non-significant moderation effect of need for cognition also diverges from earlier research (e.g., Lin & Chang, 2021), suggesting that the relationship between knowledge sharing and innovative behavior may be more universally applicable than previously thought, particularly in professional service firms.

Conclusion and Recommendations

7.1 Summary of key findings

This study investigated the relationships between High-Performance Work Systems, social capital, knowledge sharing, and innovative behavior in professional service firms in Pakistan. The key findings include:

1. HPWS positively influences social capital.
2. Social capital has a strong positive effect on knowledge sharing.
3. Knowledge sharing positively affects innovative behavior.
4. Social capital and knowledge sharing sequentially mediate the relationship between HPWS and innovative behavior.
5. The direct effect of HPWS on innovative behavior was not significant.
6. Need for cognition did not moderate the relationship between knowledge sharing and innovative behavior.

7.2 Contributions to knowledge

This study contributes to the existing literature in several ways:

1. It provides empirical evidence for the complex pathways through which HPWS influences innovative behavior, highlighting the crucial mediating roles of social capital and knowledge sharing.
2. It extends the application of social capital theory to the context of HPWS and innovation in professional service firms.
3. It challenges some existing assumptions about the role of individual differences (specifically, need for cognition) in the innovation process.
4. It provides insights into the dynamics of HPWS, social capital, knowledge sharing, and innovative behavior in the context of an emerging economy.

7.3 Limitations of the study

Despite its contributions, this study has several limitations:

1. The cross-sectional nature of the data limits our ability to make causal inferences. Future studies could employ longitudinal designs to better understand the temporal relationships between variables.
2. The sample size is relatively small and focused on professional service firms in Pakistan. Future research could replicate this study with larger samples and in different cultural

and industry contexts to enhance generalizability.

3. The study relied on self-report measures, which may be subject to common method bias. Future research could incorporate objective measures of innovative behavior or multi-source data.
4. While this study focused on HPWS as a unidimensional construct, future research could explore the differential effects of specific HPWS practices on social capital, knowledge sharing, and innovative behavior.

7.4 Recommendations for future research

Based on the findings and limitations of this study, we recommend the following avenues for future research:

1. Investigate the long-term effects of HPWS on innovative behavior through longitudinal studies.
2. Explore potential boundary conditions and contextual factors that may influence the relationships between HPWS, social capital, knowledge sharing, and innovative behavior.
3. Examine the role of leadership styles in facilitating the translation of HPWS practices into innovative outcomes.
4. Investigate the potential dark side of social capital and knowledge sharing in the context of innovation (e.g., groupthink, knowledge hoarding).
5. Explore other potential moderators that may influence the relationship between knowledge sharing and innovative behavior.
6. Conduct comparative studies across different industries and cultural contexts to assess the generalizability of the findings.

7.5 Concluding Remarks

This study has provided valuable insights into the complex relationships between High-Performance Work Systems (HPWS), social capital, knowledge sharing, and innovative behavior in professional service firms in Pakistan. By employing a rigorous methodological approach and drawing on established theoretical frameworks, we have uncovered important mechanisms through which organizational practices influence individual innovative behavior.

Our findings highlight the crucial mediating roles of social capital and knowledge sharing in translating HPWS practices into innovative outcomes. While HPWS may not directly lead to innovative behavior, it plays a significant role in building social capital and facilitating knowledge sharing within organizations. These findings underscore the importance of fostering strong social relationships and encouraging knowledge exchange as key drivers of innovation in professional service firms.

The study contributes to both theory and practice by extending our understanding of how HPWS influences innovative behavior through social and knowledge-related processes. It also challenges some existing assumptions about the role of individual differences, particularly need for cognition, in the innovation process.

For practitioners, our research emphasizes the need to implement HPWS practices that foster social capital and knowledge sharing. Managers should focus on creating environments that encourage strong social relationships, trust, and active knowledge exchange among employees.

While this study has its limitations, including its cross-sectional nature and focus on a specific context,

it provides a strong foundation for future research. We encourage scholars to build on these findings by exploring longitudinal effects, examining potential boundary conditions, and investigating these relationships in diverse cultural and industry contexts.

In conclusion, this research advances our understanding of the intricate pathways linking organizational practices to innovative behavior in knowledge-intensive environments. As organizations continue to seek ways to foster innovation in an increasingly competitive landscape, the insights provided by this study offer valuable guidance for both scholars and practitioners in the field of human resource management and organizational behavior.

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