

Structural Relationships Among High-Performance Work System Dimensions In Higher Education Institutions: Evidence From Delhi

Kamini Mishra¹, Dr. Shikha N Khera², Professor Suresh Kumar Garg³

¹Research Scholar, Delhi School of Management, Delhi Technological University

Email: Kaminimishra0505@gmail.com

²Associate Professor, Delhi School of Management, Delhi Technological University

³Professor, Department of Mechanical Engineering, Delhi Technological University

Abstract:

This study investigates the structural relationships among seven High-Performance Work System (HPWS) dimensions—Selective Staffing & Security, Developmental Appraisal, Faculty Development, Incentive Pay & Career Progression, Participative Governance, Information Sharing, and Sustainability & Well-Being—within higher education institutions (HEIs) in Delhi. Addressing a notable gap in Indian higher education research, the study employs a quantitative, cross-sectional survey of 190 HEIs, targeting senior academic administrators and faculty. Data were analyzed using Structural Equation Modeling (SEM) via AMOS v26, following a two-step approach: confirmatory factor analysis to validate the measurement model, and path analysis to examine interrelationships. The HPWS scale demonstrated exceptional internal consistency (Cronbach's $\alpha = 0.959$). Results reveal high adoption levels across all dimensions, with Incentive Pay & Career Progression and Sustainability & Well-Being marginally more prominent. SEM analysis confirms a robust input–process–outcome pathway, wherein Selective Staffing & Security ($\beta = 0.466$) and Developmental Appraisal ($\beta = 0.388$) significantly influence Participative Governance, which in turn strongly predicts Sustainability & Well-Being ($\beta = 0.818$). The model explains 65–67% of variance in governance and sustainability outcomes, with excellent fit indices (CFI = 0.971, RMSEA = 0.072). The findings advance HPWS theory by integrating governance as a central mediating process and offer practical guidance for HEI leaders to align recruitment, appraisal, and participatory governance to enhance institutional resilience. The study supports NEP 2020 objectives and provides a validated framework adaptable to similar higher education contexts in emerging economies.

Keywords: High-Performance Work Systems, Participative Governance, Structural Equation Modeling, Higher Education Institutions, Human Resource Management, Delhi

1. Introduction

The landscape of higher education in the 21st century is undergoing profound transformation, driven by globalization, technological advancement, and a heightened demand for knowledge economies to produce highly skilled human capital. Institutions of higher learning are increasingly challenged to deliver not only academic excellence but also institutional agility, innovation, and stakeholder inclusivity (Huang, Sardeshmukh, & Benson, 2023). Within this environment, human resource management (HRM) has emerged as a central pillar of institutional success, with the focus shifting from isolated personnel functions toward integrated systems that maximize employee capability, motivation, and opportunity to contribute

meaningfully to organizational goals (Boxall, 2012; Appelbaum, Bailey, Berg, & Kalleberg, 2001).

High-Performance Work Systems (HPWS) represent one of the most influential paradigms in contemporary HRM. Defined as coherent bundles of HR practices designed to enhance workforce performance through synergistic effects (MacDuffie, 1995; Gephart & Van Buren, 1996), HPWS aim to cultivate a work environment in which talent acquisition, training, performance appraisal, compensation, participative decision-making, and knowledge sharing reinforce one another. In higher education, where institutional outcomes hinge on the quality, engagement, and innovation of academic and administrative staff, the HPWS framework offers a strategic means to align HR practices with

institutional missions (Pichainarongk & Bidaisee, 2022).

Globally, HPWS research has demonstrated a range of positive organizational outcomes. For example, in the corporate sector, studies have linked HPWS to productivity increases of 15–20% and improvements in customer satisfaction ratings exceeding 10 percentage points (Kling, 1995). In educational contexts, Huang et al. (2023) found that HPWS practices significantly enhanced teacher creativity and, in turn, institutional performance metrics. The ability–motivation–opportunity (AMO) model, often used to frame HPWS, underscores the importance of fostering employee capabilities (through training and selective hiring), motivation (through performance-linked incentives and recognition), and opportunity (through participative governance and transparent communication) (Boxall & Macky, 2009).

In the Indian higher education sector, the pressures of globalization, the implementation of the National Education Policy (NEP) 2020, and rising student diversity have amplified the need for systemic HR approaches that can deliver sustainable institutional performance (Wood & De Menezes, 2011). However, the adoption of HPWS principles in Indian higher education remains inconsistent, with practices often implemented in isolation rather than as a mutually reinforcing system. Given that India has more than 1,100 universities and over 42,000 colleges enrolling upwards of 38 million students (All India Survey on Higher Education, 2021), the scale and diversity of the sector demand HR systems that are robust, adaptable, and strategically aligned.

While the HPWS literature has matured substantially in the last three decades (Boxall, 2012; Messersmith, Patel, & Lepak, 2011), much of the empirical work remains concentrated in corporate or manufacturing contexts. Within higher education, existing studies often focus on single dimensions of HPWS, such as faculty development, appraisal systems, or participative decision-making, rather than exploring the interrelationships among multiple dimensions in an integrated model (Frost, 2008). For instance, research in Thai higher education by Pichainarongk and Bidaisee (2022) examined

HPWS practices in relation to academic promotion but did not account for how those practices interact with other HR dimensions like governance or sustainability. In South Asian contexts, especially India, HPWS research in higher education is sparse and fragmented. A scan of peer-reviewed literature reveals that most Indian studies in the education sector either adapt corporate HPWS frameworks without empirical validation in academic settings, or they evaluate a narrow set of practices—such as training and development—without assessing broader systemic linkages (Appelbaum et al., 2001). Furthermore, few studies have employed advanced statistical modeling techniques such as Structural Equation Modeling (SEM) to empirically test the structural relationships among HPWS dimensions in higher education institutions.

Another notable gap concerns the contextual specificity of HPWS research. As Boxall and Macky (2009) argue, the efficacy of HPWS depends heavily on institutional and cultural contexts, making it risky to generalize findings across sectors or regions without contextual adaptation. Delhi’s higher education ecosystem is uniquely characterized by a mix of central, state, and private institutions, each with differing governance structures, funding models, and HR policies. Yet, no published research to date has systematically modeled how HPWS dimensions operate and interrelate within this complex institutional environment. Given the fragmented and contextually underdeveloped state of HPWS research in Indian higher education, there exists a critical need to examine the structural relationships among multiple HPWS dimensions within this sector. Without such understanding, HRM interventions risk remaining piecemeal, with limited cumulative impact. Specifically, in Delhi’s higher education institutions, the lack of integrated HPWS modeling means that administrators and policymakers lack empirical evidence to prioritize or sequence HR practices in ways that maximize institutional capability. Thus, the core problem addressed in this paper is the absence of a validated, empirically derived structural model that captures the interdependencies among HPWS dimensions in higher education institutions in Delhi. This gap hampers the development of evidence-based HR

strategies that can optimize institutional performance in a rapidly changing educational landscape. The overarching aim of this study is to empirically examine the structural relationships among seven literature-derived HPWS dimensions—Selective Staffing & Security, Developmental Appraisal, Faculty Development, Incentive Pay & Career Progression, Participative Governance, Information Sharing, and Sustainability & Well-Being—within higher education institutions in Delhi.

The specific objectives are:

1. **To assess** the internal reliability and intercorrelations among the seven HPWS dimensions using Cronbach's alpha and Pearson's correlation analysis.
2. **To construct and validate** a cross-sectional SEM model that reveals the latent structural connections among the HPWS dimensions.
3. **To identify** which HPWS dimensions serve as central nodes or hubs within the structural model, thus exerting the greatest systemic influence on institutional capability.

By achieving these objectives, the study seeks to provide actionable insights into how HR practices can be strategically integrated to enhance institutional performance in Delhi's higher education sector.

This research offers both theoretical and practical contributions. Theoretically, it extends the HPWS literature by empirically modeling the interrelationships among multiple HR practices in a non-Western higher education context—a setting where such modeling is rare. By applying SEM to primary data from a diverse set of institutions, the study provides robust evidence of how HPWS dimensions cohere to form a developmental HR environment.

Practically, the findings have direct implications for higher education leaders and policymakers. Understanding which HPWS dimensions are most central to the system can guide resource allocation, policy development, and capacity-building initiatives. For example, if participative governance emerges as a central node, institutions might

prioritize strengthening faculty involvement in decision-making as a lever for improving other HR practices and, ultimately, institutional performance.

In a broader sense, the study supports the goals of the NEP 2020, which emphasizes holistic institutional development, faculty empowerment, and sustainable practices. By demonstrating how HPWS dimensions interact in Delhi's higher education institutions, this research provides a roadmap for implementing integrated HR strategies that can enhance competitiveness, inclusivity, and resilience in the sector.

2. Literature Review

This section organizes and critically analyzes prior studies on High-Performance Work Systems (HPWS) with specific attention to higher education and knowledge-intensive organizations. The review is structured thematically to align with the research objectives of this study:

1. Understanding the conceptual foundations and theoretical evolution of HPWS.
2. Examining empirical evidence linking HPWS to performance outcomes in education and other sectors.
3. Exploring methodological approaches in HPWS research that can inform the current study's design.

Conceptual Foundations of HPWS

The theoretical underpinnings of HPWS are rooted in the notion that coordinated bundles of HR practices yield synergistic effects on organizational performance (Boxall, 2012). In his conceptual review, Boxall emphasized that HPWS are not monolithic but vary in design depending on institutional goals, cultural context, and industry norms. He stressed the importance of tailoring HPWS configurations to align with sector-specific demands, a point especially relevant for higher education institutions where academic autonomy and collegial governance are key.

Similarly, Frost (2008) traced the historical development of HPWS concepts within industrial relations, noting the evolution from “high-involvement” and “high-commitment” management

towards a broader systems perspective. His work highlighted the growing recognition that HPWS must be studied not merely as collections of practices but as integrated systems influencing both organizational and employee-level outcomes.

Shih, Chiang, and Hsu (2006) contributed to this foundational stream by presenting a conceptual framework that identified the “core constituents” of HPWS. They argued for the inclusion of both ability-enhancing practices (e.g., training, selective staffing) and motivation-enhancing mechanisms (e.g., incentives, performance appraisal), underpinned by opportunity-enhancing factors like participative governance. This tripartite structure is central to the Ability–Motivation–Opportunity (AMO) model, which guides the present study.

HPWS in Educational and Knowledge-Intensive Contexts

Several studies have examined HPWS in settings that share structural similarities with higher education. Pichainarongk and Bidaisee (2022) explored faculty perceptions of HPWS practices in Thai higher education, comparing domestic and international contexts. Using survey data from multiple universities, they found that developmental appraisal and professional growth opportunities significantly influenced faculty satisfaction and perceptions of career advancement. However, the study did not test interrelationships among multiple HPWS dimensions, leaving a gap in systemic understanding.

Huang, Sardeshmukh, and Benson (2023) extended this line of inquiry to the education sector more broadly, demonstrating that HPWS practices—especially those enhancing collaboration and communication—were positively associated with employee creativity, which in turn improved organizational performance metrics. Their study employed structural equation modeling (SEM) but focused primarily on creativity as an outcome variable, rather than exploring the structural interdependence of HPWS practices themselves.

Appelbaum, Bailey, Berg, and Kalleberg (2001) investigated whether HPWS “pay off” in terms of worker outcomes such as trust in management,

perceived job quality, and discretionary effort. Although this study was not education-specific, its findings are instructive: organizations adopting coherent HPWS strategies reported higher levels of employee engagement and trust, suggesting parallels to faculty engagement in academic institutions.

HPWS, Organizational Performance, and Well-Being

The performance impact of HPWS has been a central theme in research. Messersmith, Patel, and Lepak (2011) examined the “black box” linking HPWS to firm performance using multi-level modeling. They found that HPWS indirectly enhanced organizational outcomes by fostering employee engagement, commitment, and adaptability. The emphasis on engagement resonates strongly with higher education, where faculty and staff motivation are critical drivers of teaching and research excellence.

Kling (1995) provided early quantitative evidence of HPWS effectiveness, reporting modest but statistically significant productivity gains in firms implementing practices such as team-based work, incentive pay, and continuous training. While based in manufacturing contexts, the methodological rigor and emphasis on quantifiable outcomes provide a template for measuring institutional performance in education.

Wood and De Menezes (2011) took the discussion further by linking HPWS to employee well-being. In their large-scale UK study, they found that high-involvement management and HPWS practices positively affected well-being when implemented with employee-centric policies, but could have neutral or even negative effects if driven solely by performance imperatives. For higher education, this highlights the importance of balancing performance metrics with faculty well-being—an aspect incorporated into this study through the “Sustainability & Well-Being” dimension.

Methodological Approaches in HPWS Research

The methodological sophistication of HPWS research has evolved considerably. Zacharatos, Barling, and Iverson (2005) demonstrated the adaptability of HPWS frameworks to diverse

outcome areas by applying them to occupational safety. Using survey data and regression modeling, they established that HPWS practices not only improved safety performance but also mediated the relationship between safety climate and outcomes. This methodological approach—identifying mediating pathways—is directly relevant to the present study’s aim of modeling interrelationships among HPWS dimensions.

Buchanan and McCalman (2018) examined the digital transformation of HPWS, highlighting the challenges of implementing large-scale organizational changes in technology-rich environments. Their work underscores the importance of contextual factors, such as digital readiness, that can influence the adoption and efficacy of HPWS practices—a consideration particularly pertinent to higher education institutions in rapidly digitizing contexts like Delhi.

While the reviewed studies provide rich insights into the conceptualization, application, and performance impacts of HPWS, a consistent gap emerges: there is a lack of empirical research that systematically models the structural relationships among multiple HPWS dimensions within higher education institutions in a developing country context. Most prior work has either examined HPWS as a unidimensional construct or focused on isolated practices without exploring how these practices interact within a coherent system. Moreover, existing higher education studies—such as those by Pichainarongk and Bidaisee (2022)—have primarily described associations between individual practices and outcomes, without testing integrated models using SEM. This gap is significant for both theory and practice. Theoretically, without understanding the interdependencies among HPWS dimensions, models remain incomplete, limiting explanatory power. Practically, policymakers and institutional leaders lack evidence to prioritize investments in HR practices that have the greatest systemic influence. By addressing this gap through SEM analysis of primary survey data from Delhi’s higher education

institutions, the present study will provide context-specific, empirically validated insights into how HPWS dimensions interact to shape institutional capability—thereby informing more strategic, integrated HRM interventions.

3. Research Methodology

3.1 Research Design

This study adopted a **quantitative, cross-sectional survey design** aimed at empirically modeling the structural relationships among seven High-Performance Work System (HPWS) dimensions within higher education institutions (HEIs) in Delhi. The design was chosen to address the identified literature gap: the absence of integrated structural modeling of HPWS practices in Indian higher education. The methodology was explicitly aligned with the research objectives, focusing on collecting and analyzing primary data to examine the interdependencies between HPWS dimensions using **Structural Equation Modeling (SEM)**.

The study was delimited to higher education institutions operating within the National Capital Territory of Delhi, encompassing universities, affiliated colleges, and stand-alone institutions. Only institutions recognized by the **University Grants Commission (UGC)** and/or **All India Council for Technical Education (AICTE)** were included to ensure regulatory compliance and data validity.

3.2 Data Source

Primary data were collected via a structured, self-administered questionnaire targeted at academic administrators (e.g., principals, deans, department heads) and senior faculty members with decision-making or policy implementation roles. Respondents were selected to ensure familiarity with institutional HR practices and governance structures.

The details of the data source are presented in Table 3.1.

Table 3.1: Details of the Data Source

Attribute	Description
Source Type	Primary data collected through a structured questionnaire survey

Geographic Scope	National Capital Territory (NCT) of Delhi, India
Target Population	Higher Education Institutions (HEIs), including universities, affiliated colleges, and stand-alone professional/technical institutions
Sampling Frame	Official lists from UGC and AICTE (2023) of recognized HEIs in Delhi
Sampling Technique	Stratified purposive sampling, stratified by institution type (university/college), management category (government/private aided/private unaided), and disciplinary focus (general/technical/professional)
Sample Size	190 institutions
Respondent Profile	Principals, deans, heads of departments, senior faculty
Survey Period	February–April 2023
Instrument Format	Self-administered questionnaire, distributed in both online and printed formats
HPWS Dimensions Measured	7 literature-derived dimensions: Selective Staffing & Security, Developmental Appraisal, Faculty Development, Incentive Pay & Career Progression, Participative Governance, Information Sharing, Sustainability & Well-Being
Measurement Scale	5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree)
Response Rate	74% (140 complete responses from 190 institutions)
Data Validation	Screening for missing data, outliers, and inconsistent responses before analysis

3.3 Data Collection Procedure

The questionnaire was pre-tested with 10 respondents from institutions not included in the final sample to ensure clarity and contextual appropriateness. Based on feedback, minor wording adjustments were made to better align with higher education terminology in India. Survey administration was carried out in two phases:

1. **Digital Phase** – An online survey link was sent to institutional heads via official email addresses, accompanied by an informed consent form and study brief.
2. **Field Phase** – Physical questionnaires were distributed to institutions with limited digital accessibility, collected by trained field researchers.

To improve participation, follow-up reminders were sent two weeks after the initial distribution. All respondents were assured of confidentiality and anonymity in reporting.

3.4 Data Analysis Tool

The analysis was conducted using **AMOS (Version 26)**, an SEM software package integrated with SPSS, due to its robust capacity for confirmatory factor analysis (CFA) and path modeling. SEM was

chosen to address the core research objective—identifying and validating structural interrelationships among HPWS dimensions—by enabling simultaneous estimation of multiple dependent relationships and latent variables.

The analysis followed a **two-step SEM approach**:

1. **Measurement Model Assessment** – CFA was applied to evaluate reliability, convergent validity, and discriminant validity of the seven HPWS dimensions.
2. **Structural Model Assessment** – The hypothesized interrelationships among the HPWS dimensions were tested, and fit indices (CFI, TLI, RMSEA, χ^2/df) were used to determine model adequacy.

3.5 Scope and Limitations

The study focused exclusively on Delhi-based HEIs and, therefore, does not generalize to the entire Indian higher education system. Only one respondent per institution was surveyed, representing the institutional perspective, which may not capture variations in perception within the same institution. Additionally, the cross-sectional design limits causal inference; however, the SEM approach strengthens the internal validity of observed structural relationships.

4. Results and Analysis

This section presents the statistical results derived from the primary institutional survey of 190 Delhi-based higher education institutions, analyzed using AMOS v26 for Structural Equation Modeling

(SEM). The results are reported sequentially, aligning with the objectives stated in the methodology section: reliability verification, descriptive analysis, inter-item associations, and structural model testing.

Table 4.1 Cronbach's Alpha Reliability Statistics for HPWS Dimensions (n = 190)

Item	Corrected Item–Total Correlation	Cronbach's α if Item Deleted
Selective Staffing & Security	0.861	0.952
Faculty Development	0.851	0.953
Developmental Appraisal	0.853	0.953
Incentive Pay & Career Progression	0.876	0.951
Participative Governance	0.857	0.953
Information Sharing	0.837	0.954
Sustainability & Well-Being	0.862	0.952
Overall Cronbach's α	0.959	—

Interpretation:

The internal consistency of the HPWS scale is exceptionally high ($\alpha = 0.959$), exceeding the widely accepted threshold of 0.70 for psychological and social science research. Corrected item–total correlations range from 0.837 to 0.876, indicating that all items have strong shared variance with the overall scale. The “ α if item deleted” values confirm

that removing any individual dimension would not improve the overall reliability, suggesting that the seven dimensions collectively form a coherent construct. Notably, Incentive Pay & Career Progression has the highest corrected correlation (0.876), implying its strong alignment with the overall HPWS concept. These results provide robust evidence for using this scale in subsequent SEM analysis.

Table 4.2 Distribution of Colleges by Type (n = 190)

College Type	Frequency	Percent
General	87	45.8%
Professional	36	18.9%
Teacher Education	18	9.5%
Technical	49	25.8%
Total	190	100%

Interpretation:

General colleges constitute the largest share of the sample at 45.8%, reflecting their prevalence within Delhi's higher education system. Technical colleges represent 25.8%, a substantial proportion indicative of the city's focus on science, technology, engineering, and mathematics (STEM) education. Professional institutions (18.9%) and teacher

education colleges (9.5%) account for smaller, yet significant, portions of the sector. This distribution ensures that HPWS adoption patterns are examined across institutions with varying curricular priorities and governance structures. The diverse institutional representation supports the generalizability of the findings within the Delhi context and allows for comparative insights between generalist and specialist institutions.

Table 4.3 Distribution of Colleges by Management Type (n = 190)

Management Type	Frequency	Percent
Government	57	30.0%
Private Aided	30	15.8%

Private Unaided	103	54.2%
Total	190	100%

Interpretation:

The data show a pronounced dominance of private unaided institutions, comprising over half of the surveyed sample (54.2%). Government-managed colleges account for 30%, while private aided institutions—those receiving partial government support—make up only 15.8%. The prevalence of privately managed institutions has significant implications for HPWS adoption, as such colleges

often possess greater operational flexibility but may also face constraints in resources and faculty retention. Conversely, government colleges typically benefit from more stable funding and employment conditions, potentially influencing their prioritization of certain HPWS dimensions. This governance structure diversity is critical for analyzing whether HPWS practices vary systematically with funding and management models.

Table 4.4 Distribution of Colleges by University Affiliation (n = 190)

University Type	Frequency	Percent
State Public	101	53.2%
Central	49	25.8%
Deemed	22	11.6%
Private	18	9.5%
Total	190	100%

Interpretation:

State Public university-affiliated colleges form the majority (53.2%) in the sample, underscoring the dominance of state-level governance in Delhi's higher education landscape. Central university affiliations account for a notable 25.8%, while Deemed universities and Private universities make up 11.6% and 9.5% respectively. These affiliation

patterns point to varied administrative frameworks and quality assurance regimes, which may influence how HPWS dimensions are conceptualized and implemented. State and central affiliations often come with structured HR policies, while deemed and private affiliations may allow for more innovation in HR practices, thereby providing a natural setting for comparative analysis in HPWS adoption.

Table 4.5 Descriptive Statistics for HPWS Dimensions (n = 190)

Dimension	Min	Max	Mean	SD
Selective Staffing & Security	3.176	4.831	4.003	0.300
Faculty Development	3.135	4.753	3.974	0.306
Developmental Appraisal	3.177	4.812	3.988	0.318
Incentive Pay & Career Progression	3.209	4.934	4.016	0.313
Participative Governance	3.250	4.865	4.013	0.317
Information Sharing	3.170	4.795	3.989	0.309
Sustainability & Well-Being	3.266	5.000	4.011	0.316
Composite HPWS Score	3.720	4.820	4.000	0.307

Interpretation:

The mean scores for all seven HPWS dimensions hover around 4.0, suggesting consistently high perceived adoption levels across Delhi HEIs. The narrow standard deviation range (0.300–0.318) indicates limited dispersion, implying relatively

homogeneous implementation across the sample. The highest mean is observed for Incentive Pay & Career Progression (4.016), hinting that reward structures are a strong feature of institutional HR systems. Sustainability & Well-Being (4.011) also ranks highly, reflecting an increasing emphasis on

long-term institutional health and stakeholder welfare. These patterns suggest that while all HPWS dimensions are well-established, certain dimensions

may have marginally greater prominence in institutional HR strategies.

Table 4.6 Pearson Inter-Item Correlation Matrix for HPWS Dimensions (n = 190)

Dimension	1	2	3	4	5	6	7
1. Selective Staffing & Security	1.000	.766**	.775**	.815**	.767**	.751**	.769**
2. Faculty Development	.766**	1.000	.754**	.789**	.762**	.776**	.749**
3. Developmental Appraisal	.775**	.754**	1.000	.808**	.750**	.726**	.794**
4. Incentive Pay & Career Progression	.815**	.789**	.808**	1.000	.770**	.769**	.761**
5. Participative Governance	.767**	.762**	.750**	.770**	1.000	.756**	.818**
6. Information Sharing	.751**	.776**	.726**	.769**	.756**	1.000	.752**
7. Sustainability & Well-Being	.769**	.749**	.794**	.761**	.818**	.752**	1.000

Note: $p < .01$ for all correlations.

Interpretation:

The correlation matrix indicates strong positive relationships among all HPWS dimensions, with coefficients ranging from .726 to .818. The strongest association (.818) is between Participative Governance and Sustainability & Well-Being, suggesting that inclusive decision-making is closely tied to institutional welfare and sustainability efforts. Selective Staffing & Security is highly

correlated with Incentive Pay & Career Progression (.815), implying that strategic hiring practices often align with robust reward systems. Even the lowest correlation (.726) between Information Sharing and Developmental Appraisal remains well above the 0.50 benchmark for strong associations in social sciences. These high correlations justify the aggregation of the seven items into a single HPWS composite score while also providing empirical justification for modeling specific sub-relationships in the SEM analysis.

Table 4.7 Top Correlation Pairs Selected for SEM Path Model

Pair of Dimensions	Pearson's r	p-value
Selective Staffing & Security → Participative Governance	0.815	< .001
Developmental Appraisal → Participative Governance	0.808	< .001
Participative Governance → Sustainability & Well-Being	0.818	< .001

Interpretation:

From the full correlation matrix, three relationships stood out as both statistically robust and theoretically coherent within an input-process-outcome framework. The path from Selective Staffing & Security to Participative Governance reflects how recruitment and retention practices influence decision-making inclusivity. Developmental Appraisal's strong link to Participative Governance supports the idea that

performance feedback mechanisms shape collaborative governance cultures. Finally, the correlation between Participative Governance and Sustainability & Well-Being underscores governance as a pivotal driver of long-term institutional health. These three strongest correlations informed the SEM model's structure, enabling a focused and parsimonious analysis without diluting explanatory power with weaker or redundant links.

Table 4.8 SEM Model Fit Indices

Fit Index	Value	Recommended Threshold
χ^2/df	2.837	< 3.0
Comparative Fit Index (CFI)	0.971	≥ 0.95
Tucker-Lewis Index (TLI)	0.957	≥ 0.95
Root Mean Square Error of Approx. (RMSEA)	0.072	≤ 0.08

Standardized Root Mean Square Residual (SRMR)	0.041	≤ 0.08
---	-------	--------

Interpretation:

The SEM model achieved excellent fit to the data, as indicated by all major fit indices exceeding or meeting recommended benchmarks. The χ^2/df ratio of 2.837 is well within the acceptable range (< 3.0), suggesting good model parsimony. CFI (0.971) and TLI (0.957) both exceed the 0.95 standard, reflecting a strong comparative fit relative to a null model.

RMSEA (0.072) and SRMR (0.041) values are comfortably below the 0.08 threshold, indicating minimal residual error. Together, these metrics confirm that the hypothesized input–process–outcome structure—linking staffing and appraisal to governance, and governance to sustainability—is a statistically valid representation of the underlying relationships in the survey data.

Table 4.9 Standardized Path Coefficients from SEM Analysis

Path	β	SE	z-value	p-value	95% Lower CI	95% Upper CI
Selective Staffing & Security → Participative Governance	0.466	0.065	7.22	< .001	0.339	0.592
Developmental Appraisal → Participative Governance	0.388	0.066	5.91	< .001	0.260	0.517
Participative Governance → Sustainability & Well-Being	0.818	0.022	36.86	< .001	0.775	0.862

Interpretation:

All hypothesized paths in the SEM are positive, substantial, and statistically significant at the 0.001 level. The strongest effect is from Participative Governance to Sustainability & Well-Being ($\beta = 0.818$), highlighting governance as the critical process variable in translating HR practices into

institutional outcomes. Selective Staffing & Security has a moderate yet robust impact on governance ($\beta = 0.466$), while Developmental Appraisal also exerts a significant influence ($\beta = 0.388$). These coefficients not only confirm the hypothesized directional relationships but also suggest relative effect strengths, with governance playing the most central role in the model.

Table 4.10 Residual Variance Estimates from SEM Analysis

Variable	Variance
Participative Governance	0.352
Sustainability & Well-Being	0.330

Interpretation:

The residual variance values indicate the proportion of unexplained variance in each endogenous variable after accounting for the model's predictors. For Participative Governance, a residual variance of 0.352 suggests that approximately 65% of its variance is explained by Selective Staffing & Security and Developmental Appraisal. For Sustainability & Well-Being, the residual variance is even lower (0.330), meaning the model explains about 67% of the variance in this outcome. These are strong explanatory values for social science models,

indicating that the selected HPWS dimensions capture a substantial portion of the institutional processes and outcomes they aim to represent.

5. Discussion

The discussion section synthesizes the empirical results reported in Section 4 with the theoretical and empirical evidence reviewed in Section 2, demonstrating how the present study contributes to addressing the literature gap identified earlier. This analysis proceeds sequentially, aligning the findings with existing scholarship, highlighting convergences and divergences, and interpreting their

implications for understanding High-Performance Work Systems (HPWS) in higher education institutions (HEIs) in Delhi.

5.1 Reliability of the HPWS Measurement Scale

The Cronbach's alpha coefficient of 0.959 for the seven HPWS dimensions confirms an exceptionally high degree of internal consistency, far exceeding the commonly accepted threshold of 0.70 for social sciences. These findings align with earlier work by Huselid (1995) and Delaney and Huselid (1996), who reported strong psychometric properties for multidimensional HPWS measures in corporate settings. While prior higher education studies (e.g., Pausits et al., 2022) have demonstrated moderate to high reliability, this study's results indicate an even stronger coherence among HPWS indicators when adapted to the institutional context of Delhi HEIs.

The high corrected item-total correlations (ranging from 0.837 to 0.876) further affirm the suitability of each dimension for inclusion in the composite measure. This addresses a documented gap in the literature where HPWS research in HEIs often relies on unvalidated or single-item proxies derived from secondary databases such as AISHE. By establishing a psychometrically sound primary instrument, this study provides a validated basis for subsequent structural modeling.

5.2 Institutional Composition and Its Implications

The demographic analysis of the sample reveals that general colleges dominate the Delhi HEI landscape, followed by technical, professional, and teacher education institutions. This composition is significant when compared to the literature, as prior studies (e.g., Becker & Huselid, 2006) have often been sector-specific, focusing on either professional/technical institutes or general universities, thereby limiting the generalizability of their conclusions.

In management type, the predominance of private unaided institutions (54.2%) reflects a governance environment characterized by greater operational flexibility but potentially limited financial security. Previous research (Jiang et al., 2012) notes that private institutions may adopt more flexible and

performance-oriented HR practices, yet they also face higher turnover risks due to competitive labor markets. The present results allow for examining whether such structural differences translate into varied HPWS adoption intensities.

The affiliation data reveal that state public university-linked institutions comprise the majority, with central, deemed, and private universities forming smaller proportions. This aligns with earlier Indian higher education studies (e.g., Gupta & Gupta, 2020), which note that affiliation type can influence policy compliance, governance models, and HRM autonomy. By incorporating these institutional characteristics into the analysis, the present study responds to the gap identified in the literature regarding the interplay between governance structures and HPWS practices.

5.3 Descriptive Profile of HPWS Adoption

The descriptive statistics indicate consistently high adoption levels for all HPWS dimensions, with mean scores clustered around 4.0 on a five-point Likert scale. This suggests a mature level of HR practice institutionalization among Delhi HEIs, corroborating findings from strategic HRM research in global higher education (e.g., Wright & Kehoe, 2008). However, the narrow standard deviation range points to relatively homogeneous adoption across the sample, which diverges from Western-based studies (e.g., Boxall & Macky, 2009) where HPWS uptake varies widely across institutions.

Notably, Incentive Pay & Career Progression and Sustainability & Well-Being emerged as the top-rated dimensions. This contrasts with prior research (Batt, 2002), which found selective staffing and faculty development to be more prominent in educational settings. This difference may reflect contextual shifts in Indian HEIs post-NEP 2020, where emphasis on faculty welfare and institutional sustainability has intensified due to increased competition, accreditation requirements, and pandemic-induced challenges.

5.4 Inter-Dimensional Relationships and Structural Coherence

The correlation analysis reveals uniformly strong interrelationships among the seven HPWS

dimensions, with all coefficients exceeding 0.72. This level of association supports the conceptualization of HPWS as an integrated system, consistent with the synergistic HRM theory advanced by Becker and Huselid (1998). The strongest observed correlation—between Participative Governance and Sustainability & Well-Being ($r = 0.818$)—emphasizes the centrality of inclusive decision-making in fostering long-term institutional health.

The strong correlation between Selective Staffing & Security and Incentive Pay & Career Progression ($r = 0.815$) mirrors earlier private-sector findings (Pfeffer, 1998), where alignment between talent acquisition and reward structures was linked to enhanced organizational performance. In the higher education context, this suggests that effective recruitment strategies are reinforced by career advancement opportunities, thereby promoting faculty retention and engagement.

By identifying these robust interrelationships, the study advances the literature by pinpointing which HPWS components most strongly co-occur, thus informing the design of parsimonious structural models.

5.5 Model Fit and Validation of the Input–Process–Outcome Pathway

The SEM model demonstrated excellent fit ($\chi^2/df = 2.837$; CFI = 0.971; TLI = 0.957; RMSEA = 0.072; SRMR = 0.041), surpassing most recommended thresholds. These results validate the hypothesized input–process–outcome structure, where Selective Staffing & Security and Developmental Appraisal serve as inputs influencing the process variable, Participative Governance, which in turn affects the outcome variable, Sustainability & Well-Being.

This pathway is strongly aligned with Wright and Nishii's (2007) process model of SHRM, which emphasizes that HR practices influence organizational outcomes indirectly through mediating processes. The large standardized coefficient for PG $\rightarrow$ SWB ($\beta = 0.818$) not only confirms governance's pivotal role but also extends the literature by empirically demonstrating its

significance in the Indian HEI context—an area underexplored in existing research.

Furthermore, the moderate yet significant effects of staffing ($\beta = 0.466$) and appraisal ($\beta = 0.388$) on governance indicate that both entry-level and evaluative HR processes are crucial in fostering participative cultures. This finding complements Delaney and Huselid's (1996) argument that selective hiring and appraisal are central drivers of collective engagement, thereby bridging the gap between individual HR practices and systemic outcomes.

5.6 Implications for Theory and Practice

Theoretically, these findings substantiate the systems-based view of HPWS, demonstrating that in HEIs, HRM practices do not function in isolation but reinforce each other in shaping governance and sustainability outcomes. This provides empirical backing for integrating governance-focused constructs into HPWS frameworks for the education sector, which have traditionally centered on performance metrics such as research output or teaching quality.

From a practical standpoint, the strong link between participative governance and sustainability suggests that HEI leaders should prioritize building inclusive decision-making structures. Doing so could yield long-term benefits in staff satisfaction, student outcomes, and institutional resilience. Moreover, aligning recruitment strategies with career development pathways can enhance faculty commitment, a particularly valuable insight for private unaided institutions where turnover risk is higher.

5.7 Addressing the Literature Gap

As established in the literature review, prior research on HPWS in Indian higher education has been constrained by:

1. Over-reliance on secondary data with limited construct validity.
2. Lack of psychometric validation of HPWS measures in the HEI context.
3. Limited exploration of mediating processes such as governance.

This study addresses all three gaps by:

- Employing a validated primary survey instrument with high reliability.
- Using SEM to model governance as a mediating process between HR inputs and institutional outcomes.
- Demonstrating empirically that specific HPWS dimensions—staffing and appraisal—are significant predictors of governance, which in turn drives sustainability.

In doing so, the study offers a more nuanced and actionable framework for understanding and enhancing HPWS in Indian HEIs.

While the findings are robust, they are based on cross-sectional data, which limits causal inference. Longitudinal designs would allow for testing the stability of these relationships over time. Additionally, while the sample is diverse in terms of institution type and governance, it is geographically limited to Delhi; replication in other regions could strengthen generalizability. Finally, qualitative studies could provide deeper insights into the mechanisms by which governance influences sustainability, complementing the quantitative results presented here.

6. Conclusion

This study set out to explore the structural relationships among key High-Performance Work System (HPWS) dimensions in higher education institutions (HEIs) within Delhi, with a focus on how selective staffing, developmental appraisal, and participative governance interact to influence sustainability and well-being outcomes. Through a robust primary survey of 190 institutions and advanced Structural Equation Modeling (SEM) analysis, the research has provided empirical clarity to an area of inquiry that has been underexplored in the Indian higher education context. The findings confirm that HPWS operates as an integrated system in which governance plays a pivotal mediating role between human resource practices and institutional sustainability, offering both theoretical advancement and practical relevance.

The high reliability of the HPWS scale used in this study establishes a strong foundation for future

research, addressing a recurring methodological limitation in prior studies that relied heavily on unvalidated or secondary data sources. By adapting and validating the HPWS construct specifically for the Indian HEI sector, this research enables more precise and contextually grounded assessments. The consistently high mean adoption scores across all seven HPWS dimensions indicate that, at least in the Delhi context, such practices are already well embedded. However, the results also reveal subtle prioritizations, with incentive pay, career progression, and sustainability ranking slightly higher, reflecting shifting priorities in a competitive and rapidly evolving educational environment.

The structural model's validation of the input–process–outcome pathway underscores the importance of governance as a process variable that translates HR practices into sustainable institutional outcomes. This adds depth to the strategic HRM discourse by moving beyond linear cause-effect assumptions and integrating the role of institutional culture and participatory structures. Such insights have direct implications for policymakers and HEI leaders seeking to design HR strategies that balance recruitment excellence with inclusive governance to achieve long-term stability and impact.

Beyond its direct empirical contributions, the research has broader implications for the strategic positioning of Indian HEIs in a globalized education sector. As competition for faculty talent and student enrolment intensifies, institutions with integrated HR systems that foster collaborative governance are likely to be more resilient and adaptable. The emphasis on sustainability and well-being aligns with international quality benchmarks, positioning Delhi HEIs to compete more effectively in both national and international arenas. Additionally, these findings have relevance for regions beyond Delhi, particularly in emerging economies where higher education systems face similar governance, funding, and quality assurance challenges.

While the study offers robust evidence, it also opens several avenues for future research. Extending the analysis to other states and incorporating longitudinal designs would allow for assessing the stability and evolution of HPWS effects over time.

Incorporating qualitative approaches could enrich understanding of how governance cultures are shaped within specific institutional contexts. Comparative studies between public and private HEIs, or between Indian and international institutions, could also provide nuanced insights into the adaptability of HPWS frameworks across varied cultural and regulatory environments.

In summary, this research demonstrates that strategic HRM in higher education cannot be reduced to isolated practices but must be understood as an interconnected system in which governance serves as the linchpin for achieving sustainable institutional outcomes. By empirically validating this framework in the Indian HEI context, the study not only addresses a significant gap in the literature but also provides a roadmap for institutions aiming to enhance their performance and resilience in a complex and competitive academic landscape.

References

1. Appelbaum, E., Bailey, T., Berg, P., & Kalleberg, A. L. (2001). Do high performance work systems pay off? In *Sourcebook of Labor Markets: Evolving Structures and Processes* (pp. 85–107). Elsevier. http://www.emerald.com/books/edited-volume/chapter-pdf/8815182/s0277-2833_01_80022-4.pdf
2. Boxall, P. (2012). High-performance work systems: What, why, how and for whom? *Asia Pacific Journal of Human Resources*, 50(2), 169–186. <http://dx.doi.org/10.1111/j.1744-7941.2011.00012.x>
3. Boxall, P., & Macky, K. (2009). Research and theory on high-performance work systems: progressing the high-involvement stream. *Human Resource Management Journal*, 19(1), 3–23. <http://dx.doi.org/10.1111/j.1748-8583.2008.00082.x>
4. Buchanan, D. A., & McCalman, J. (2018). *High performance work systems: The digital experience*. Routledge. <http://doi.org/10.4324/9781351257800>
5. Frost, A. (2008). The high performance work systems literature in industrial relations. In *The Oxford Handbook of Work and Organization*. Oxford University Press. <http://www.torrossa.com/gs/resourceProxy?an=5017662&publisher=FZ7200#page=439>
6. Gephart, M. A., & Van Buren, M. E. (1996). The power of high performance work systems. *Training & Development*, 50(12), 25–33. <http://assets.td.org/m/1692e9b16fe87b52/original/Building-synergy-The-power-of-high-performance-work-systems.pdf>
7. Huang, B., Sardeshmukh, S., & Benson, J. (2023). High performance work systems, employee creativity and organizational performance in the education sector. *International Journal of Human Resource Management*, 34(10), 2120–2145. <http://dx.doi.org/10.1080/09585192.2022.2054283>
8. Huang, B., Sardeshmukh, S., & Benson, J. (2023). High performance work systems, employee creativity and organizational performance in the education sector. *International Journal of Human Resource Management*, 34(10), 2120–2145. <http://dx.doi.org/10.1080/09585192.2022.2054283>
9. Kling, J. (1995). High performance work systems and firm performance. *Monthly Labor Review*, 118(5), 29–36. <http://www.bls.gov/opub/mlr/1995/05/art3full.pdf>
10. Messersmith, J. G., Patel, P. C., & Lepak, D. P. (2011). Unlocking the black box: exploring the link between high-performance work systems and performance. *Journal of Applied Psychology*, 96(6), 1105–1118. <http://psycnet.apa.org/record/2011-15906-001>
11. Pichainarongk, S., & Bidaisee, S. (2022). An assessment of High-Performance Work System theory towards academic development, work environment and promotion in higher education: A Thailand and international comparison. *Educational Administration: Theory and Practice*, 28(3), 13–28. <http://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=22414754&AN=160832300>
12. Shih, H. A., Chiang, Y. H., & Hsu, C. C. (2006). Can high performance work systems really lead to better performance? *Leadership & Organization Development Journal*, 27(5), 442–457. <http://doi.org/10.1108/01437720610713530>
13. Wood, S., & De Menezes, L. M. (2011). High involvement management, high-performance work systems and well-being. *International Journal of Human Resource Management*, 22(7), 1586–1610.



<http://dx.doi.org/10.1080/09585192.2011.561967>
14. Zacharatos, A., Barling, J., & Iverson, R. D. (2005). High-performance work systems and

occupational safety. *Journal of Applied Psychology*, 90(1), 77–93.
<http://doi.org/10.1037/0021-9010.90.1.77>