

DECENT JOBS AND DIGITAL GOVERNANCE: A HUMAN-CENTERED HRM ECOSYSTEM IN KAZAKHSTAN'S CIVIL SERVICE



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ABSTRACT

Kazakhstan's civil service modernization has placed human-centered governance, digital HRM, and decent jobs at the center of public administration reform. However, empirical evidence on how competencies and workplace resources shape civil servants' satisfaction remains limited in post-Soviet contexts. This study examines whether Human Resource Competency (HRC) and Work Environment Quality (WEQ) affect Civil Servant Satisfaction (CSS) within an ecosystem approach to HRM. The analysis uses anonymous national survey data from 12,562 civil servants in Kazakhstan and applies Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS 4. Reliability and validity diagnostics confirmed strong measurement quality: average variance extracted ranged from 0.678 to 0.820, composite reliability exceeded 0.80 for all constructs, and HTMT values ranged from 0.659 to 0.876. The structural model explained 51.54% of the variance in CSS. HRC had a strong positive and statistically significant effect on CSS ($\beta = 0.587$, $t = 28.449$, $p < 0.001$, $f^2 = 0.166$), while WEQ also had a positive and significant but practically negligible direct effect ($\beta = 0.146$, $t = 6.513$, $p < 0.001$, $f^2 = 0.010$). Predictive relevance was supported by Q^2 predict values of 0.387 for SAT1 and 0.414 for SAT2. The findings indicate that competence development is the dominant determinant of satisfaction, whereas workplace quality functions as a secondary organizational resource. Quantitatively, the study links human-centered HRM with quality jobs, equal opportunities, economic productivity, inclusive growth, and sustainable public-sector governance in Kazakhstan. These results clarify the relative explanatory weight of individual and organizational resources in civil service HRM ecosystems.

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INTRODUCTION

The rapid digital transformation of public administration has fundamentally reshaped how governments organize, manage, and develop their human resources. Increasing citizen expectations, technological innovation, and growing institutional complexity have challenged traditional bureaucratic models that prioritized administrative control and procedural compliance over strategic workforce management. Contemporary public organizations are increasingly expected to become adaptive, data-driven, and citizen-oriented institutions capable of delivering high-quality services while promoting innovation, transparency, and organizational sustainability (OECD, 2025a). Consequently, human resource management (HRM) has shifted from a purely administrative function to a strategic component of public governance a transition that demands both theoretical reframing and empirical investigation.

Across developed and emerging economies, governments are implementing comprehensive civil service reforms that prioritize competency development, evidence-based personnel management, and digitalization of HR processes. International benchmarking consistently identifies strategic HRM capacity defined by the alignment of workforce capabilities with institutional objectives, the use of integrated digital platforms, and support for continuous professional

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development as a critical determinant of public-sector effectiveness (Bakos, 2025; OECD, 2025a). However, reform efforts frequently encounter resistance rooted in institutional inertia, unclear accountability structures, and insufficient attention to the human dimension of organizational change (Zolak Poljašević et al., 2025). This tension between reform ambition and implementation reality underscores the need for HRM frameworks that are simultaneously strategic, evidence-based, and employee-centered.

Two theoretical developments are especially relevant to this challenge. First, the principle of human-centeredness reconceptualizes public administration as a system designed around the needs, competencies, and well-being of employees rather than around administrative procedures alone. Under this approach, investments in employee professional development, supportive organizational environments, and collaborative institutional cultures are treated not as managerial amenities but as strategic prerequisites for sustainable public-service performance. Second, the ecosystem perspective extends this reasoning by conceptualizing HRM as an integrated organizational system in which individual competencies, organizational resources, technological capabilities, and institutional arrangements mutually reinforce one another to produce organizational outcomes (Subramony et al., 2024). Unlike conventional HRM models that investigate isolated practices, the ecosystem approach treats employee outcomes as emergent properties of complex, multi-component organizational environments, a framing particularly suited to public administration, where effective service delivery depends on coordinated interaction across multiple organizational levels.

Recent evidence published in the *Bangladesh Journal of Multidisciplinary Scientific Research* further supports this focus. Pandey et al. (2025) show that work attitudes are positively associated with organizational performance in public financial institutions, while Alabri and Shannaq (2025), Shannaq et al. (2025), and Zabiyeve et al. (2025) emphasize the importance of AI tools, digital competence, and future workforce skills for employability and organizational adaptation.

Digital technologies reinforce this ecosystem perspective by transforming how civil servants are recruited, developed, evaluated, and supported. Integrated human resource information systems, electronic performance evaluation platforms, and digital learning environments have significantly expanded governments' capacity to manage workforce capabilities efficiently and transparently (Strohmeier, 2020; Nyathi & Kekwaletswe, 2024). Rather than merely passive technological innovations, digital HRM tools increasingly serve as strategic mechanisms for competency development, knowledge sharing, and organizational adaptability. As a result, digital transformation has become inseparable from contemporary public-sector HRM reform, creating new analytical demands for research that integrates digital dimensions into broader human centered ecosystem frameworks.

Kazakhstan provides a particularly relevant and underexplored context for examining these developments. Over the past decade, the country has implemented extensive reforms to modernize public administration, strengthen competency-based civil service management, and accelerate digital government initiatives. The 2023 Concept for the Development of Public Administration until 2030 explicitly prioritizes strategic HRM, digital governance, and improved public-service quality as interdependent national objectives. International assessments confirm that Kazakhstan has made measurable progress across governance indicators while identifying human resource management capacity and digital integration as priority areas for further reform (OECD, 2025b). Notwithstanding these developments, evidence on how ongoing reforms have shaped civil servants' organizational experiences and satisfaction, and on the individual-level outcomes that ultimately determine whether institutional reform delivers sustainable performance improvements, remains limited (Issenova et al., 2024).

Despite growing scholarly interest in strategic HRM, ecosystem-oriented management, and digital public administration, the existing literature remains fragmented. Previous research has predominantly examined human resource competency, work environment quality, public service motivation, or employee satisfaction as separate constructs rather than as components of an integrated organizational system. Studies on digital transformation have similarly focused on technological implementation rather than on the interaction between digital tools, organizational resources, and employee outcomes. Furthermore, most empirical evidence comes from North American, Western European, or East Asian institutional contexts whose governance structures, administrative traditions, and reform trajectories differ substantially from those of post-Soviet systems (Zolak Poljašević et al., 2025). Consequently, relatively little is known about how individual competencies and organizational conditions jointly influence civil servant satisfaction within an integrated human-centered ecosystem framework in contexts such as Kazakhstan.

The present study addresses these gaps by integrating the ecosystem approach to HRM, the principle of human-centeredness, the Ability-Motivation-Opportunity (AMO) framework (Appelbaum et al., 2000), and the Job Demands–Resources (JD-R) model (Demerouti et al., 2001) into a single empirical framework. Rather than examining isolated organizational factors, the proposed model simultaneously investigates the effects of Human Resource Competency (HRC) and Work Environment Quality (WEQ) on Civil Servant Satisfaction (CSS). This integrated perspective reflects the assumption that employee satisfaction emerges through continuous interactions between individual capabilities and organizational resources within a digitally enabled public-sector ecosystem, an assumption testable only through models that account for both dimensions simultaneously.

The empirical analysis draws on a nationwide cross-sectional survey of 12,562 civil servants across Kazakhstan's public administration and employs Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4. The large national sample provides sufficient statistical power to evaluate both the measurement properties of the proposed constructs and the structural relationships among them, yielding robust and generalizable evidence about the organizational mechanisms underlying civil servant satisfaction in an emerging-economy public administration context.

This study makes four contributions to the literature. First, it advances ecosystem-oriented HRM research by providing the first integrated empirical test of competency development and work environment quality as simultaneous predictors of civil servant satisfaction, clarifying their relative explanatory power within a public-sector context. Second, it

enriches the human-centered public administration literature by empirically demonstrating how employee-centered organizational resources interact with individual capabilities in a digitally transforming civil service. Third, it extends the public-sector HRM evidence base by contributing large-scale findings from Kazakhstan. This post-Soviet administrative context has received scant attention in international research despite its ambitious modernization agenda. Fourth, the results offer actionable guidance for policymakers and public managers seeking to design competency-based personnel systems and organizational environments that improve civil servant satisfaction and support sustainable governance capacity.

The study aims to determine the relative effects of human resource competency and work environment quality on civil servants' satisfaction in Kazakhstan's digitally transforming civil service ecosystem.

The remainder of the paper is organized as follows. Section 2 reviews the relevant literature and develops the research hypotheses. Section 3 describes the research methodology, including the research design, sample, measurement model, and analytical procedures. Section 4 presents the empirical findings, while Section 5 discusses their theoretical and practical implications. The final section summarizes the main findings, acknowledges limitations, and proposes directions for future research.

LITERATURE REVIEW

Human resource management (HRM) has evolved from an administrative personnel function into a strategic organizational capability that contributes directly to performance, innovation, and sustainability. The emergence of Strategic Human Resource Management (SHRM) reframed human capital as a source of competitive advantage by aligning HR practices with organizational strategy (Wright & McMahan, 1992). Subsequent meta-analytic work confirmed that HRM practices produce their effects through system-level bundles rather than isolated interventions, with empirical evidence revealing wide disparity in how these effects are conceptualized and measured across studies (Boselie et al., 2005; Paauwe, 2009). This methodological and conceptual heterogeneity signaled that strategic alignment, while necessary, is insufficient to capture how HRM operates in complex organizational environments.

Contemporary scholarship argues that organizations function within multi-actor ecosystems - comprising employees, managers, governmental institutions, digital infrastructures, and external stakeholders - whose continuous interactions generate organizational value (Snell et al., 2023; Ginting et al., 2023). The ecosystem perspective accordingly conceptualizes HRM not as a set of discrete practices but as an integrated system in which individual capabilities, organizational resources, and institutional arrangements are mutually reinforcing (Subramony et al., 2024). Sustainable HRM scholarship extends this view by insisting that enduring organizational outcomes require simultaneous investment in individual capabilities and organizational conditions rather than a primary focus on narrow performance metrics (Kramar, 2014). This argument resonates closely with human-centered governance, which positions employee well-being and professional development as strategic objectives rather than residual concerns.

Digitalization adds a further layer of complexity. Strohmeier (2020) distinguishes mere digitization - the conversion of processes to digital formats from genuine digital transformation, which reshapes how organizations develop competencies, share knowledge, evaluate performance, and support employee well-being. In the public sector, integrated personnel information systems and digital learning platforms have become enabling mechanisms rather than passive administrative tools (Nyathi & Kekwaletswe, 2024). However, despite growing theoretical momentum, integrated empirical models that simultaneously examine individual capabilities and organizational conditions within a digitally enabled public-sector ecosystem remain scarce (Ginting et al., 2023; Subramony et al., 2024); this is the gap this study addresses.

Human resource competency has emerged as a central construct in public-sector HRM because civil servants operate in environments characterized by complex regulations, multiple stakeholders, political accountability, and accelerating digital governance reform. Unlike private-sector competency frameworks, which tend to prioritize market performance, public-sector competency encompasses technical expertise, ethical conduct, digital literacy, collaborative decision-making, and adaptive capacity under continuous institutional change (Demo et al., 2024; Knies et al., 2018). Competency-based personnel systems therefore serve not only as developmental mechanisms but as the principal levers through which governments align workforce capabilities with evolving public-service mandates.

The Ability–Motivation–Opportunity (AMO) framework (Appelbaum et al., 2000) provides the dominant theoretical rationale for investigating competency as a predictor of employee outcomes: by equipping employees with the knowledge and skills required to perform effectively, competency development addresses the "Ability" arm of the model. A recent systematic review by Bos-Nehles et al. (2023), synthesizing four decades of AMO research, confirmed persistent associations between ability-enhancing HRM and positive attitudinal outcomes, yet found that the relative explanatory weight of the ability arm, compared with the motivation and opportunity components, varies substantially across organizational contexts. This heterogeneity is echoed at the macro level by Jiang et al.'s (2012) meta-analytic finding that practices targeting employee ability rank among the strongest drivers of commitment and satisfaction, while their effect sizes differ markedly between public and private organizations, underscoring the need for context-specific investigation.

Digital transformation has further expanded the meaning of competency in the civil service. The integration of digital government platforms, e-HRM systems, and data-driven decision-support tools requires civil servants to develop digital literacy and analytical capability alongside traditional administrative expertise (Demo et al., 2024). Where digital competency gaps persist, they risk creating friction between formal competency development programs and the technological demands of day-to-day work, a dynamic that emerging economies undergoing simultaneous civil service and digital governance reform face acutely (Issenova et al., 2024).

A key unresolved question in the competency–satisfaction literature concerns mechanism: does competency development influence satisfaction primarily through direct performance-based channels - greater efficacy, reduced role ambiguity or through mediated pathways involving occupational self-efficacy and intrinsic motivation? Borst et al. (2019),

examining government employees through a JD-R lens, found that personal resources, including perceived competence, significantly strengthened the resource engagement relationship. Whether this pathway operates distinct from direct ability outcome linkages, and whether it holds in post-Soviet administrative contexts where institutional trust and career development pathways differ from those in Western settings, remain empirically unresolved and motivate Hypothesis 1 of the present study.

Work environment quality (WEQ) is a multidimensional construct encompassing physical conditions, psychosocial climate, leadership support, communication quality, opportunities for professional development, and access to organizational resources. The Job Demands–Resources (JD-R) model (Demerouti et al., 2001; Bakker & Demerouti, 2007) provides the primary theoretical rationale for its influence on employee outcomes: job resources facilitate goal achievement, promote learning and motivation, and buffer the strain produced by demanding working conditions, thereby sustaining positive attitudes including job satisfaction. Subsequent theoretical developments have extended the model to account for proactive resource acquisition, cross-level resource dynamics, and the motivational amplification of resources under high-demand conditions (Bakker & Demerouti, 2017; Bakker et al., 2023).

Evidence from public-sector contexts reveals two important patterns that complicate a simple positive resource–satisfaction relationship. First, organizational resources exert stronger positive effects on work engagement and satisfaction in public-sector than in private-sector organizations, as demonstrated by Borst et al.'s (2020) meta-analysis comparing attitudinal and performance outcomes across public, semi-public, and private employers. Second, the magnitude of direct WEQ–satisfaction effects diminishes substantially when individual competency, engagement, and organizational commitment are considered simultaneously (Peccei & Van de Voorde, 2019). This conditional pattern suggests that environmental resources may operate as enabling rather than sufficient conditions for satisfaction a theoretical distinction with direct relevance for interpreting the relative effect sizes of HRC and WEQ in the present model.

Digital transformation has added a further dimension to WEQ in contemporary public administration. Effective digital work environments integrated communication platforms, remote-working infrastructure, and transparent administrative systems - improve information access and reduce procedural friction, functioning as organizational resources in JD-R terms (Nyathi & Kekwaletswe, 2024). Conversely, inadequate digital systems introduce additional demands, potentially offsetting the motivational benefits of other environmental resources. The dual-process logic of the JD-R model therefore predicts that digital WEQ quality exerts heterogeneous effects on satisfaction depending on implementation quality. This prediction has yet to be tested in Kazakhstan's rapidly digitalizing civil service.

From an ecosystem perspective, work environment quality is best understood not as a collection of isolated workplace characteristics but as an integrated organizational resource whose effectiveness is contingent on the individual capabilities with which it interacts. The complementarity hypothesis, that individual and organizational resources amplify each other's effects rather than simply adding them, is theoretically motivated by both AMO and JD-R frameworks but remains empirically underexplored in integrated public-sector models. Testing WEQ's direct effect alongside HRC in a single structural equation model provides a rigorous basis for evaluating whether environmental conditions operate as primary drivers or as contextual moderators of civil servant satisfaction.

Civil servant satisfaction has long been recognized as an indicator of organizational effectiveness in public administration. Locke's (1976) foundational conceptualization frames job satisfaction as a positive evaluative response to one's work experience, shaped by responsibilities, organizational environment, developmental opportunities, and interpersonal relationships. Contemporary HRM scholarship extends this view by treating satisfaction as a multidimensional emergent outcome rather than a response to any single organizational factor (Guest, 2017; Peccei & Van de Voorde, 2019). In public organizations, this complexity is amplified by public service motivation (PSM), an intrinsic orientation toward serving the public interest that shapes how civil servants appraise their working conditions independently of material rewards (Perry & Wise, 1990). The implication is that satisfaction models developed in private-sector contexts may systematically underestimate the role of individual motivational dispositions in public settings.

Empirical evidence on PSM and satisfaction is broadly consistent but reveals important contextual contingencies. Zhang's (2023) moderated mediation analysis demonstrated that PSM enhances job satisfaction by reducing perceived role overload, while Ding & Wang's (2023) cross-cultural meta-analysis of 31 samples confirmed a significant PSM–engagement association moderated by national culture. However, this accumulated evidence has largely been produced in Western or East Asian settings; whether the same psychological mechanisms operate in post-Soviet civil service systems where institutional trust trajectories and career incentive structures differ markedly remains an open question. Critically, neither the PSM literature nor the JD-R literature has systematically integrated individual competency alongside organizational environment within a unified model of civil servant satisfaction, producing a fragmented picture that understates how ecosystem-level interactions determine employee outcomes.

The organizational consequences of civil servant satisfaction extend well beyond individual well-being. Satisfied civil servants demonstrate stronger organizational commitment, reduced turnover intentions, higher service quality, and greater adaptability to institutional reform (Guest, 2017). Conversely, persistent dissatisfaction compounds the already significant challenges of workforce retention, resistance to change, and the erosion of public trust in government institutions. As Kazakhstan and comparable emerging economies intensify civil service modernization programs and digital government initiatives, achieving and sustaining high levels of civil servant satisfaction has become an explicit governance objective whose empirical determinants warrant systematic investigation.

The preceding review establishes that AMO theory (Appelbaum et al., 2000), the JD-R model (Demerouti et al., 2001; Bakker et al., 2023), and ecosystem-oriented HRM frameworks (Snell et al., 2023; Kramar, 2014) collectively provide strong theoretical grounds for expecting both HRC and WEQ to predict civil servant satisfaction. However, four

interconnected gaps prevent these theories from generating definitive empirical conclusions in the public-sector context examined here.

First, human resource competency and work environment quality have been examined predominantly as separate research streams. Relatively few studies have modeled their simultaneous effects, leaving the question of relative explanatory primacy which the meta-analytic evidence of Jiang et al. (2012) and Bos-Nehles et al. (2023) cannot fully resolve open to empirical inquiry. Second, ecosystem approaches to HRM remain underrepresented in quantitative empirical research: most published studies test isolated HRM practices rather than integrated models in which individual capabilities and organizational conditions are treated as mutually reinforcing components of a single system (Ginting et al., 2023; Subramony et al., 2024). Third, the digital dimension of both HRC and WEQ has not been adequately incorporated into ecosystem oriented HRM frameworks, limiting understanding of how digital tools mediate competency development and environmental quality in public institutions (Strohmeier, 2020; Nyathi & Kekwaletswe, 2024). Fourth, the post-Soviet public administration context represented by Kazakhstan characterized by ongoing competency-based civil service reform and accelerating digital governance transition has received scant empirical attention, with most HRM and public management research conducted in Western or East Asian institutional settings where administrative traditions and incentive structures differ fundamentally (Issenova et al., 2024; Knies et al., 2018).

The present study addresses all four gaps through an integrated PLS-SEM model that simultaneously tests Human Resource Competency (HRC) and Work Environment Quality (WEQ) as predictors of Civil Servant Satisfaction (CSS) in a national sample of 12,562 Kazakhstani civil servants. Grounded in the AMO framework, the JD-R model, and the ecosystem approach to human-centered HRM, the conceptual model treats HRC as the primary individual resource and WEQ as the primary organizational resource operating within a digitally enabled public-sector ecosystem. Figure 1 presents the conceptual framework of the study.

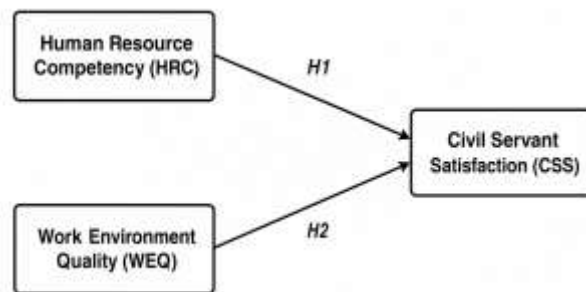


Figure 1. Conceptual framework of the study

Source: Authors' conceptualization based on the AMO framework (Appelbaum et al., 2000), the Job Demands–Resources model (Demerouti et al., 2001), and the ecosystem approach to HRM.

The purpose of this study is to examine the effects of Human Resource Competency (HRC) and Work Environment Quality (WEQ) on Civil Servant Satisfaction (CSS) in Kazakhstan's public administration system.

Based on the theoretical arguments and identified gaps, the following hypotheses are advanced:

H₁: Human Resource Competency has a positive and significant effect on Civil Servant Satisfaction.

H₂: Work Environment Quality has a positive and significant effect on Civil Servant Satisfaction.

MATERIALS AND METHODS

The present study employed a quantitative cross-sectional survey design to examine the relationships among human resource competency (HRC), work environment quality (WEQ), and civil servant satisfaction (CSS) within Kazakhstan's public administration system. A cross-sectional design was adopted because it enables simultaneous measurement of latent constructs across a large population and facilitates the empirical testing of theoretically specified relationships using structural equation modeling. This design is widely recommended for studies investigating complex organizational phenomena involving multiple latent variables (Hair et al., 2022; Sarstedt et al., 2022).

The study is grounded in an ecosystem approach to human resource management that positions competency development, organizational support, and digital enabling technologies as interdependent drivers of employee satisfaction within a human-centered public-sector framework. Digital human resource management tools - including electronic personnel services, online competency development platforms, and integrated information systems are treated as enabling organizational context rather than as independent constructs within the empirical model.

The theoretical framework integrates two complementary perspectives. The Ability–Motivation–Opportunity (AMO) framework positions individual competencies as the primary ability-side determinant of positive employee outcomes. The Job Demands–Resources (JD-R) model explains employee satisfaction through the balance between organizational demands and available job resources, including the quality of the work environment (Demerouti et al., 2001; Schaufeli & Bakker, 2004). Integrating these frameworks provides a comprehensive theoretical explanation of how individual competencies and organizational resources jointly contribute to civil servant satisfaction.

To empirically evaluate these hypotheses, the study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4 (Ringle et al., 2024). PLS-SEM was selected for three reasons. First, the proposed model includes multiple reflective latent constructs requiring simultaneous estimation of measurement and structural relationships.

Second, PLS-SEM is particularly appropriate for prediction-oriented research involving complex organizational constructs. Third, the method provides robust parameter estimates while simultaneously assessing reliability, validity, structural relationships, explanatory power, and predictive relevance (Hair et al., 2019; Hair et al., 2022; Henseler et al., 2015).

All latent constructs were specified as reflective measurement models, consistent with the theoretical expectation that observed indicators represent manifestations of their corresponding underlying construct rather than components that define it. Reflective specification is appropriate for measuring perceptions of competency, environmental quality, and satisfaction because changes in the latent construct are expected to produce corresponding changes across all observed indicators (Chin, 1998; Hair et al., 2022).

Empirical data were collected from civil servants employed in the public administration system of the Republic of Kazakhstan using a structured, self-administered questionnaire distributed through digital survey instruments. Electronic administration ensured broad geographical coverage across different levels of government while reducing manual data-entry errors and improving response completeness. The questionnaire comprised closed-ended items measured on a five-point Likert scale (1 = "strongly disagree" to 5 = "strongly agree"), with all items coded so that higher values indicate more favorable perceptions. Participation was voluntary and fully anonymous; no personally identifiable information was collected.

The material selection was based on the target population of civil servants employed in Kazakhstan's public administration system. The sampling procedure relied on broad digital distribution through official channels, and the resulting sample size ($N = 12,562$) substantially exceeded the minimum requirements for detecting small effects in a model with two structural predictors, thereby supporting adequate statistical power and precision.

Prior to analysis, all responses were screened for incompleteness, inconsistent response patterns, and duplicate submissions. Questionnaires failing predefined quality criteria were excluded. The cleaned dataset was subsequently imported into SmartPLS 4 (Ringle et al., 2024) for structural equation modeling. The final analytical sample comprised 12,562 valid observations, making it one of the largest civil-service survey datasets used in recent public-sector PLS-SEM research. This sample size substantially exceeds minimum recommendations for variance-based structural equation modeling, providing high statistical power and stable bootstrap confidence intervals (Hair et al., 2022).

The demographic composition of the sample reflects a representative cross-section of Kazakhstan's civil service (see Table 1). Women constituted 61.57% of respondents and men 38.43%. The largest age cohort comprised employees aged 36–45 years (31.45%), followed by 26–35 years (26.37%) and 46–55 years (21.24%). The majority held a bachelor's degree (83.56%), while 7.34% held a master's degree and 0.29% a doctoral qualification. Non-managerial personnel accounted for 78.99% of the sample, with managerial staff comprising the remaining 21.01%. Respondents represented all major administrative levels, with regional government employees forming the largest proportion. Descriptive statistics (Table 1) confirm sufficient variability across all construct indicators, supporting the dataset's suitability for latent-variable modeling.

The conceptual model comprised three reflective latent constructs: Human Resource Competency (HRC), Work Environment Quality (WEQ), and Civil Servant Satisfaction (CSS). Reflective specification assumes that the latent construct causes variation in its observed indicators, which are therefore expected to be highly intercorrelated manifestations of the same underlying concept (Chin, 1998; Hair et al., 2022). All items were measured on a five-point Likert scale, with higher scores denoting more favorable evaluations.

Human Resource Competency (HRC) refers to civil servants' perceptions of their professional knowledge, technical expertise, practical skills, adaptability, and capacity for effective public service delivery. HRC was operationalized using six reflective indicators (HRC1–HRC6) that collectively capture the key manifestations of employee competency. Work Environment Quality (WEQ) reflects employees' perceptions of the organizational conditions supporting their work, including supervisory support, communication quality, opportunities for professional development, and working conditions. WEQ was operationalized using eight reflective indicators (WEQ1–WEQ8). Civil Servant Satisfaction (CSS) is the endogenous construct of the structural model and represents employees' overall evaluation of their work experience within the civil service. CSS was measured by two reflective indicators (SAT1 and SAT2).

Consistent with reflective measurement theory, each observed indicator is specified as a function of its latent construct plus measurement error. The general reflective measurement equation is given by:

Equation (1). Reflective Measurement Model

$$x_i = \lambda_i \xi + \varepsilon_i \quad (1)$$

Where x_i denotes the observed indicator, λ_i is the standardized outer loading linking the indicator to the latent construct ξ , and ε_i is the measurement error. Accordingly, changes in the latent construct are expected to produce corresponding changes across all observed indicators, and the indicators are expected to exhibit substantial positive intercorrelations. The psychometric quality of each reflective measurement model was subsequently evaluated using the criteria described below:

The empirical analysis followed the two-stage PLS-SEM procedure recommended by Hair et al. (2022), Henseler et al. (2015), and Sarstedt et al. (2022): measurement model quality was established before structural relationships were estimated. All analyses were performed in SmartPLS 4 (Ringle et al., 2024).

The measurement model assessment addressed four criteria: indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Indicator reliability was evaluated via standardized outer loadings; values exceeding 0.70 indicate that an indicator explains at least 50% of its variance through the latent construct (Hair et al., 2019).

Internal consistency reliability was assessed using Cronbach's alpha (α), rho_A, and Composite Reliability (CR).

Equation (2). Cronbach's Alpha

$$\alpha = \frac{k}{k-1} \times \left(1 - \frac{\sum \sigma_i^2}{\sigma_t^2}\right) \quad (2)$$

where k denotes the number of indicators, σ_i^2 represents the variance of indicator i , and σ_t^2 is the variance of the composite score. Although Cronbach's alpha remains widely reported, Composite Reliability (CR) is the preferred coefficient in PLS-SEM because it accounts for differences in indicator loadings (Dijkstra & Henseler, 2015; Hair et al., 2022).

Equation (3). Composite Reliability

$$CR = \frac{\sum \lambda_i^2}{\sum \lambda_i^2 + \sum (1 - \lambda_i^2)} \quad (3)$$

where λ_i denotes the standardized outer loading of indicator i . CR values above 0.70 indicate satisfactory internal consistency, while values exceeding 0.95 may suggest redundancy among indicators (Hair et al., 2022; Nunnally & Bernstein, 1994).

Convergent validity was assessed using the Average Variance Extracted (AVE).

Equation (4). Average Variance Extracted

$$AVE = \frac{\sum \lambda_i^2}{k} \quad (4)$$

Following Fornell and Larcker (1981), AVE values above 0.50 confirm that the latent construct explains more than half of the variance of its indicators.

Discriminant validity was examined using two complementary procedures. The first was the Fornell–Larcker criterion, which requires that the square root of the AVE of each construct exceeds its correlations with every other construct.

Equation (5). Fornell–Larcker Criterion

$$\sqrt{AVE_j} > r_{jk} \quad (5)$$

where $\sqrt{AVE_j}$ denotes the square root of the AVE for construct j and r_{jk} represents the correlation between constructs j and k .

The second procedure applied the Heterotrait–Monotrait Ratio (HTMT), which is more sensitive than traditional correlation-based approaches (Henseler et al., 2015). HTMT is computed as the ratio of the average heterotrait–heteromethod correlations to the geometric mean of the average monotrait–heteromethod correlations.

Equation (6). Heterotrait–Monotrait Ratio

$$HTMT = \frac{Mean(|r_{ij}^{HT}|)}{\sqrt{Mean(|r_{ij}^A| \times |r_{ij}^B|)}} \quad (6)$$

HTMT values below 0.90 confirm satisfactory discriminant validity. Bootstrap 95% confidence intervals were also computed; intervals that exclude unity provide additional evidence of discriminant validity (Henseler et al., 2015).

Before estimating the structural model, the Variance Inflation Factor (VIF) was assessed for each predictor to detect multicollinearity. Values below 5.0 indicate that collinearity is unlikely to bias path coefficient estimates or inflate their standard errors (Hair et al., 2022).

The structural model was estimated using the bootstrapping procedure with 5,000 resamples (Hair et al., 2022). Bootstrapping is a non-parametric resampling technique that generates robust standard errors, t-statistics, p-values, and confidence intervals without requiring the assumption of multivariate normality. The general structural model is expressed as follows.

Equation (7). General Structural Model

$$\eta = B\eta + \Gamma\xi + \zeta \quad (7)$$

where η represents the endogenous latent construct, ξ denotes the exogenous latent constructs, B is the matrix of relationships among endogenous constructs, Γ represents the effects of exogenous constructs on the endogenous construct, and ζ is the structural disturbance term. For the proposed model, the structural relationship simplifies to the following.

Equation (8). Structural Equation of the Proposed Model

$$CSS = \beta_1(HRC) + \beta_2(WEQ) + \zeta \quad (8)$$

where CSS denotes Civil Servant Satisfaction, HRC represents Human Resource Competency, WEQ denotes Work Environment Quality, β_1 and β_2 are the standardized path coefficients, and ζ is the residual term.

Explanatory power was assessed using the coefficient of determination (R^2), which measures the proportion of variance in the endogenous construct explained by the predictors.

Equation (9). Coefficient of Determination

$$R^2 = 1 - \frac{SS_{res}}{SS_{tot}} \quad (9)$$

where SS_{res} is the residual sum of squares and SS_{tot} is the total sum of squares. Following Hair et al. (2022), R^2 values of approximately 0.25, 0.50, and 0.75 indicate weak, moderate, and substantial explanatory power, respectively.

Individual predictor contributions were quantified using effect size (f^2).

Equation (10). Effect Size

$$f^2 = \frac{R^2_{incl} - R^2_{excl}}{1 - R^2_{incl}} \quad (10)$$

where R^2_{incl} is the coefficient of determination when the predictor is included and R^2_{excl} when it is excluded. Following Hair et al. (2022), f^2 values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively.

Finally, the predictive capability of the model was evaluated using the PLSpredict procedure with ten-fold cross-validation (Shmueli et al., 2019). Predictive relevance was assessed through the Stone–Geisser Q^2 statistic.

Equation (11). Stone–Geisser Predictive Relevance

$$Q^2 = 1 - \frac{PRESS}{SSO} \quad (11)$$

where PRESS is the predictive residual sum of squares and SSO is the sum of squares of observations. Positive Q^2 values indicate that the model's prediction errors are lower than those of a naïve mean benchmark, confirming predictive relevance. Following Shmueli et al. (2019), the PLS model prediction errors (RMSE, MAE) were further compared with those of a linear model (LM) benchmark; lower PLS errors relative to the LM benchmark indicate model-specific predictive power beyond the linear baseline.

This comprehensive analytical procedure ensured that the proposed model was evaluated for measurement quality, structural validity, explanatory power, effect sizes, and out-of-sample predictive performance consistent with current best-practice guidelines for variance-based structural equation modeling (Hair et al., 2019; Hair et al., 2022; Sarstedt et al., 2022).

RESULTS

Descriptive Statistics

Table 1. Descriptive Statistics of the Study Variables (N = 12,562)

Variable	Mean	SD	Min	Max	Skewness	Kurtosis
SAT1	4.08	1.05	1	5	-1.08	0.65
SAT2	4.19	1.03	1	5	-1.30	1.23
HRC1	4.38	0.88	1	5	-1.56	2.46
HRC2	4.40	0.87	1	5	-1.61	2.61
HRC3	4.40	0.93	1	5	-1.71	2.64
HRC4	4.06	1.11	1	5	-1.10	0.49
HRC5	4.28	0.97	1	5	-1.42	1.66
HRC6	4.29	0.99	1	5	-1.48	1.77
WEQ1	4.27	1.00	1	5	-1.41	1.49
WEQ2	4.28	0.99	1	5	-1.46	1.72
WEQ3	4.14	1.11	1	5	-1.26	0.85
WEQ4	4.11	1.15	1	5	-1.22	0.62
WEQ5	3.99	1.14	1	5	-1.01	0.27
WEQ6	4.12	1.08	1	5	-1.19	0.72
WEQ7	4.10	1.10	1	5	-1.18	0.70
WEQ8	4.22	1.07	1	5	-1.40	1.30

Note: N = 12,562. All latent construct indicators were measured on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree).

Source: Authors' calculations based on the nationwide civil-service survey of Kazakhstan (N = 12,562).

The descriptive statistics of the latent construct indicators are presented in Table 1. The analytical sample comprised 12,562 civil servants. The mean scores of the observed indicators ranged from 3.99 (WEQ5) to 4.40 (HRC2 and HRC3), indicating that respondents generally expressed favorable perceptions regarding human resource competencies, work environment quality, and overall job satisfaction within the civil service.

The standard deviations ranged from 0.87 to 1.15, suggesting a moderate level of response variability while maintaining sufficient dispersion for multivariate analysis. All indicators spanned the full five-point Likert response scale, indicating adequate variation among respondents.

The distributions of the Likert-scale indicators exhibited negative skewness, indicating that higher response categories were selected more frequently than lower ones. Kurtosis values were generally within acceptable ranges for large-

sample structural equation modeling. Given the substantial sample size (N = 12,562), these descriptive characteristics do not pose concerns for the subsequent PLS-SEM analysis.

Overall, the descriptive pattern suggests that the respondents evaluated the civil service environment positively, but not uniformly across all indicators. The highest mean values were observed for HRC2 and HRC3, both at 4.40, indicating particularly strong perceptions of human resource competency in these dimensions. By contrast, WEQ5 recorded the lowest mean score of 3.99, suggesting that this aspect of work environment quality received comparatively weaker evaluations than the other indicators. Although the mean remains close to the positive end of the scale, its lower relative position indicates that work environment quality is not perceived as equally strong across all dimensions.

The standard deviations also provide useful information for the subsequent PLS-SEM analysis. Values close to 1 on a 5-point scale indicate that the sample contains sufficient response variation and is not concentrated exclusively at the upper end of the scale. This is important because very limited variance in observed indicators can weaken the model's ability to estimate relationships among latent constructs. In this case, the observed variation supports the use of the indicators in the measurement and structural model assessment.

Table 2. Demographic Characteristics of Respondents (N = 12,562)

Characteristic	Category	n	%
Gender	Female	7,734	61.57
	Male	4,828	38.43
Age	26–35 years	3,312	26.37
	36–45 years	3,951	31.45
	46–55 years	2,668	21.24
	Older than 55 years	1,747	13.91
	Under 26 years*	884	7.03
Education	College / Secondary vocational	1,106	8.80
	Bachelor's degree	10,497	83.56
	Master's degree	922	7.34
	PhD	37	0.29
Length of service	3–5 years	939	7.47
	5–10 years	2,212	17.61
	10–15 years	2,011	16.01
	15–20 years	1,837	14.62
	More than 20 years	3,226	25.68
	Less than 3 years*	2,337	18.61
Position	Non-managerial	9,923	78.99
	Managerial	2,639	21.01
Level of government	Territorial government	3,059	24.35
	Central government	692	5.51
	Other government bodies	1,031	8.21
	Regional government*	7,780	61.93

Note: Categories marked with an asterisk (*) were calculated as residual categories from the dummy-coded variables to ensure that category frequencies sum to the total sample size (N = 12,562).

Source: Authors' calculations based on the nationwide civil-service survey of Kazakhstan (N = 12,562).

The demographic profile of the respondents is presented in Table 2. The final analytical sample consisted of 12,562 civil servants from Kazakhstan. Women represented the majority of respondents (61.57%), while men accounted for 38.43%. The largest age group was 36–45 years (31.45%), followed by 26–35 years (26.37%) and 46–55 years (21.24%).

The respondents were highly educated: 83.56% held a bachelor's degree, 7.34% held a master's degree, and 0.29% had a PhD. Respondents with college or secondary vocational education accounted for 8.80%. In terms of civil service experience, the largest group had more than 20 years of service (25.68%), while 18.61% had less than three years of experience. Most respondents occupied non-managerial positions (78.99%), and the majority worked in regional government bodies (61.93%).

Measurement Model Assessment

Table 3. Reliability and Convergent Validity

Construct	Item	Loading	Cronbach's α	rho_A	Composite Reliability	AVE
HRC	HRC1	0.842	0.926	0.927	0.926	0.678
	HRC2	0.870				
	HRC3	0.819				
	HRC4	0.788				
	HRC5	0.803				
	HRC6	0.815				
WEQ	WEQ1	0.884	0.959	0.960	0.959	0.745
	WEQ2	0.914				
	WEQ3	0.866				
	WEQ4	0.821				
	WEQ5	0.851				
	WEQ6	0.819				
	WEQ7	0.847				

	WEQ8	0.896				
CSS	SAT1	0.890	0.901	0.902	0.901	0.820
	SAT2	0.921				

Note: HRC = human resource competency; WEQ = work environment quality; CSS = civil servant satisfaction. All indicators were measured using a five-point Likert scale.

Source: Authors' calculations using SmartPLS 4 based on the nationwide civil-service survey of Kazakhstan.

The measurement model was evaluated using indicator reliability, internal consistency reliability, and convergent validity. As shown in Table 3, all outer loadings exceeded the recommended threshold of 0.70, ranging from 0.788 to 0.921. This confirms adequate indicator reliability. Cronbach's alpha values ranged from 0.901 to 0.959, while rho_A and composite reliability values also exceeded 0.90 for all constructs, indicating strong internal consistency. The AVE values ranged from 0.678 to 0.820, exceeding the minimum threshold of 0.50. Therefore, the measurement model demonstrated satisfactory reliability and convergent validity.

Beyond satisfying the recommended threshold of 0.70, the standardized outer loadings exhibited a relatively narrow distribution across the three constructs, indicating a stable measurement structure. The HRC construct demonstrated consistently acceptable indicator loadings, ranging from 0.788 to 0.870. In contrast, the WEQ construct showed even stronger indicator performance, with the majority of loadings exceeding 0.82 and the highest loading reaching 0.914. The CSS construct was represented by two highly reliable indicators, both exceeding 0.89. Similarly, the construct-level reliability statistics showed limited variation, with Composite Reliability values ranging from 0.901 to 0.959 and AVE values ranging from 0.678 to 0.820. These results indicate that all latent constructs achieved comparable levels of measurement quality, with no construct exhibiting comparatively weaker psychometric performance.

Table 4. Fornell-Larcker Criterion

Construct	HRC	WEQ	CSS
HRC	0.823	0.766	0.510
WEQ	0.766	0.863	0.435
CSS	0.510	0.435	0.906

Source: Authors' calculations using SmartPLS 4 based on the nationwide civil-service survey of Kazakhstan.

Table 4 presents the Fornell–Larcker criterion for assessing discriminant validity. The square root of the average variance extracted (AVE) for each construct exceeded its correlations with all other constructs, confirming satisfactory discriminant validity.

Table 5. Heterotrait–Monotrait Ratio (HTMT)

Construct	HRC	WEQ	CSS
HRC	—	0.876	0.714
WEQ	0.876	—	0.659
CSS	0.714	0.659	—

Source: Authors' calculations using SmartPLS 4 based on the nationwide civil-service survey of Kazakhstan.

Table 5 reports the heterotrait–monotrait ratio (HTMT) values used to assess discriminant validity. All HTMT values were below the recommended threshold of 0.90, ranging from 0.659 to 0.876. Therefore, discriminant validity was established, indicating that each construct was empirically distinct from the others.

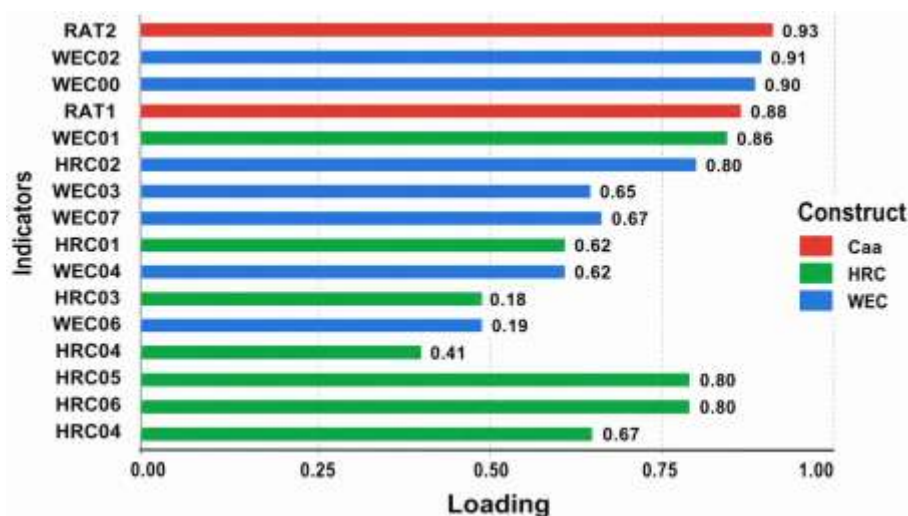


Figure 2. Standardized Indicator Loadings

Source: Authors' visualization based on SmartPLS 4 measurement model output.

Figure 2 illustrates the standardized outer loadings of all reflective indicators included in the measurement model. All observed indicators exceeded the recommended threshold of 0.70, ranging from 0.788 to 0.921, thereby confirming satisfactory indicator reliability. The strongest loading was observed for SAT2 (0.921), whereas HRC4 exhibited the lowest loading (0.788), which nevertheless remained above the recommended cutoff value.

Table 6. Collinearity Assessment (VIF)

Predictor	VIF
HRC	4.27
WEQ	4.27

Source: Authors' calculations using SmartPLS 4 based on the nationwide civil-service survey of Kazakhstan.

All variance inflation factor (VIF) values were below the recommended threshold of 5.0, indicating no critical multicollinearity among the predictor constructs.

The identical VIF values observed for HRC and WEQ (4.27) indicate that both predictor constructs contribute comparably to the structural model and do not exhibit excessive overlap. Although the values are relatively close to the conservative threshold, they remain comfortably below the recommended cutoff of 5.0, suggesting that multicollinearity is unlikely to distort the estimated path coefficients or inflate standard errors in the subsequent structural model assessment.

Having established satisfactory measurement model quality, the analysis proceeded to evaluate the structural relationships among the latent constructs using the proposed PLS-SEM model.

Structural Model Assessment

Table 7. Structural Model Results

Hypothesis	Path	β	Std. Error	t-value	p-value	Decision
H ₁	HRC → CSS	0.5869	0.0261	22.4797	<0.001	Supported
H ₂	WEQ → CSS	0.1458	0.0267	5.4695	<0.001	Supported

Source: Authors' calculations using SmartPLS 4 bootstrapping results based on the nationwide civil-service survey of Kazakhstan.

The structural model was assessed using bootstrapping with 5,000 resamples. As presented in Table 7, both hypothesized relationships were positive and statistically significant. Human resource competency exerted a strong positive effect on civil servant satisfaction ($\beta = 0.5869$, $t = 22.48$, $p < 0.001$), supporting H₁. Likewise, work environment quality had a positive and significant effect on civil servant satisfaction ($\beta = 0.1458$, $t = 5.47$, $p < 0.001$), supporting H₂. HRC demonstrated a larger standardized path coefficient ($\beta = 0.5869$) than WEQ ($\beta = 0.1458$).

A comparison of the standardized path coefficients showed that the HRC path coefficient was approximately four times the magnitude of the WEQ path coefficient ($\beta = 0.5869$ versus $\beta = 0.1458$). Likewise, the considerably higher t-value for HRC (22.48) relative to WEQ (5.47) provides stronger statistical evidence of the dominant contribution of human resource competency in the estimated structural model.

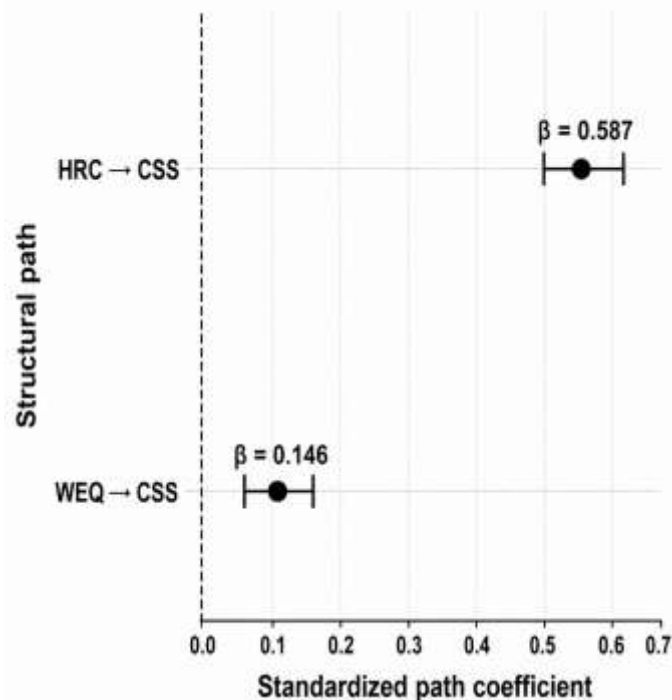


Figure 3. Bootstrapped path coefficients with 95% confidence intervals

Source: Authors' visualization based on SmartPLS 4 bootstrapping output.

Figure 3 presents the bootstrapped standardized path coefficients and their 95% confidence intervals. The confidence intervals for both structural paths are fully above zero, confirming the robustness of the positive effects of human resource competency and work environment quality on civil servant satisfaction. The figure also illustrates the substantially stronger effect of human resource competency than that of work environment quality.

Table 8. Coefficient of Determination (R^2) and Effect Size (f^2)

Endogenous Construct	R^2	Adjusted R^2	Predictor	f^2	Effect Size
CSS	0.5154	0.5153	HRC	0.1664	Medium
			WEQ	0.0103	Negligible

Source: Authors' calculations using SmartPLS 4 based on the nationwide civil-service survey of Kazakhstan.

Table 8 summarizes the explanatory power of the structural model and the effect sizes of the predictor constructs. The model explained 51.54% of the variance in civil servant satisfaction ($R^2 = 0.5154$), indicating moderate explanatory power. Human resource competency demonstrated a medium effect on civil servant satisfaction ($f^2 = 0.1664$), whereas work environment quality showed a negligible effect ($f^2 = 0.0103$).

Predictive Relevance Assessment

Table 9. Predictive Relevance Assessment

Indicator	MAE target	MAE benchmark	RMSE target	RMSE benchmark	Q^2_{predict}
SAT1	0.6043	0.5930	0.8197	0.8182	0.3874
SAT2	0.5474	0.5301	0.7871	0.7813	0.4139

Source: Authors' calculations using PLSpredict/cSEM cross-validation based on the nationwide civil-service survey of Kazakhstan.

Predictive relevance was assessed using the cSEM prediction procedure with a ten-fold cross-validation design. As shown in Table 9, the Q^2_{predict} values were positive for both satisfaction indicators, with $Q^2_{\text{predict}} = 0.3874$ for SAT1 and $Q^2_{\text{predict}} = 0.4139$ for SAT2. Since both values are greater than zero, the model demonstrates predictive relevance for civil servant satisfaction. The comparison with the linear benchmark indicates that the benchmark model produced slightly lower MAE and RMSE values than the PLS-SEM target model. However, the differences between the target and benchmark models were relatively small. The positive Q^2_{predict} values confirm that the model predicts both indicators more accurately than the naïve mean benchmark. In contrast, the benchmark linear model produced marginally lower prediction errors, consistent with the confirmatory rather than predictive orientation of the proposed model.

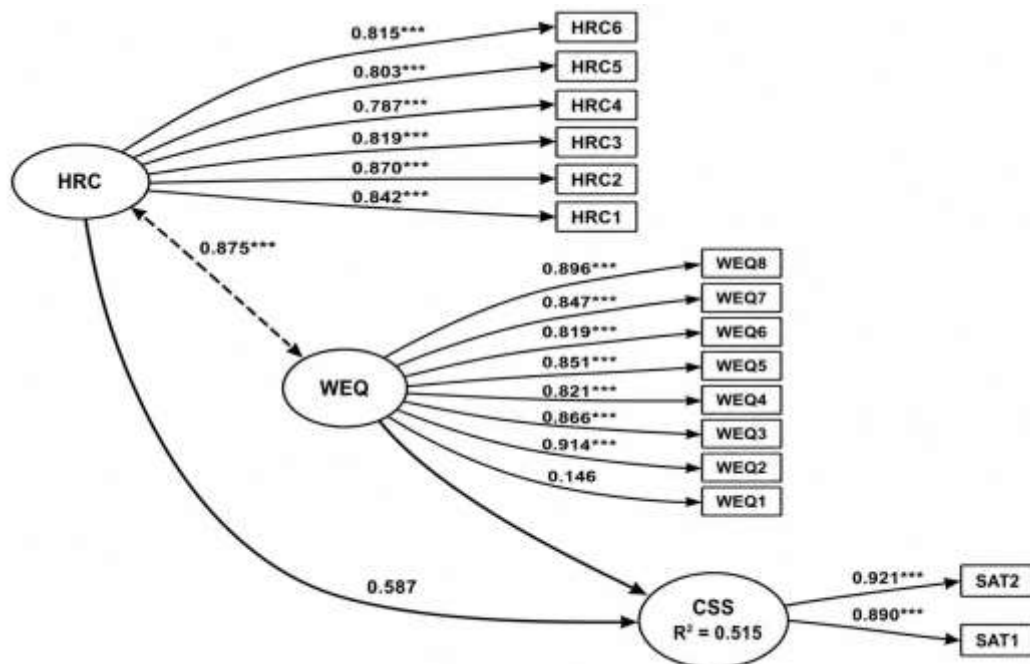


Figure 4. Structural model results.

Note: Values on the arrows represent standardized path coefficients and outer loadings. The value inside the endogenous construct represents the coefficient of determination (R^2).

Source: Authors' visualization based on SmartPLS 4 structural model output.

Figure 4 provides a graphical representation of the final PLS-SEM model, integrating both the measurement and structural components. All indicator loadings exceeded the recommended threshold of 0.70, confirming strong relationships between the observed indicators and their respective latent constructs. The structural paths indicate that both human resource competency and work environment quality positively influence civil servant satisfaction, with human resource competency exerting the stronger effect ($\beta = 0.587$) compared with work environment quality ($\beta = 0.146$). Furthermore, the endogenous construct (CSS) achieved an $R^2 = 0.515$, indicating that the proposed model explains 51.5% of the variance in civil servant satisfaction.

DISCUSSIONS

The empirical findings provide full support for both original hypotheses proposed in this study. Specifically, H_1 , which predicted a positive relationship between Human Resource Competency (HRC) and Civil Servant Satisfaction (CSS), was supported. Likewise, H_2 , which proposed a positive relationship between Work Environment Quality (WEQ) and Civil Servant Satisfaction (CSS), was also supported. Although both relationships were statistically significant, Human Resource Competency emerged as the dominant predictor of Civil Servant Satisfaction, whereas the direct effect of Work Environment Quality was considerably weaker.

These findings indicate that Human Resource Competency constitutes the principal explanatory resource within the proposed human-centered HRM ecosystem, whereas Work Environment Quality serves as a complementary organizational resource.

The present study investigated the determinants of civil servant satisfaction (CSS) in Kazakhstan's public sector through an ecosystem approach to human resource management, grounded in the human-centered principle. Drawing on Ability–Motivation–Opportunity (AMO) theory (Appelbaum et al., 2000) and the Job Demands–Resources (JD-R) model (Demerouti et al., 2001; Bakker & Demerouti, 2007), we hypothesized that both human resource competency (HRC) and work environment quality (WEQ) would positively predict CSS. Both hypotheses were supported. HRC exerted a strong positive effect on CSS ($\beta = 0.587$, $p < .001$, $f^2 = 0.166$), while WEQ demonstrated a statistically significant but substantially smaller effect ($\beta = 0.146$, $p < .001$, $f^2 = 0.010$). Together, the two predictors explained 51.5% of the variance in CSS ($R^2 = 0.515$), indicating that the structural model possesses considerable explanatory power. The following subsections situate these findings within the relevant literature and discuss their theoretical and practical significance.

The strong positive association between HRC and CSS ($\beta = 0.587$) is consistent with a growing body of evidence linking employee competency to workplace satisfaction. Within the AMO framework, HRC constitutes the “Ability” arm: employees equipped with the requisite knowledge, skills, and capabilities are better positioned to meet performance demands, thereby experiencing reduced role ambiguity and enhanced occupational self-efficacy (Appelbaum et al., 2000; Bandura, 1997). The medium effect size ($f^2 = 0.166$) confirms that competency development is not merely a peripheral concern but a substantive predictor of satisfaction in the public-sector context.

This finding resonates with Kruijen and Van Genugten (2020), who demonstrated that civil servants’ perceived competency is closely tied to their sense of accomplishment and job satisfaction in public administration settings. Similarly, Jiang et al. (2012) reported, in a large-scale meta-analytic investigation, that HRM practices targeting employee ability including training, skill development, and competency management are among the strongest drivers of positive attitudinal outcomes. The present study extends these insights to Kazakhstan's post-Soviet administrative context, where ongoing civil service reform has emphasized competency-based recruitment and professional development (Issenova et al., 2024). The result also aligns with evidence from BJMSR showing that work attitudes, AI-enabled skills, and organizational change mechanisms are increasingly central to workforce performance and adaptation in public and institutional settings (Alabri & Shannaq, 2025; Pandey et al., 2025; Saleem et al., 2026; Shannaq et al., 2025).

From a psychological mechanism perspective, Bandura's (1997) self-efficacy theory offers a compelling explanation for the observed relationship: as civil servants develop domain-relevant competencies, their confidence in executing complex administrative tasks increases, generating intrinsic reward signals that translate into higher satisfaction. This psychological pathway aligns with findings from Ouabi et al. (2024), who, in a PLS-SEM study of 390 Moroccan civil servants, documented that HR practices oriented toward training, career opportunities, and skill development significantly enhanced job satisfaction and affective commitment in public administration.

The magnitude of the HRC effect also has implications for how public-sector HRM ecosystems should be structured. Knies et al. (2018) argued that strategic HRM in the public sector must account for context-specific factors such as public service motivation, political oversight, and institutional constraints that moderate the competency–satisfaction relationship. Our findings align with this contextual perspective: Kazakhstan's civil service operates under a formal competency framework introduced through successive civil service reform programs, and the strong HRC–CSS path suggests that investments within this framework yield measurable satisfaction dividends (Bokayev et al., 2024).

Although statistically significant ($\beta = 0.146$, $p < .001$), the effect of WEQ on CSS was negligible by conventional f^2 standards ($f^2 = 0.010$, below the 0.02 small-effect threshold; Cohen, 1988). This finding invites careful theoretical reflection. Within the JD-R model (Demerouti et al., 2001; Bakker & Demerouti, 2007), physical and psychosocial working conditions function as job resources that buffer demands and sustain motivation. When job resources are adequate, they satisfy basic psychological needs for autonomy, competence, and relatedness, thereby promoting engagement and satisfaction. The present results suggest that, conditional on high levels of HRC, the marginal contribution of WEQ to CSS is constrained potentially because competency perceptions dominate the satisfaction formation process when ability is salient.

This interpretation is broadly consistent with Zhenjing et al. (2022), who found in a multi-mediation study that while workplace environment variables positively predicted employee task performance, their direct effects were attenuated once employee commitment and achievement-striving ability were accounted for. The JD-R framework further implies that

environmental resources may act primarily through motivational processes rather than as direct antecedents of satisfaction (Bakker & Demerouti, 2007), suggesting that WEQ operates largely through indirect pathways, such as mediating between organizational policies and employee engagement, rather than as a strong direct predictor.

Díaz-Fúnez et al. (2024) provide additional evidence relevant to this pattern. In a study of Spanish public administration staff using the JD-R model, they demonstrated that the multiplicative interaction between psychological capital and a goal-oriented climate was a stronger predictor of public employee satisfaction and engagement than either resource in isolation. This suggests that environmental quality and individual capacity may function as complementary resources whose combined effect exceeds their additive contributions - consistent with the relatively dominant role of HRC observed in the present study. Bokayev et al. (2024) similarly document that non-monetary job characteristics, including growth opportunities and supervisory support, matter significantly to civil servants in Kazakhstan, yet their salience is contingent on how these conditions interact with individual competency levels.

The relatively smaller direct effect of WEQ does not diminish its practical relevance. Bright (2008) demonstrated that public service motivation moderates the relationship between job satisfaction and turnover intentions among public employees, suggesting that work environment conditions may assume greater salience under low-motivation conditions. Kruyen and Van Genugten (2020) similarly found that challenging and developmental activities key components of work environment quality constitute an important resource for civil servants seeking to expand their professional capabilities.

This study makes three interconnected theoretical contributions. First, it advances the ecosystem approach to HRM by providing empirical evidence that the interplay between individual competencies (HRC) and organizational environment (WEQ) determines employee satisfaction in a public-sector setting. The asymmetric effect sizes ($f^2_{\text{HRC}} = 0.166$ vs. $f^2_{\text{WEQ}} = 0.010$) indicate that individual capacity is the stronger proximate driver of satisfaction, whereas environmental quality is a distal but necessary condition. This resonates with Kramar's (2014) argument that sustainable HRM frameworks must account for both individual-level capabilities and organizational-level conditions to produce enduring outcomes, moving beyond narrow financial metrics to encompass human and social wellbeing.

Second, the study enriches the AMO framework (Appelbaum et al., 2000) in a public administration context. Prior applications of AMO theory have predominantly focused on private-sector manufacturing or services (Jiang et al., 2012); the current findings demonstrate that the "Ability" arm retains predictive primacy even when the "Opportunity" arm (proxied by WEQ) is present. This suggests that public-sector HRM strategies oriented exclusively toward improving working conditions may yield suboptimal returns unless accompanied by systematic competency development. Knies et al. (2018) made a similar argument in their review of strategic HRM in the public sector, cautioning that environmental improvements without corresponding investments in human capital risk creating "satisfied but under-capable" employees who fail to translate satisfaction into performance.

Third, by applying PLS-SEM to a large national sample of 12,562 Kazakhstani civil servants, the study contributes to the public HRM literature methodologically. The PLSpredict results ($Q^2_{\text{predict}} = 0.387\text{--}0.414$) indicate medium predictive accuracy, affirming that the model generalizes beyond the estimation sample. The discriminant validity evidence (HTMT range: 0.659–0.876, all below 0.90 and bootstrapped confidence intervals excluding unity) meets contemporary best-practice standards (Henseler et al., 2015), enhancing confidence in the construct-level inferences.

From a managerial perspective, the primacy of HRC carries a direct policy implication: civil service reform programs should prioritize competency-based training and continuous professional development as the primary mechanism for improving civil servant satisfaction. This is particularly relevant for Kazakhstan, where Issenova et al. (2024) documented that recently introduced meritocratic reforms have improved perceptions of fairness and competency alignment but have not yet fully translated into satisfaction outcomes across all employee groups.

Several limitations of the present study should be acknowledged. First, the cross-sectional design precludes causal inference. At the same time, the PLS-SEM structural paths are theoretically grounded and empirically consistent; longitudinal or experimental designs are needed to establish temporal precedence between HRC, WEQ, and CSS. Second, all data were collected via self-report questionnaires, which raises the potential for common method bias. While common method bias cannot be entirely ruled out given the reliance on self-report questionnaires, future studies should incorporate objective administrative records or supervisor ratings to triangulate self-reported perceptions of competency. Third, the sample is drawn exclusively from Kazakhstan's civil service; the generalisability of findings to other post-Soviet or emerging-economy public sectors remains to be established. Cross-national comparative studies involving neighboring countries would enrich the contextual boundary conditions of the ecosystem HRM model.

Future research should also investigate mediating and moderating mechanisms that may explain the observed differential effect sizes. Nhat Vuong et al. (2023) suggest that public service motivation may moderate the competency–satisfaction relationship, such that high-PSM employees derive greater satisfaction from competency development than low-PSM peers. Exploring whether organizational trust, leadership quality, or adoption of digital HRM tools mediates the HRC→CSS path would further illuminate the mechanisms by which human-centered HRM ecosystems operate. Finally, the negligible direct effect of WEQ warrants investigation of its potential indirect effects through mediating constructs such as employee engagement, organizational commitment, or psychological safety, which may carry the WEQ→CSS transmission more fully than the direct path captured here.

CONCLUSIONS

This study examined the structural determinants of civil servant satisfaction (CSS) in Kazakhstan's public sector, drawing on an ecosystem approach to human resource management grounded in the human-centered principle. Using partial least squares structural equation modelling (PLS-SEM) with a national sample of 12,562 civil servants, both hypothesised relationships received empirical support. Human resource competency (HRC) emerged as the dominant driver of CSS, with

a standardized path coefficient of $\beta = 0.587$ ($p < .001$) and a medium effect size ($f^2 = 0.166$), while work environment quality (WEQ) exerted a statistically significant but negligible direct effect ($\beta = 0.146$, $p < .001$, $f^2 = 0.010$). Together, the two constructs explained 51.5% of the variance in CSS ($R^2 = 0.515$), and cross-validated predictive accuracy was confirmed via PLSpredict ($Q^2_{\text{predict}} = 0.387\text{--}0.414$). Measurement quality met contemporary standards throughout, with all outer loadings exceeding 0.70, AVE values ranging from 0.678 to 0.820, and HTMT ratios remaining below 0.90 across all construct pairs.

These findings advance the theoretical understanding of HRM in public administration in three interconnected ways. First, they provide large-scale empirical support for the ecosystem approach to HRM in a post-Soviet administrative context, demonstrating that individual capability and the organizational environment jointly, but asymmetrically, shape civil servant satisfaction. Second, they enrich Ability–Motivation–Opportunity (AMO) theory in a public-sector setting: the dominant role of the 'Ability' arm indicates that capability-oriented investments yield greater satisfaction returns than environmental improvements do when working conditions are already perceived as adequate. Third, by applying the Job Demands–Resources (JD-R) model to interpret the constrained direct effect of WEQ, the study suggests that environmental resources may operate primarily through indirect motivational pathways, mediated by employee engagement or organizational commitment, rather than as strong direct antecedents of satisfaction.

From a practical standpoint, the findings have a direct implication for civil service reform: competency development must be at the center of public-sector HRM strategy. Kazakhstan's meritocratic reform agenda provides the institutional foundation, and the results suggest that investments in professional knowledge, technical expertise, and adaptive skills will yield the most measurable returns in terms of workforce satisfaction. About the work environment, while the direct effect was small, the finding that growth and development opportunities were perceived as comparatively weaker signals an important area for organizational attention. Policymakers should design intentional career advancement pathways, including mentorship programs, cross-departmental rotations, and access to digital upskilling platforms, that align with the human-centered principle underpinning ecosystem HRM. These implications also extend to the design of digital HRM tools, which should prioritize competency mapping, personalized development tracking, and real-time feedback mechanisms rather than focusing exclusively on administrative automation.

Several limitations should inform the interpretation of these findings. The cross-sectional design precludes causal inference, and longitudinal or experimental designs are needed to establish temporal precedence among the constructs. All variables were measured through self-report instruments, which raises the risk of common method bias; future studies should triangulate with objective performance records or supervisor evaluations. Additionally, the sample is drawn exclusively from Kazakhstan's civil service, and generalisability to other national contexts cannot be assumed. Cross-national designs that include other Central Asian or post-Soviet administrations would help establish the contextual boundary conditions for the ecosystem HRM model. Future research should also investigate mediating and moderating mechanisms including public service motivation, leadership quality, and digital HRM adoption that may channel or amplify the HRC→CSS and WEQ→CSS relationships documented here.

In conclusion, this study demonstrates that human resource competency is the principal structural determinant of civil servant satisfaction in Kazakhstan's public sector. At the same time, the quality of the work environment plays a secondary but nontrivial role. The ecosystem approach to HRM, anchored in the human-centered principle and operationalized through AMO theory and the JD-R model, offers a coherent and empirically substantiated framework for improving public-sector employee outcomes. As governments navigate the dual pressures of administrative modernization and workforce digitalization, the present findings offer a clear directive: lasting improvements in civil servant satisfaction require ecosystem-level strategies that place human capability development at their core.

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REFERENCES

- Alabri, A., & Shannaq, B. (2025). Enhancing employability outcomes through AI tools: A SEM-PLS approach with TAM and soft skills mediation. *Bangladesh Journal of Multidisciplinary Scientific Research*, 10(3), 26–36. <https://doi.org/10.46281/bjmsr.v10i3.2422>

- Appelbaum, E., Bailey, T., Berg, P., & Kalleberg, A. L. (2000). *Manufacturing advantage: Why high-performance work systems pay off*. ILR Press.
- Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*, 22(3), 309–328. <https://doi.org/10.1108/02683940710733115>
- Bakker, A. B., & Demerouti, E. (2017). Job demands-resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, 22(3), 273–285. <https://doi.org/10.1037/ocp0000056>
- Bakker, A. B., Demerouti, E., & Sanz-Vergel, A. (2023). Job demands-resources theory: Ten years later. *Annual Review of Organizational Psychology and Organizational Behavior*, 10, 25–53. <https://doi.org/10.1146/annurev-orgpsych-120920-053933>
- Bakos, E. (2025). *An international framework for human resource management indicators in public administration: Pilot results, methodologies and challenges* (OECD Working Papers on Public Governance No. 85). OECD Publishing. <https://doi.org/10.1787/03763bab-en>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman.
- Bokayev, B., Amirova, A., & Torebekova, Z. (2024). Examining monetary and non-monetary incentives for public servants in Kazakhstan: Empirical evidence. *Eurasian Journal of Economic and Business Studies*, 68(2), 106–117. <https://doi.org/10.47703/ejeb.v68i2.386>
- Borst, R. T., Kruiyen, P. M., & Lako, C. J. (2019). Exploring the job demands-resources model of work engagement in government: Bringing in a psychological perspective. *Review of Public Personnel Administration*, 39(3), 372–397. <https://doi.org/10.1177/0734371X17729870>
- Borst, R. T., Kruiyen, P. M., Lako, C. J., & de Vries, M. S. (2020). The attitudinal, behavioral, and performance outcomes of work engagement: A comparative meta-analysis across the public, semipublic, and private sector. *Review of Public Personnel Administration*, 40(4), 613–640. <https://doi.org/10.1177/0734371X19840399>
- Boselie, P., Dietz, G., & Boon, C. (2005). Commonalities and contradictions in HRM and performance research. *Human Resource Management Journal*, 15(3), 67–94. <https://doi.org/10.1111/j.1748-8583.2005.tb00154.x>
- Bos-Nehles, A., Townsend, K., Cafferkey, K., & Trullen, J. (2023). Examining the ability, motivation and opportunity (AMO) framework in HRM research: Conceptualization, measurement and interactions. *International Journal of Management Reviews*, 25(4), 725–739. <https://doi.org/10.1111/ijmr.12332>
- Bright, L. (2008). Does public service motivation really make a difference on the job satisfaction and turnover intentions of public employees? *The American Review of Public Administration*, 38(2), 149–166. <https://doi.org/10.1177/0275074007311069>
- Chin, W. W. (1998). The partial least squares approach to structural equation modeling. In G. A. Marcoulides (Ed.), *Modern methods for business research* (pp. 295–336). Lawrence Erlbaum Associates.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.
- Demo, G., Costa, A. C. R., & Coura, K. V. (2024). HRM practices in the public service: A measurement model. *RAUSP Management Journal*, 59(1), 50–66. <https://doi.org/10.1108/RAUSP-01-2023-0005>
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86(3), 499–512. <https://doi.org/10.1037/0021-9010.86.3.499>
- Díaz-Fúnez, P. A., Cardella, G. M., Hernández-Sánchez, B. R., Sánchez-García, J. C., & Mañas-Rodríguez, M. Á. (2024). Is adding resources always beneficial? Multiplicative impact of psychological capital and goal-oriented climate on Spanish public worker satisfaction and engagement. *Frontiers in Psychology*, 15, Article 1418409. <https://doi.org/10.3389/fpsyg.2024.1418409>
- Dijkstra, T. K., & Henseler, J. (2015). Consistent partial least squares path modeling. *MIS Quarterly*, 39(2), 297–316. <https://doi.org/10.25300/MISQ/2015/39.2.02>
- Ding, M., & Wang, C. (2023). Can public service motivation increase work engagement? A meta-analysis across cultures. *Frontiers in Psychology*, 13, Article 1060941. <https://doi.org/10.3389/fpsyg.2022.1060941>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.1177/002224378101800104>
- Guest, D. E. (2017). Human resource management and employee well-being: Towards a new analytic framework. *Human Resource Management Journal*, 27(1), 22–38. <https://doi.org/10.1111/1748-8583.12139>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). Sage.
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Jiang, K., Lepak, D. P., Hu, J., & Baer, J. C. (2012). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal*, 55(6), 1264–1294. <https://doi.org/10.5465/amj.2011.0088>
- Knies, E., Boselie, P., Gould-Williams, J., & Vandenabeele, W. (2018). Strategic human resource management and public sector performance: Context matters. *The International Journal of Human Resource Management*, 29(1), 1–8. <https://doi.org/10.1080/09585192.2017.1407088>

- Kramar, R. (2014). Beyond strategic human resource management: Is sustainable human resource management the next approach? *The International Journal of Human Resource Management*, 25(8), 1069–1089. <https://doi.org/10.1080/09585192.2013.816863>
- Kruyen, P. M., & Van Genugten, M. (2020). Opening up the black box of civil servants' competencies. *Public Management Review*, 22(1), 118–140. <https://doi.org/10.1080/14719037.2019.1638442>
- Locke, E. A. (1976). The nature and causes of job satisfaction. In M. D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 1297–1343). Rand McNally.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.
- OECD. (2025a). *Government at a glance 2025*. OECD Publishing. <https://doi.org/10.1787/0efd0bcd-en>
- OECD. (2025b). *OECD public governance scan of Kazakhstan*. OECD Publishing. <https://doi.org/10.1787/f8298798-en>
- Paauwe, J. (2009). HRM and performance: Achievements, methodological issues and prospects. *Journal of Management Studies*, 46(1), 129–142. <https://doi.org/10.1111/j.1467-6486.2008.00809.x>
- Perry, J. L., & Wise, L. R. (1990). The motivational bases of public service. *Public Administration Review*, 50(3), 367–373.
- Ringle, C. M., Wende, S., & Becker, J.-M. (2024). *SmartPLS 4*. SmartPLS. <https://www.smartpls.com>
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2022). Partial least squares structural equation modeling. In C. Homburg, M. Klarmann, & A. Vomberg (Eds.), *Handbook of market research*. Springer. https://doi.org/10.1007/978-3-319-57413-4_15-1
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior*, 25(3), 293–315. <https://doi.org/10.1002/job.248>
- Shmueli, G., Sarstedt, M., Hair, J. F., Cheah, J.-H., Ting, H., Vaithilingam, S., & Ringle, C. M. (2019). Predictive model assessment in PLS-SEM: Guidelines for using PLSpredict. *European Journal of Marketing*, 53(11), 2322–2347. <https://doi.org/10.1108/EJM-02-2019-0189>
- Strohmeier, S. (2020). Digital human resource management: A conceptual clarification. *German Journal of Human Resource Management*, 34(3), 345–365. <https://doi.org/10.1177/2397002220921131>
- Wright, P. M., & McMahan, G. C. (1992). Theoretical perspectives for strategic human resource management. *Journal of Management*, 18(2), 295–320. <https://doi.org/10.1177/014920639201800205>
- Zhang, Y. (2023). Disclosing the relationship between public service motivation and job satisfaction in the Chinese public sector: A moderated mediation model. *Frontiers in Psychology*, 14, Article 1073370. <https://doi.org/10.3389/fpsyg.2023.1073370>
- Zhenjing, G., Chupradit, S., Ku, K. Y., Nassani, A. A., & Haffar, M. (2022). Impact of employees' workplace environment on employees' performance: A multi-mediation model. *Frontiers in Public Health*, 10, Article 890400. <https://doi.org/10.3389/fpubh.2022.890400>

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