



The Mediating Role of Perceived HRM Practices in the Relationship Between Managerial-Rated HRM Practices and Employee Engagement in Ethiopian Higher Education Institutions

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ABSTRACT

Strategic Human Resource Management Practices (SHRMP) researchers stressed the perception of High-Performance Work System (HPWS) in addition to organizational HPWS to impact engagement. However, few studies are carried using such variable. Hence, HRM system strength and signal theory, using the probability multi-stage sample survey of 102 departments and 360 academic staffs of Ethiopian Public Higher Education Institutions, the researchers examined that positive and full meditational effect of perceived HPWS between managerial-rated HPWS and engagement. Furthermore, the researchers tested direct effect of managerial-rated HPWS on the perceived HPWS positively. The results of Multilevel Structural Equation Model analysis using R software revealed that the effect of perceived HPWS on the engagement is significant within department level as well as between department level. Hence, the researchers concluded that employees oriented SHRMP has fully mediated department level SHRMP and engagement when both rated and perceived HPWS are considered from two dimensions. The theoretical contributions and practical implications of these findings are discussed as well.

KEY WORDS

managerial-rated HPWS; perceived HPWS; dual HPWS; engagement; multilevel structural equation model

1. Introduction

Engagement is the source of organizational competitive advantage (Sun & Bunchapattanasakda, 2019), that shows it is a crucial construct in today's ever-changing and dynamic business environment (Saks, 2006; Tensay & Singh, 2020; Rich, et al., 2010; Wollard & Shuck, 2011; Alfes, et al., 2013). According to a Gallup poll in November 2023, only 23% of employees worldwide are engaged, while 77% are not (Gallup, 2023). Knight, Patterson, and Dawson (2017) argue that the lack of practical knowledge on employee engagement issues has limited scholars' ability to effectively assess, enhance, and sustain engagement in real-world contexts (Kwon & Park, 2020). Research on employee engagement has demonstrated that HPWS is positively related to employee engagement (Goyal et al., 2023; Saks, 2022; Singh, 2019). However, still there is a call of researches by employing mediating variable between HPWS and employee engagement (Saks, 2022). Hence, line manager-rated

HPWS/managerial-rated HPWS, rather than top level and/or HRM managers, at unit level is proposed to impact on the employees perceived the same HPWS (with manager) at lower level, that means through multilevel analytics (Sambrook, 2021). Therefore, the researchers focused on the mediation of perceived HPWS between managerial-rated HPWS and engagement.

Limited number of researchers showed that there is positive meditational effect of perceived HPWS between managerial-rated HPWS and employees outcome (Aryee et al., 2012; Den Hartog et al., 2013; Jensen et al., 2013; Jiang et al., 2017; Kitt & Sanders, 2022; Li & Frenkel, 2017; Liao et al., 2009; Wang et al., 2021). It is also not clear what HRM practices or system of practices is most important for employee engagement or the theoretical mechanisms that intervene and explain the link between HPWS and employee engagement (B. Hu et al., 2022; Saks, 2022). Since perceived HPWS influences employee attitude and behavior,

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rather than managerially implemented HPWS (Den Hartog *et al.*, 2013; Jensen *et al.*, 2013; Kehoe & Wright, 2013; Nishii *et al.* 2008; Rossenberg & Patel, 2021; Vermeeren, 2014), SHRMP researchers have increasingly adopted an employee perspective of HPWS (Jiang *et al.*, 2015; Van Rossenberg & Patel, 2021; Xiao & Cooke, 2022), as mediator. Still inconsistency is available, because whether collective and/or individual level perceived HPWS mediate between managerial-rated HPWS and engagement has not been solved yet (Bowen & Ostroff, 2004). Some researchers proposed dual parallel mediation at both upper and lower level (Xi, *et al.*, 2021), whereas others (Liao, *et al.*, 2009; Aryee, *et al.*, 2013) concluded only upper-level mediation and with consideration of only perceived HPWS impact on the engagement at lower level. Hence, the researchers employed integration of two communication theories to relate this link. The relevance of signaling theory assumption is that HPWS as signals sent from managers towards employees and affects employees perception of HPWS then engagement (Wang *et al.*, 2020) while from HRM system strength view, managerial-rated HPWS deliver certain messages to employees to form consistency or collective perception at upper level while there is divergence of perception (Bowen & Ostroff, 2004). Therefore, by the integration of signal theory and HPWS strength theories and the researchers hypothesized that signal or HPWS sent by line manager has positive impact on the employees collectively and that in turn positively impact on the engagement. However, there is individual level heterogeneous perspective of HPWS that in turn impact on the engagement.

This study was carried out in the context of Ethiopian public HEIs, because of the following reasons. First, Ethiopia has carried out educational strategy reform in the near past that needs evaluation from HR perspective. Second, HEI is considered as cornerstone of development of a country particularly for the developing countries. Consequently, the development of a country cannot be realized unless engagement of employees of HEIs. In line of these HEIs are hub for the quality of HRM of other sectors of a country; so that this can provide double strategic goal achievement. Therefore, this study aims to identify the role of high-performance work systems in employees' engagement at public HEIs of Ethiopia.

2. Theoretical framework and hypothesis

2.1. Direct effects

In the way to enhance engagement, scholars more focus on the impact of perceived HPWS on the attitude and behaviors that is with the expense of studying the antecedents of perceived HPWS (Xiao & Cooke, 2022). According to Wang *et al.* (2020) argument, if HPWS contents are to influence employee outcomes, they must first exist in the minds of employees (Wright and Nishii, 2008), because cognition is a crucial predecessor of subsequent attitudes and behaviors (Fiske & Taylor, 1991). As attribution theory of Kelley (1973), shows that researcher examined antecedents of HR attributions from managerial perspective as a main information source that influences on employees' interpretation of employers' intent (Hackman, 1994; Hewett *et al.*, 2018; Shen *et al.*, 2018; Wang *et al.*, 2020). This is due to line managers do not only simply implement HR practices but also they have a crucial role in providing employees with information that helps them to understand why specific HR practices are used in their team (Beijer *et al.*, 2019; L. Nishii & Paluch, 2018; Peccei & Van De Voorde, 2019; J. Zhang *et al.*, 2018). Hence, the impact of managerial rated HPWS impact on the perceived HPWS should be studied first, in order to impact engagement (Y. Wang *et al.*, 2021).

Even if there are some organizational level HPWS impact on the perceived HPWS studied (Xi *et al.*, 2021), there is only very few studies at team level that study the impact of managerial-rated HPWS impact on the employees' perception of the same HPWS (e.g., Aryee *et al.*, 2012; Den Hartog *et al.*, 2013; Jiang *et al.*, 2015, 2017; Li & Frenkel, 2017; Liao *et al.*, 2009; Wang *et al.*, 2021). Even if HPWS strength assumes consistency between managerial-rated HPWS and perceived HPWS, the evidence to date for perceived HPWS is weak and often contradictory (Ostroff, 2021; Van Rossenberg & Patel, 2021; Wang *et al.*, 2021). In order to minimize the inconsistency between managerial-rated HPWS and perceived HPWS, internal fit of HPWS configuration is proposed by the researchers (Guest *et al.*, 2021; Meier-Barthold *et al.*, 2023). Meier-Barthold, Biemann and Alfes (2023) argued that managerial-rated HPWS lead to lower variability in perception of HPWS among employees when there is internal fit (compared to internal misfit) between the HPWS elements where the internal fit of an HPWS describes the degree to which the practices in a system are coherent, consistent, and strategically integrated (Delery & Doty, 1996). From integrated HRM system strength theories within signal theory, the study supported that when [strong dual line managerial-rated] HPWS normally send intentional signals to the staff

(Hoglund, 2012), then employees experience and make sense to form an individual understanding towards to HPWS (Gomes 2024) which impact on the engagement.

Hypothesis 1: cross-level impact of manager-rated HPWS at department level is positively related to perceive HPWS.

According to scholars (e.g., Aryee et al., 2012; Den Hartog et al., 2013; Jensen et al., 2013) perceived HPWS has more direct relationships with employee outcomes than manager-reported HRM systems (Jiang & Messersmith, 2018). Although researchers have shown that employee perceptions of HRM are positively related to work engagement (Alfes et al., 2013; Boon & Kalshoven, 2014; Siyal et al., 2020), it remains unclear what the underlying mechanisms are that explain this relationship (e.g., Coelho et al., 2015; J. Meijerink et al., 2020; Ostroff & Bowen, 2016; Siyal et al., 2020; Y. Wang et al., 2020; Zhong et al., 2015). Besides, perception of the same HPWS measurement by the employees has impact on the engagement, but there is the conflict of knowledge about how this can conceptualized (Li & Frenkel, 2017; Ostroff & Bowen, 2016a; van Rossenberg et al., 2022; Wang & Liang, 2020; Wang et al., 2020). Researchers may not refer the term of perceived HPWS in the same dimensions, so that an increasing number of studies have perplexed the HR perceptions with other related conceptualizations (Wang et al. 2020). This is due to lack of transparency/clarity in the theoretical backgrounds of perceived HPWS (Beijer et al., 2021; Boon et al., 2019; Van Beurden et al., 2020; Wang et al., 2020). Hence, previous studies categorized perceived HPWS in to three distinct but inter-related dimensions: perceived HRM content (the content or 'what' of the HR practices), HRM system strength (the process or 'how' HR practices are delivered), and HRM attributions (the intent, or 'why' HR practices exist) (Cooke et al., 2020; Ostroff & Bowen, 2016b; Y. Wang et al., 2020; Xiao & Cooke, 2022b). However, both HPWS content and HPWS strength theories get much focus in the study of managerial-rated HPWS and perceived HPWS (Ostroff & Bowen, 2016b). Messages can be embedded in HR content (the 'what') or in the way HPWS are implemented (the 'how') that can be operational-ized through perceived HPWS summarize the messages to employees, either individually or collectively, receive from their employers by experiencing HPWS (Y. Wang et al., 2020). This means HPWS content can be perceived collectively and individually by employees. This is also consistent with HR system strength theory (Bowen & Ostroff, 2004), which argues that when

shared climate perceptions or collective perceptions of HPWS emerge at the department level, engagement of employees can be enhanced at department level (Xi et al., 2021). Hence, the researchers used compositional model or aggregate individual perceptions of HPWS to the group level (Boon et al., 2019) in order to test its impact on the engagement at department level. Researchers have studied empirically in different contexts, 286 companies in China (Xi et al., 2021), China (J. Zhang et al., 2018) 92 branches of national bank in Japan (Liao et al., 2009a), nationwide shipping company in China (Jiang, 2013). However, such study is not studied in the context of Ethiopian HEIs. Therefore, according to signal theory and HRM system strength theories and empirical works, at between-group level, the researchers expected that between-unit differences occur as perceived employees' engagement become higher in the departments in which the perceived HPWS is higher.

Hypothesis 2: Perception of integrated dual HPWS positively impact engagement of employees between level.

Beside to between level this HPWS difference shows the positive impact of perceived HPWS on the engagement at within group level (termed as individual level HPWS (Wang et al., 2020; Xi, Chen and Zhao, 2021) needs consideration in the study (Wang et al., 2020). Researchers (Liao et al., 2009) stressed to don't assume homogeneity of employee experience with the HPWS across employees even within the same group. There are differential effects from homogeneity assumption of employees perception of HPWS as collective HPWS whereas heterogeneity assumption of employees perception of HPWS termed as individual HPWS (Xia et al., 2019). Even if higher-level attributions have been treated as compositional in nature to date, there may be utility in exploring various compilation type of models (Kozlowski & Klein, 2000) such as majority/minority sub groupings or different configurations across the mix of attributions (Ostroff, 2021). Obviously, beside to collective properties or compositional approach called 'shared property', there is collective properties that emerge from compilation approach called 'configurial property' that impact on the engagement at within group level (Lin & Sanders, 2017; Renkema et al., 2017). In the case of workforce/HRM differentiation, the goal is not to create a strong shared perception of HR among all employees; the strategy is to provide different HR practices for targeted subgroups of employees (Van Rossenberg, 2021). In another words, employees' variation in their perception of HPWS has significance on the

engagement for the subgroups or at within group level. From idiosyncratic deals theory (Rousseau et al., 2006), individual arrangements are made in a manner that can be expected to lead to extensive differences in perceptions of HPWS between and within employee groups (Van Rossenberg, 2021), but empirically the variability in HR practices among employees within the same unit is undermined by the previous researchers and unplugged for the researchers (Boon et al., 2019; Den Hartog et al., 2013; Jiang et al., 2013; Liao et al., 2009; Xi et al., 2016, 2021). Relying of empirical work of Jiang (2013), at the within-group level, the researches also expected that within every group, employees who perceive HPWS positively are likely to be more engaged.

Hypothesis 3: Perception of integrated dual HPWS positively impact engagement of employees at within unit level.

2.2. Indirect effect of managerial-rated HPWS and engagement through perceived HPWS

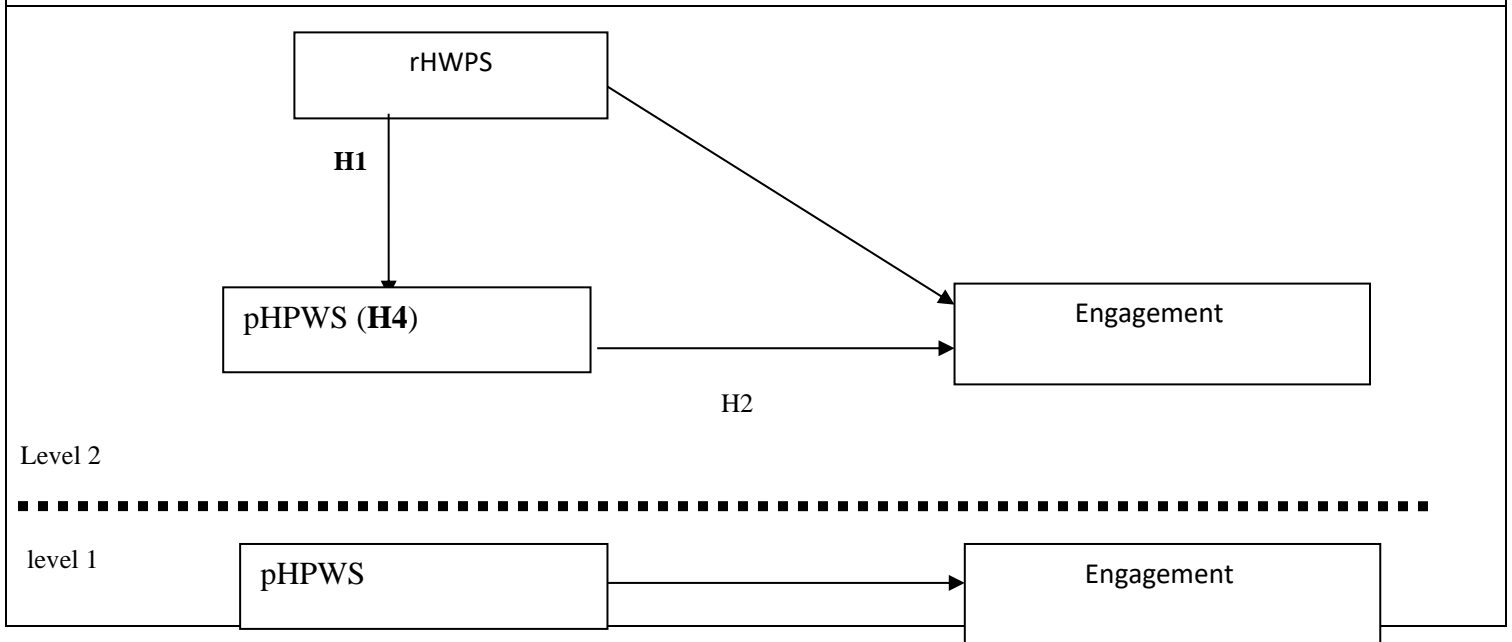
In line with the original thoughts of the SHRM process model (Nishii & Wright, 2008), majority of studies investigate employee perceptions of HRM as a mediating mechanism in the relationship between manager-rated HRM and motivational employee outcomes (e.g. satisfaction, commitment, and engagement) and/ or organizational outcomes (e.g. Ang et al., 2013; Den Hartog et al., 2013), but much is still unknown about how employee perceptions of HRM serve a mediating mechanism (Beurden et al., 2021). According to Grubert et al. (2023), there is a gap of department level HPWS and engagement that may be better understood by considering internal and external responsible HPWS perception by

Hypothesis 4: The relationship between manager-rated HRM and engagement is fully mediated by integrated dual employee-rated HRM.

employees in public sector (see also Hameduddin & Lee, 2021). This part is conceptualized by the researchers (e.g., Alfes et al., 2021) as a perception of commitment and control HPWS and it has positive meditational effect between managerial-rated HPWS and engagement. Therefore, many previous studies (Guest, 2017) claimed that the perception of private and public HPWS positively mediate between rated HPWS and engagement (Alfes et al., 2021). Again, Qamar et al. (2019) concluded that whether integrated (commitment and control) or separated HPWS, has impact on engagement, is not yet agreed upon (see also Mathieu et al., 2017; Caniëls and Veld, 2019). In order to solve such knowledge conflict and empirical gap indicated by meta analysis as the positive mediation of perception of integrated dual aspects of HPWS needs more empirical work (Alfes et al., 2022; Constant et al., 2020; Lee et al., 2020; Pahos & Galanaki, 2022), the researchers hypothesized the perception of dual HPWS positively mediate between managerial-rated HPWS and engagement. Therefore, the researchers assumed in line of Aryee et al. (2012) and Liao et al. (2009a) found that employee-experienced HPWS fully mediated the relationship of manager-rated HPWS with individual outcomes (Jiang, 2013), because the impact of rated HPWS has direct effect on the engagement if and only if mediation of perceived HPWS is absent (see Den Hartog et al., 2013).

Therefore, integrated dual HPWS perceived collectively at department level this in turn impact on the engagement of employees at upper level. So that upper level integrated dual HPWS perception by employees positively mediate between managerial-rated dual HPWS and engagement (see Figure 1).

Fig 1: - conceptual framework that shows multilevel mediation of perceived HPWS between rated HPWS and engagement.



3. Methodology of the Study

3.1. Study design, procedure and participants.

To reduce single-source bias and ensure the reliability of the data, the researchers collected data from multiple sources within each institution including department heads and employees. Specifically, the data on managerial rated HPWS was collected from department heads whereas engagement was collected from employees. The Researcher selected three samples of universities from 42 public universities, includes Wachemo, Worabe, and Wolaita Sodo Universities using simple random sampling. Secondly, from each university, departments are selected using strata sampling technique. From each department, five employees are selected using simple random sampling technique. At the department level, department head filled the questionnaire.

The employee’s questionnaire was first sent by the department heads, but most of the employees bring back using phone number and through personally that ensures employees confidence. The department heads of many groups endorsed me in collecting of questionnaire from employees. The respondents were assured of confidentiality and that nobody from the universities would have access to their individual responses. To further reduce potential psychological stress, the researchers did not include any question in the employee surveys pertaining to individuals’ names and their

department. Then, their specific department was filled at the collecting of questionnaire since specification of department/group/ is must in the multilevel research design.

The researchers had planned to collect 90% of departments from three universities of Ethiopian public HEIs, includes Wachemo, Worabe, and Wolaita Sodo universities. Therefore, totally 149 and 745 questionnaires were distributed to department heads and employees, respectively. Of this questionnaire, 109 department heads and 380 questionnaires were collected. After removing unmatched questionnaires to both heads and employees, 102 and 360 questionnaires were included. Therefore, 102 (68.45%) department heads and 360 (48.32 %) employees had responded effectively. The overall response rate was 51.68%, which is more than the average suggested in the literature for multilevel studies, specifically by (Baruch & Holtom, 2008).

Table 1: shows demographic profile of department heads and lecturers

Demographic profile	Scales	Department heads		Employees lecturers	
		Figure	Percentage	Figure	Percentage
Gender	Male	86	84.31	265	73.62
	Female	16	15.69	95	26.38
Age	18-25	5	4.9	40	11.11
	26-35	61	59.80	275	76.39
	36-45	26	25.49	35	9.72
	46-55,	6	5.82	6	1.67
	56-60	4	3.82	4	1.11
Marriage status	Married	77	75.49	242	67.22
	Unmarried	25	24.51	110	30.56
	Divorced	-	-	8	2.2
Educational status	BA.	5	4.90	21	5.83
	Masters	64	62.74	315	87.50
	Asst. prof. & masters	25	24.51	19	5.28
Work experience	Asst. prof. & Dr.	8	7.84%	5	1.39
	2-5	27	26.47	204	56.67
	6-10	44	43.13	109	30.28
	11-20	21	20.59	36	10
	Greater than 21	10	9.8	11	3.06

3.2. Questionnaire development

Three phases of tool developments were carried. At the first phase, content validity was tested using experts. Based on the management researcher, the researchers followed the same procedures of previous work of Koednok and Sungsanit (2018), 3 doctors (PhD degree holders) and assistant professors with many publications from academic institutions. The second phase of tool development was carried through translating and redesigning of questionnaire's word order, and layout. Relying on the procedure of Bekaroglu and Danayiyen (2020), and Mielke et al. (2019) procedure of translation process of the original 10-item HPWS questionnaire followed the adapted Brislin translation model (Brislin, 1970). Third phase was carried out to test the pilot using 50 samples from Hossaina polytechnic college employees.

3.3. Measurements

Departmental rated HPWS: Rated HPWS was measured using 10 measures with 54 items using the previous literatures. The format of question includes

“employment security” (e.g., employees’ job is guaranteed in this department), Totally 54 items of rated HPWS were scaled using five likert scale. The scale’s Cronbach’s coefficient was .924.

Employees perceived HPWS: since, the research is homologous HRM that employed referent-shift model describing the constructs that maintain the same meanings across different levels of analysis (Sanders et al., 2008) by which both managers and employees agree the level of experience about the same meaning of HPWS. The question format from Dorta-Afonso et al. (2021), to assess the constructs of “employment security” (e.g., my job is guaranteed in this department), “training” (e.g., the department provides training to adapt new employees to their work), “opportunities for advancement” (e.g., the department provides me with real opportunities for promotion and advancement), “results-oriented appraisal” (e.g., the department values my performance at work objectively). Cronbach's α is .930. The Rwg and ICC values of employees’ perceptions of (ICC1 is .176, ICC2 is .918) provided support for our aggregation of employees’ individual

perceptions into collective perceptions at the department level (James et al., 1984).

Employee Engagement: the researchers measured employee engagement that consists of 12 items, equally distributed across the three factors (emotional, behavioral, cognitive) of Kahn’s (1990) engagement theory, and measured by the 5-point Likert scale (1 = completely disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = completely agree) (Shuck et al., 2017). A sample item is, ‘I feel positive about my work.’ The scale’s Cronbach’s coefficient was .856. To ensure that the engagement were acceptable to be aggregated into department level based on Bliese (2000) work, the researchers also assessed ICC level. ICC1 value is .207 and ICC2 is .823. Therefore, engagement measurement is valid to aggregate at between level.

Control variables. Because of the multilevel data structure, this study controlled for factors at both the individual and departments levels. At the individual level, the researchers controlled for gender, education, marital status, work experience, and income in the analyses due to their potential impacts on employees’ individual perceptions of HPWS and their work outcomes (i.e., (Liao et al., 2009a). At the department level, the researchers considered department managers’ age, gender, education (L. H. Nishii & Wright, 2008), marital status, experience as control variables because those factors may

Tables 2: present the means, standard deviations, and inter-scale correlations of all variables at the employee level

	Mean Statistic	Std. Deviation Statistic	Variance Statistic	Skewness Statistic	Std. Error	Kurtosis Statistic	Std. Error
Marriage	1.74	.520	.270	-.232	.129	-.365	.256
Education	3.04	.485	.235	.846	.129	4.071	.256
Work_expreince	2.78	.900	.810	.712	.129	-.164	.256
Salary	5.02	.453	.206	-.989	.129	6.936	.256
pHPWS	3.5064	.59067	.349	.041	.129	-.226	.256
ENGM	3.5564	.80131	.642	-.158	.129	.001	.256
rHPWS	3.6196	.53244	.283	-.246	.129	.226	.256

As shown in Table 3 below, inter-scale correlations show the expected direction of association and, with few exceptions, are all significant at the $p < .01$ level and $p < .05$ levels. Mainly, managerial rated HRM is positively and significantly related with engagement ($r = .211, p < .001$) and with perceived HPWS ($r = .223, p < .001$). Moreover, perceived HPWS is positively correlated with engagement ($r = .409, p < .001$). Therefore, H1,

influence how they perceive HR practices and implement HR practices in their departments.

4. Results

4.1. multilevel mediation model specification

Multilevel model was examined to have the direct effects of rated HPWS on engagement and the indirect effects through perception of HPWS. Pham (2017) argued that MSEM model for the analysis 2-1-1 mediation model is better to consider perceived HPWS impact on the engagement at both between department and within department level that mitigate the measurement error of between level.

4.2. Results

4.2.1. Preliminary analysis

For the MSEM assumption, first, Outliers’ identification was accomplished through assessing standard deviation less than mean shows no outlier (see Table 2). Table 3 shows that all correlations are less than 0.85 that indicates there is no multicollinearity. Skewness and kurtosis tests show that data is normally distributed (Table 2) in line of Byrne (2010) recommendation of normality of data that can be expressed using average value of -2 and +2 for skewness while -7 and +7 for kurtosis.

H2b, H3 are expected with positive relationships. The correlation with other demographic is also indicates a hint for the within level effect of perceived HPWS impact on the engagement. Therefore, correlation with other demographic factors also positive (except for gender, which is a matter of coding), that indicates a hint for the within level effect of perceived HPWS impact on the engagement.

Table 3: Pearson Correlation and Sig. (2-tailed), N-360 employees

	1	2	3	4	5	6	7	8	9
1. Gender									
2. Age	-.091								
3. Marriage	-.075	.223**							
4. Education on	-.099	.279**	.264**						
5. Work_experience	-.063	.679**	.292**	.443**					
6. Salary	-.138**	.300**	.261**	.794**	.449**				
7. pHPWS	-.063	.012	-.139**	.050	-.029	-.081			
8. ENGM	-.130*	.219**	.085	.230**	.260**	.098	.409**		
9. rHPWS	-.115*	.180**	-.023	.142**	.075	.078	.223**	.221**	

** . Correlation is significant at the 0.01 level (2-tailed).* . Correlation is significant at the 0.05 level (2-tailed).

NB: coding of Gender: male is coded as “zero” while female was coded “1”

4.2.2. Measurement model

Confirmatory factor analysis (CFA) by using jamovi-2.3.28.0 software was performed to examine the distinctiveness of employees’ engagement and perceived HPWS. To determine how the model fitted our data following the recommendation of L. Hu and Bentler (1998), researchers calculated multiple indices of fit which are fit indices (J. F. J. Hair et al., 2006). These are with their cut of value of χ^2/df values less than 2.5; for the Tucker–Lewis index (TLI) and comparative fit index (CFI), values greater than 0.9 represent a good model fit (Bentler, 1990), and for the root mean square error of approximation (RMSEA) and standardized root mean square residual (SRMR), values less than 0.08 indicate a good model fit (Browne & Cudeck, 1992). Since scholars considered Exploratory factor analysis of HRM as second order (see Jiang et al., 2012; Korff et al., 2017; Mostafa et al., 2015; Tensay & Singh, 2020), researchers also adapted Armour (2015) built second order HRM construct through ten SHRM practices categorized under ability oriented HRM practices, motivation oriented practices and opportunity oriented HRM practices. Moreover, engagement is considered as first order factor, based on the previous researchers (e.g., Kazimoto, 2016; Tensay & Singh, 2020). So that lastly model fit for two factor model (perceived HPWS and engagement) become with the

value of χ^2/df values is 2.5, CFI is 0.965, TLI is 0.956 and RMSEA is 0.067. Moreover, SRMR is 0.068 when the model estimation is at diagonally weighted least square (but not in automatic estimation method).

Parceling is usually done in studies with dichotomously or coarsely categorized measurement indicators to meet certain assumption of normality and continuity of statistical fit test (Bandalos & Finney, 2001). Therefore, the researchers applied for the two variables: for the perceived HPWS based on the AMO while engagement was categorized using three dimensions called ‘cognitive, affective behavioral’ standardized beta value were greater than 0.60 and it indicates that parceled items were loaded satisfactory on their respective factors (Byrne, 2016) .

To validate convergent validity, both variable have AVE value of greater than .7 whereas the value of AVE is also greater than .5 (J. Hair et al., 2010). So possible to compare the square root value of AVE with the correlation between factors to ensure divergent validity (F. Hair Jr et al., 2014), that shows their (perceived HPWS and engagement) correlation is less than square root of AVE (Table 1). As shown in the Table 4, both variables have Cronbach’s alpha and CR values are above 0.70 reveals that the scale is reliable (F. Hair Jr et al., 2014).

Table 4: validity and reliability

	α	AVE	Sqrt of AVE	CR
Perceived HPWS	0.93	.63	.79	.84
Engagement	0.856	.63	.79	.84

α : Cronbach’s alpha; AVE: average variance, sqrt; square root; composite reliability

Thirdly, convergent validity statistically tested through harman's exploratory factor analysis as it suggests that if the un rotated solution (with all measured items included) produces one factor that accounts for less than 50% of the variance, no worry about common method bias (Kock et al., 2021). For both engagements is 39.177% and perceived HPWS is 23.322% the total variance explained is below 50%.

4.2.3. Hypothesis testing

To investigate whether positive indirect effect of pHPWS between rHPWS and employees' engagement, a path model was carried out using R version 4.3.1 (2023-06-16 ucrt) with the help of lavaan 0.6-16 FREE software! As shown in the following Table.

Table 5 shows hypothesis tests

Managerial-rated HPWS >engagement	
Managerial-rated HPWS >perceived HPWS	
Perceived HPWS>engagement (within department)	
Perceived HPWS>engagement (between department)	
Managerial-rated HPWS>perceived HPWS (between department)>engagement	

Note: all are at p<.001 significance, 95% CIs

According to Table 5, researcher investigated the effect size of indirect effect of perceived HPWS between rated HPWS and engagement of employees using path analysis and supported with using percentile bootstrapped confidence intervals (Shrout & Bolger, 2002). The result shows that positive effect of rated HPWS predicted positive perceived HPWS, $\beta = .204$, $SE = .085$, 95% CI [.036, .371], $\beta^* = .23$, $p = .017$, while the effect of perceived HPWS on the engagement of employees at between groups is $\beta = .614$, $SE = .133$, 95% CI [.352, .875], $\beta^* = .452$, $p < .001$. The effect of perceived HPWS on the employees' engagement at within level is also shown as $\beta = .371$, $SE = .069$, 95% CI [.236, .507], $\beta^* = .272$, $p < .001$. The direct effect of rated HPWS on the engagement is significant only when perceived HPWS is controlled unless it is insignificant at, $\beta = .218$, $SE = .062$, 95% CI [-0.011, .447], $\beta^* = .181$, $p = .062$. CI includes zero and p value is not significant at 0.95. That implies the full mediational effect of perceived

HPWS between rated HPWS and engagement significantly at, $\beta = .125$, $SE = .059$, 95% CI [.009, .240], $\beta^* = .104$, $p = .034$. The total effect indirect and direct effect is also significant at $\beta = .343$, $SE = .125$, 95% CI [.098, .587], $\beta^* = .285$, $p = .006$.

The total amount variance in engagement accounted for by both rated HPWS and perceived HPWS was 27.5% ($R^2=0.275$) while the total amount variance in perception of HPWS at between level was 5.3% ($R^2=0.053$). Moreover, at within group level, the total amount variance in engagement accounted for perceived HPWS was 7.4% ($R^2=0.074$).

4.3. Discussion

In order to increase the impact of SHRMP on the performance through employees outcome, employees perception of the same HPWS as managerial-rated HPWS is stressed (Liao et al., 2009b; L. H. Nishii & Wright, 2008; Renkema et al., 2017a; Y. Wang et al., 2020). They initiated to focus not only employee's perception but also the managerial rating of HPWS as it is nearby manager to affect employees' perception of the same HPWS rather than top level HRM rating. Hence, these researchers agreed that line manager and employee's perception of HPWS are especially important to realize organizational performance. Therefore this research fill that challenge of SHRMP research that has been traditionally focused on the relationships between HRM systems and performance outcomes at the organizational level with neglecting the voices of employees in HRM practice (e.g. Xi et al., 2021; Zhang et al., 2018). Again it provided explanation for the researchers forwarded the knowledge gap about the perceptions of HPWS to provide a better understanding and explanation for the reasons behind their behaviors (Díaz-Fernández et al., 2023; Liao et al., 2009b; L. Nishii et al., 2008) through stressing on the perception of managerial-rated and employees perception about the same (homologous) HPWS as well as focusing dual aspects of these HPWS (including commitment and control oriented SHRMP).

Consequently, the researchers tested that the positive effect of managerial-rated dual HPWS on the employee's perception of dual HPWS. Second, the researchers examined the positive effect of perceived dual HPWS on the engagement of employees at between group level. Third, research hers verified that the positive effect of perceived dual HPWS on the engagement of employees at lower level. Fourth, the researchers focused of mediational effect of integrated dual perceived HPWS between managerial rated dual HPWS and engagement.

4.4. Theoretical and empirical implications

The specific SHRMP theoretical and empirical contributions includes as follows: First, by the integration of HRM system strength and signal theory, the researchers conceptualized in line of Bednall et al. (2022) meditational hypothesis by the integration of HRM system strength with HRM signal theory (Connelly et al., 2011; Ehrnrooth & Björkman, 2012), the researchers studied that when line managerial rated HPWS send strong dual HPWS to employees (receivers) receives the HPWS, then employees respond with positive feedback that enhances their engagement in Ethiopian public HEIs. However, due to idea synchronization of perceived HPWS and its effect on the engagement include not only team climate formation but also includes psychological formation. But mediation will occur only upper level.

Second, this integration of HPWS content and HPWS strength theory has been unplugged yet. Hence, studying of HPWS content using signal theory integrated with the emergency of perceived HPWS at both collective and individual level using HRM system strength responds the call of studies to tangible inefficiency of studies toward the integration of HR content, perceived HR strength, and employee outcomes into one conceptual model in gaining of a full picture of the HRM-performance relationship (Guest et al., 2021; Ostroff & Bowen, 2016).

Third, to increase the perception of employees towards HPWS, the researchers studied with the integration of HRM strength under signal theory that assumes there are two aspects of HPWS (commitment- and control-oriented HPWS) and it is rated by department head has positive effect on the perception of HPWS by employees (Meier-Barthold, et al., 2023). However, previous studies (Díaz-Fernández et al., 2023; Liao et al., 2009a; L. Nishii et al., 2008; Xi et al., 2021; J. Zhang et al., 2018) studied homologous HPWS that have not applied dual aspect of HPWS. Hence in line with dual aspect focused HPWS researchers (Alfes et al., 2021; Su & Wright, 2012; Xia et al., 2019), this study also integrated HRM system strength in line of signal theory to explain managerial-rated HPWS impact on the perceived HPWS then on engagement. Hence, the researchers framed the integrated perception of commitment- and control-oriented HPWS positively mediate between managerial-rated dual HPWS and engagement. This may be due to pay based performance appraisal is currently stated as positively affecting factor for engagement. Even if some researchers started to test this dual HPWSs mediation between managerial-rated HPWS and

engagement (Alfes et al., 2021), their managerial-rated HPWS is neither dual nor the homologous HPWS. Hence, this study will be a reference point to further HPWS researchers to conceptualize dual HPWS.

4.5. Practical contribution

This study also has contributions to the managers. HR professionals should communicate clearly with other department managers about HR practices (Bos-Nehles et al., 2013) and show support for the implementation of new practices (Kuvaas et al., 2014), because the managerial understanding about HRM and employees perception of HPWS positively enhances the perception of HPWS that in turn related with the organizational performance (Y. Wang et al., 2021) Since dual managerial-rated HPWS has enhances the perception of HPWS, managerial should have to focus on the department level dual HPWS aspects. This perceived HPWS has positive impact on the organizational performance (Alfes et al., 2021) such as innovation, creativity, end negatively with employees turn over and burn out. Besides, collective perception of HPWS is directly related with the organizational performance (Xia et al., 2019) that attracts the focus of managers in their effort to increase organizational performance.

That means, employees difference within one department should get focused to manage employees based on their individual perception to optimize their preferences. Because not only composition/collectivity oriented HPWS but also individual-oriented/compilation HPWS has positive impact on the organizational performance (Renkema et al., 2017)..Therefore, managers should have to manage both compositional and compilation HPWS to engage employees in their roles.

4.6. Limitation and further research implication

Though there are theoretical and empirical contributions, there are related short comings as listed below.

First, the researchers studied the mediation effect of perceived HPWS impact on the engagement. That is only one aspect of reaction of employees. However, the impact of managerial-rated HPWS on the most strongly affected outcome five employee outcomes (including employee engagement, organizational commitment, organizational identification, intention to leave, job satisfaction, perceived organizational support, self-efficacy, and coping with change) was mediated by the perceived HPWS (Bednall et al., 2022). The

same result might be achieved using one or combinations of these outcomes.

Second, researchers studied using the combination of only what and how HPWS (Wang et al., 2021; Xiao & Cooke, 2022a), but the perception also includes including why, i.e., attribution aspect. Hence, future researchers have better to study including HPWS attribution. Prior researchers (Alfes et al., 2021) studied that perceived HPWS impact on the engagement can be mediated by the perception of HPWS attributions. Hence, researchers call studies on the serial mediation of perceived HPWS then perception of HPWS attributions between managerial-rated HPWS and engagement.

Third, the researchers studied mediation of perceived HPWS between managerial-rated HPWS and engagement. But, a number of scholars indicated that due to weak and contradicting effect of managerial-rated HPWS and perceived HPWS relationship (Ostroff, 2021; Wang et al., 2021), engagement has been diminishing. Hence, inconsistency between them can be improved complementing the moderation of HPWS strength (Guest et al., 2021; Meier-Barthold et al., 2023; Ostroff, 2021). Hence, future researchers could have better engaged employees when they strength managerial-rated HPWS and perceived HPWS through nine-meta features.

Fourth, this research was conducted using MSEM approach of two levels. Hence, this will add the empirical value for the future researchers, as the SHRMP field has faced the drought of MSEM application (Boon et al., 2019; Jiang & Messersmith, 2018; Van Beurden et al., 2021). But the nature of organization is not restricted in two level natures that neglect the role of top managers and boards and HRM department. So that future researcher could have better to include the three level impacts on the engagement of employees.

Fifth, researchers conducted this research by the effect of departmental HPWS as upper level, but overall intended SHRMP may not transferred from top managers and HRM personnel to line managers that may hinder to know compressive SHRMP impact of institutions on the employees engagement. A. C. Bos-Nehles and Meijerink (2018) collected multilevel data from two sources (75 employees and 20 line managers) of Dutch engineering firm and the results show that employees perceive a larger number of HRM practices when they have a good relationship with their line managers and when their line managers are motivated to implement HRM practices while line managers, in turn, reciprocate perceived support

from the HRM department with greater motivation to implement these practices. The HR department and line managers both influence the extent of HRM system implementation (Kehoe & Han, 2020) as well as employee perception of the system (Pak & Kim, 2018; Wang, Zhou & Zheng, 2022). Therefore, including top level managerial or HRM personnel perception of HPWS impact besides to branch level HPWS may shine its effect on employees' engagement.

Six, this study carried only in the three public HEIs that restrict the generalizeability of this outcome. Even if the findings of Blom et al. (2018) shows that significant differences between sectors, there is no place to differentiate the affecting level of HPWS on the individual outcome among private, public and semipublic sectors. Therefore, the outcome of this research can be applied for non-public HEI sectors but not for the other sectors. Hence, further researcher has better to study in the other sectors other than HEIs.

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