

MULTILEVEL EFFECT OF MANAGERIAL-RATED HRM PRACTICE ON THE ENGAGEMENT IN ETHIOPIAN HEIS

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ABSTRACT

Strategic Human Resource Management practice (SHRMP) is a dual managerial concept that ensures optimal employee engagement in both creative and innovative dimensions for sustained organizational competitive advantage. However, this has been undermined by the previous studies. In this study, we applied Signal theory to assess the effect of dual managerial-rated High Performance Work System (HPWS) on employees' engagement using multilevel data collected from 102 department heads and 360 lecturers of three selected Ethiopian public HEIS (Wachemo, Worabe, and Wolaita Sodo). The results indicate that positive managerial-rated HPWS predicted engagement significantly ($\beta = .349$, $SE = .125$, $\beta^ = .293$, $p = .005$ at confidence intervals of 95% .104, .593 while the total amount of variance in engagement accounted for by positive managerial HPWS was 8.6%, $R^2 = .086$. We conclude that dual HPWS have a positive impact on employee engagement. Further researchers could expand managerial-rated dual HPWS to enhance employee engagement.*

Keywords: SHRMP, Dual HPWS, Engagement.

INTRODUCTION

Strategic Human Resource Management practice (SHRMP) is defined in the preliminary work of Wright and McMahan (1992) as the effective use of human resources for an organization's strategic needs via the integration of planned human resource practices aligned with business strategy to achieve organizational performance and competitive advantages (e.g., Armstrong & Brown, 2019; Herlina et al., 2022; Jiang & Li, 2019; 23; Junita, 2016a; Phanwattana & Vichit, 2017). SHRMP, so called "bundle" of human resource practices or High performance work system should be linked to organizations' strategic objectives (Bailey, 1993) because it is related to managing employees for sustained competitive advantage (Altarawneh & Aldehayyat, 2011; Eneh & Awara, 2016; Kuse & Wanyoike, 2022; Phanwattana & Vichit, 2017; Savaneviciene & Stankeviciute, 2012). Of the many SHRMP models, the most influential new Strategic Human Resource Management (SHRM) models, such as the Harvard Model (Beer et al., 1985), have shown how external environment-oriented business strategies can be internalized through HRM practices to proximal and distal outcomes (Storey & Wright, 2023). In line with this, the term work role requirement (e.g., Schuler & Jackson, 1987) or work performance (e.g. Campbell, 1974) is argued to be a HRM system that can contribute to organizational effectiveness by managing and controlling organizationally desired role behaviours of employees (to meet the challenges of internal and external environments, Bos-Nehles, et al., 2023; Jiang &

Messersmith, 2018). According to Nishii (2008) and Wright and Nishii (2006, 2007), individuals' work role focuses on the outcome of individuals or attitudinal outcomes (Liao, Toya, Lepak & Hong, 2009; Renkema, Meijerink & Bondarouk, 2017) Adillah et al., (2022).

Meijerink et al. (2020) and Saks (2022) explained that relative to other work attitude constructs, such as job involvement, job satisfaction, and organizational commitment; engagement provides a multidimensional motivation state and is a broader construct that involves a more holistic and complete investment of the entire or full self in the performance of a task or role. Therefore, such employees' attitudinal outcome is stated as employee engagement with its meanings 'cognitive, emotional, and behavioural energy of an employee directs toward positive organizational outcomes' (e.g., Khan, 1990; Shuck & Reio, 2014). It is found to have a positive relationship with not only individual performance (such as organizational commitment and positive behaviour), but also with organizational performance (example customer satisfaction, financial return Sun & Bunchapattanasakda, 2019a). Therefore, motivating employee work engagement has emerged as one of the most significant drivers of high performance and achievement in today's dynamic environment and has become essential in gaining a sustainable competitive advantage of institutions (Aslan, Mert & Sen, 2021; Bhutta & Zafar, 2019; Saad, Gaber & Labib, 2021; Sun & Bunchapattanasakda, 2019b) Allui & Sahni (2016). However, practical evidence from Gallup's survey (2012) showed that the average level of employee engagement is only 13% across the world, which indicates that most of the world's employees are disengaged (Aktar & Pangil, 2018). Consequently, some researchers (Saks, 2019) argued that the extant literature show some shortcomings regarding the antecedents of employee engagement (Saad et al., 2021). As employee engagement is a significant outcome of HRM practices in organizations (Markoulli et al., 2017), many scholars have concluded that HPWS has taken the foremost step in enhancing engagement (Jahangir et al., 2024). However, many researchers agreed that few are known about the role of HPWSs as antecedents of engagement Kim & Lepine, 2019, 378; Wu, Wei, Zhang & Han, 2011). We assumed that this gap is due to the following two reasons Appelbaum (2000).

First, although vertical and horizontal fit in strategic human resource management are foundational to the links between a HPWS and organizational performance, little is known about how these two fits interact to affect organizational performance (Han, Kang, Oh, Kehoe & Lepak, 2019) Armstrong (2011). This clearly shows that in order to have better SHRMP and engagement linkage, SHRMP needs to be understood as it contains two broad types of practices: employment practices and work practice strategies: in other words, an ideal-type market-oriented HR system and ideal-type employee-oriented HR system (Dayarathna, 2019; Meier-Barthold, Biemann & Alfes, 2023; Tafvelin, Stenling, Lundmark & Westerberg, 2019) or performance-and commitment-oriented human resource practices (e.g. Armour, 2015; Boxall, 1996; Fan, Liu & Zou, 2018; Kehoe & Wright, 2013). Researches (Meier-barthold & Alfes, 2023), recommended integrated dual as fit of HPWS that decreases the disengagement of employees. Hence, when there is fit of dual HPWS aspects, employees become high in engagement Arooj et al., (2022).

Second, although management scholars have devoted more to investigating the mechanisms underlying the linkages between HPWS and employee outcomes via cross-level path analyses (Aryee, et al., 2013; Bos-Nehles, Renkema & Janssen, 2017; Liao, et al., 2009), further studies are needed to test the theorized cross-level impact of HPWS on employee outcomes (Jiang & Messersmith, 2018; Peccei & Van De Voorde, 2019; Shen et al., 2018) Arrowsmith & Parker (2013). Since the nature of organization is multilevel, it should be considered in the HPWS studies (Renkema et al., 2017). Signal theory also proposes that HPWS

rated by line manager has positive impact on the engagement of employees (Connelly et al., 2011). Even if there are some studies on this, there is no empirical evidence that poses both multilevel and dual fit of HPWS. Multilevel design integrated with dual aspects of HPWS can be seen as organizational ambidexterity that can be accomplished through operational managers' ambidexterity (team level HPWS) to pursue both explorative and exploitative activities (e.g. Constant, et al., 2020; Mom et al., 2019; Yap, Ahmad, Jalaludin & Hashim, 2020) to engage employees toward creativity and innovation. However, in the HEIs scenario, previous SHRM researchers (such as Alfawaire & Atan, 2021; Emeagwal & Ogbonmwan, 2018; Hamadin & Atan, 2019) have not touched on multilevel design using team-level dual SHRMP in relation to employees' engagement in both creativity and innovative performance Aybas & Acar (2017). Therefore, this study examines the direct and positive impact of managerial perceptions of dual SHRMP at the department level on the engagement of employees at a lower level Bal et al., (2013).

This study was carried out in the Ethiopian public HEI context because of the following advantages. First, HEIs provide a strategic focus for the development of the country. In Ethiopia, public higher education has the highest rate of return for employees from three key sectors: teacher education, agriculture, and health sciences with estimated increases in earnings of 23%, 15.3%, and 16.3%, respectively (Demissie, 2023). This shows that it is a strategic focus for the development (performance) of the country. Second, Ethiopia's state-led and public-investment-intensive development model supported growth rates of nearly 10 percent between 2004 and 2018, among the world's highest, and drove significant gains in poverty reduction, for example, growth flow from 6.4 percent in FY22 to 7.2 percent in FY23, supported by good harvests and steady service sector growth (Outlook, 2023). This shows high economic development by focusing on the public sector-driven development strategy, which verifies the motivation of researchers to study Ethiopian public HEIs rather than other countries and the private sector Bashir et al., (2012).

This study has the following values for its audiences. Theoretically, first, it enhances the application of signal theory in the study of manager-rated HPWSs on the engagement (see Fig 1). That responds the call of researchers to this area (e.g., Guest et al., 2021; Meier-barthold & Alfes, 2023; Taj, 2016; Y. Wang et al., 2020). Second, it helps to bridge the gap of manager-rated HPWS and engagement through signal fit assumption of signal theory, because department head provide through balancing commitment and control-oriented HPWS to employees, then employees become engaged more in the work role Becker (2001). Methodologically, it extends the application of multilevel particularly, two level through team level HPWS to affect engagement of employees Becker & Huselid (1998). Practically, it enhances HRM implementation through team level oriented HPWS and dual aspect of HPWS Figure 1.

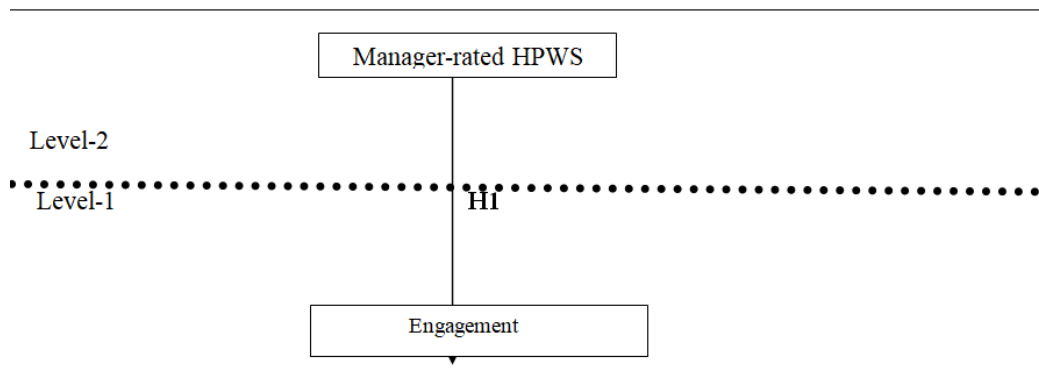


FIGURE 1
SHOWS THE RESEARCHERS' OWN WORK, WHICH SHOWS THE CROSS-LEVEL IMPACT
OF MANAGER-RATED HPWSS ON EMPLOYEES' ENGAGEMENT IN THE ETHIOPIAN PUBLIC
HIGHER EDUCATION INSTITUTION

Employees' engagement has been defined as the simultaneous investment of an individual's physical, cognitive, and emotional energy in active, full work performance (Rich et al 2010; p.69). It is currently a popular topic within many organizations, given its association with employee well-being and performance (e.g. Christian, Garza, & Slaughter, 2011; Halbesleben, 2010; Knight et al., 2017). Engaged employees have a high sense of responsibility where they feel that they should enhance their performance for the sake of their organizations (Saks, 2019; Saad, et al. 2021). However, the debate on how employers can promote employee engagement remains unsettled (Young et al., 2018), and researchers have called for further studies to examine antecedents of employee engagement to improve organizational functioning (Barreiro & Treglown, 2020; Jahangir et al., 2024; Kwon & Kim, 2020). Therefore, scholars have proposed HPWS as a main driver of it (Bhasin et al., 2019; Saks, 2022; Sambrook, 2021). However, according to researchers (e.g., Crawford, LePine & Rich, et al., 2010; Saks, 2006; Zhong, et al., 2016), few are known about the role of organizational HPWSs as antecedents of engagement (Arefin et al., 2019). Although many studies have shown that HPWSs have a direct impact on engagement (see Phanwattana & Vichit, 2017), there has been limited research examining how HPWSs influence engagement (e.g. Alfes, et al., 2013; Saks, 2006, 2019, 2022; Sparrow, 2014; Truss, et al., 2013). We supposed that this knowledge conflict is related with the following two reasons Bednall et al., (2014).

First, evidence of methodological issues (de Brito & Oliveira, 2016), shows that there is a gap in the relationship between HPWSs and engagement (e.g. Huselid, 1995) regarding how to test the HPWS on engagement (El-Ghalayini, 2017). Previous empirical evidence of HPWS direct and positive impacts on the engagement based on the 2040 employees of the Chinese banking industry (Cooke, Cooper, Bartram, Wang & Mei, 2019), brewery factories in Uganda (Muzee 2016), in the small- and medium-sized enterprises of the US (Lartey, 2021) and from the Ethiopian public sector (Tensay & Singh, 2020) data, but their studies are single level. However, SHRMP should follow organizational nature based multilevel study design (Lin & Sanders, 2017; Ostroff & Bowen, 2000; Peccei & Van De Voorde, 2019). Even though multilevel research concepts and strategies have been studied by previous researchers (e.g. Bowen & Ostroff, 2000; Den Hartog, et al., 2013; Guest et al., 2013; Nishii, et al., 2008; Wright & Nishii, 2012), further multilevel design SHRM research is needed to test the cross-level effects of comprehensive

SHRMP (dual HPWS) on employee engagement (see also Shen, Messersmith & Jiang, 2018; Wright & Ulrich, 2017). Renkema et al. (2017) argued that multilevel organizational HRM policies influence organization-level performance by affecting lower-level individuals' attitudes and behaviours. However, available cross-level studies mostly use organizational-level HPWS (see Do, 2016; Xia et al., 2019; Zhang, et al., 2018) those are not focused on HRM implementation through team-level HPWS and only few studies are available (Sambrook, 2020; Trullen, 2020). More specifically (Vermeeren et al., 2014), as line managers have judgment over how they implement (intended) HR practices (Harney & Collings, 2021; Purcell & Hutchinson, 2007), HR practices will vary between work-units (Nishii & Wright, 2008). Line manager is also called sense giver (e.g. Collins, 2022; Nishii & Paluch, 2018; Ostroff, 2021). They are also HPWS implementer (Trullen, et al. 2020). Recently, there is a call for research to adapt caring SHRMP (in a sense, dual HPWS) based on managers' experiences to study its impact on employee outcomes (e.g., Parent-Lamarche, et al., 2023; Saks, 2022). Such cross-level SHRMP impact on engagement in public HEIs has not been studied by researchers (see Emeagwal & Ogbonmwan, 2018; Hamadamin & Atan, 2019; Siyal, et al., 2020). Therefore, the researcher considered manager-rated HPWSs at the department level as it impacts the engagement of employees at a lower level Benner & Tushman (2003).

The extant mechanisms used to explain the underpinning pathways between HPWS and employee behaviours have mainly focused on employees' attitudes towards their teams (e.g., affective commitment, job satisfaction, justice perceptions and work engagement; Fan et al., 2014; Heffernan & Dundon, 2016; Zhang et al., 2013) based on social exchange (e.g., Zhong et al., 2016) or attribution (e.g., Van De Voorde & Beijer, 2015), and signal (H. Wang et al., 2022) theories. Single level studies are argued using signal theory Brunetto et al., (2012). Arefin et al. (2019) argued that signal theory (Spence, 2002), as an environmental cue proposes HPWS signal to employees that organization emphasizes employees contribution, recognises their worth, fosters their development, cares about their skills and knowledge, and helps them to interpreted positively like intended by organization (Arefin, Raquib & Arefin, 2015; Sun, et al., 2007; Takeuchi, Chen & Lepak, 2009). Using signal theory, organizational opportunity-enhancing bundle and its interaction with the other two bundles (ability-and motivation-oriented HPWSs) had a positive impact on job satisfaction (Nadeem & Rahat, 2021). On the other hand, multilevel studies also carried out previously using data of 86 CEOs, 86 HR managers and 489 employees of 100 enterprises in Jiangsu, Anhui, Guangzhou, Beijing and other places, including finance, service, manufacturing and other industries, firm level high commitment work system has impact on the wellbeing of employees at lower level (Zhang et al., 2022). And also, using secondary data from the British National Health Service, evidence was found for a direct positive relationship between organizational HPWP and employee outcomes (job satisfaction and employee engagement) (Ogbonnaya & Valizade, 2018). At team level, using signalling theory and a sample of 366 employees and 60 managers from 60 departments, Wang, Zhang and Wan (2022) concluded that cross-level linking department-level HPWS to employee job burnout. However, this study was based on the 360 employees and 102 department heads of Ethiopian public HEIs to test cross level effect of departmental-level HPWS on the engagement Jiang et al., (2017) Chernyak-Hai & Rabenu (2018).

Second, the other main challenges for conflict of HPWS content is argued by Hansen, Guttel, and Swart (2019) in line with Lepak and Snell (2008, p. 223), 'How do HR architectures serve as a means of balancing public and private level behavior in various dynamic environments?' Although researchers have shown a growing interest in the effects of human

resource practices on employee attitude (Edgar & Geare, 2005; Guest, 1997), it is hardly studied to examine the effects of the commitment- and control-approaches on employee attitude (Heinsman, De Hoogh, Koopman & Vanmuijen, 2008). According to Walrave, Romme, Van Oorschot and Langerak (2017), over emphasizing on the control aspects of HPWS, which is called “success trap” with its a strong focus on exploitation, may causes in relatively certain returns but also discourages more logn term profit through commitment, and is therefore likely to undermine the firm’s adaptability. In contrast, over-focusing commitment HRM practices have a negative effect in the Chinese context, so it is better to provide both commitment and control HRM practices to enhance engagement of employees (Wright & Urlich, 2017). Although researchers have shown a growing interest in the effects of human resource practices on employee attitude and behavior (Edgar & Geare, 2005; Guest, 1999), it is hardly studied to examine the effects of the commitment- and control-approaches on employee attitude towards (Heinsman, De Hoogh, Koopman & Vanmuijen, 2008). Anitha (2014) suggested that employee engagement reflects two essential elements: (a) willingness to contribute to organizational success and (b) a positive and energized employee who is at a motivational state (Eldor & Harpaz, 2015). Thus, managers and organizations must be simultaneously ambidextrous to balance the control- (evolutionary change) and commitment oriented HPWSs (revolutionary change) associated with alignment and adaptability (Kafetzopoulos, 2022; Mueller, Renzl & Will, 2020; Probst, Raisch & Tushman, 2011; Tushman & O’Reilly, 1996). Similarly, this dual HPWS influence people’s dimensions in the management of people, acquiring their services, developing their skills, motivating them to higher levels of performance, and maintaining their commitment (Phanwattana & Vichit, 2017; Shin & Konrad, 2017). Therefore, Constant, et al. (2020) attaining ambidexterity engagement is challenging, that needs due focus of managerial ambidexterity with its meaning of “manager’s behavioural orientation toward combining exploration and exploitation related activities within a certain period of time (Mom, Van Den Bosch & Volberda, 2009, p. 812; Yap, et al., 2020). Hence, both peformance orineted and commitment oreinted HPWS should be focused by the department head to engage employees on both creative and innovative behaviors of the university.

In summary, we hypothesized that department-level dual HPWS relates positively to the engagement of employees and that at the between-group level, engagement of employees (lecturers) becomes higher in departments in which manager-rated HPWS is higher.

H₁: *Manager-rated dual HPWS at the department level have a positive impact on employee engagement at the employee*

RESEARCH METHOD AND MATERIALS

Study design, procedure and participants

To reduce single-source bias and ensure data reliability, we collected data from multiple sources within each company, including the department heads and employees. Specifically, the data on manager-rated HPWS were collected from department heads, whereas engagement was collected from employees.

The researchers selected three samples from 42 public universities, including Worabe, Wachemo, and Wolaita Sodo, using simple random sampling. Second, departments were selected from each university using at strata sampling technique. Five employees were

selected from each department using simple random sampling. The department head completed the questionnaire at the departmental level.

The employees' questionnaire was first sent by the department heads, but most of the employees returned using phone numbers and personally to ensure their confidence. The department heads of many groups endorsed me in collecting questionnaires from the 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, we did not include any questions pertaining to individuals' names and departments in the employee surveys. Then, their specific department was filled out at the time of collecting the questionnaire, since specification of department/group is required in the multilevel research design.

Researchers have planned to collect 90% of departments from three universities of Ethiopian public HEIs: University A, University B, and University C. Therefore, 149 and 745 questionnaires were distributed to department heads and employees, respectively. A total of 109 department heads and 380 questionnaires were collected. After removing unmatched questionnaires from both heads and employees, 102 and 360 questionnaires, respectively, were included. Thus, 102 (68.45%) department heads and 360 (48.32%) employees responded. The overall response rate was 51.68%, which is higher than the average reported in the literature for multilevel studies, specifically from 53% in Snape and Redman (2010) and 47% in Takeuchi et al. (2009). Overall profiles of respondents are listed below in the Table 1.

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
	Asst. prof. & Dr.	8	7.84%	5	1.39
Work experience	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

Three phases of tool development were carried out. In the first phase, face and content validity were assessed by experts. We followed the same procedures used in the previous management work of Koednok and Sungsanit (137). Accordingly, we contacted 3 doctors (PhD degree holders) and assistant professors who had publications. The second phase of tool development was carried out to translate and redesign the questionnaire, including the word order and layout. The translation process was carried out by adapting the Brislin translation model (138) procedure. Because Amharic is the official language of commerce and administration in Ethiopia, we translated it to Amharic. In the third phase, we employed a pilot test using 50 employees from the Z polytechnic college.

Ethical consideration

A questionnaire can be recognized as a formalized framework consisting of a set of questions and scales designed to generate primary data (Satya & Roopa, 2017), that was employed to gather data from employees and department heads. Researchers followed basic ethical considerations of university of Gondar. This study was carried out based on the survey, not a manipulation of subjects. In the first part of questionnaires, respondents were provided by the general goal of research, and request of agreement. In the consent form, secrecy of data, and they have a freedom to fill and to cease at any time when they feel uncomfortable sense. All respondents were informed and agreed that overall data will be analysis and published in the Scopus indexed journal and presented in the University of Gondar. We requested and get permission from each university's from vice president/academic affairs directorate to department heads to distribute questionnaire.

Measurements

Managerial rated HPWS: Rated HPWS was measured using 10 measures with 54 items. MR-HPWSs were measured using 10 measures with 54 items. We operationalized, in line with Meier-Barthold et al. (2023), the HPWS configurations by designing HPWSs, which consisted of the same 10 HPWSs, including job design, recruitment/selection, training/development, performance evaluations, compensation/rewards, promotion/career, employment security, participation, employee voice/grievance, and information sharing. We replaced employee voice with autonomy, as many researchers Tensay and Singh (2020) have argued that autonomy is the best of all practices. Then, items were developed based on related literature. In total, using 10 measures with 54 items of the MR-HPWS were rated using a five-point Likert scale. The scale's Cronbach's coefficient was .924.

Employees' engagement: Employee engagement was measured using a 12-item scale adapted from Rich et al. (2010). A sample item is, 'I feel positive about my work.' The response scale ranged from 1 ('completely disagree') to 5 ('completely agree'). The Cronbach's coefficient was .856. To ensure that engagement was acceptable for aggregation at the department level based on Bliese (2000), we assessed ICC1 as .270, ICC2 as .823, and ICC3 as .856.

Controlling variables: At the individual level, we controlled for gender, education, marital status, work experience, and income in the analyses due to their potential impacts on employees work outcomes Liao et al. (2009). At the departmental level, we controlled for departmental managers' age, gender, education, income and in line of Nishii and Wright (2008)

including marital status, and experience because these factors may influence how implement HPWS in their departments.

Analysis method

First, descriptive statistics, preliminary analysis and confirmatory factor analysis was examined to attain the assumptions of multilevel analysis and validity and reliability test. Then, multilevel path analysis was used to test the MSEM, which uses a full information maximum likelihood estimator with unbalanced level-1 sample sizes for all analyses, and the weighted least squares mean and variance-adjusted estimator to test model fit based on chi-square measures using R version 4.3.1 (2023-06-16 ucrt) package lavaan 0.6.16. To achieve precision, researchers generated bootstrapping results for a multilevel model using the percentile method (Preacher & Selig, 2012).

Inspecting the assumption of multilevel analysis

Since MSEM research has assumptions, the researcher first checked these assumptions. Hierarchical linear modelling analysis necessitates consideration of some basic assumptions before proceeding to the analysis Delery, (1998). The first method addresses missing data. Second, assessment for normality and detection of any potential outliers of variables, as well as aggregation, were carried out Delery & Doty (1996).

Missing data: Based on the missing data assessment, two variables (recruitment item number 6 and career development number 1) that missed more than 10% of the data were removed Do et al., (2016). Then, less than 10% of the missing data were substituted by a series mean. When using mean substitution, missing values are replaced with the overall mean and imputed values are treated as 'real' observed values (de Goeij, van Diepen, Jager, Tripepi, Zoccali & Dekker, 2013) Hales (2005).

Outlier detection: Outlier identification was accomplished by first employing univariate, followed by multivariate detection methods (Hair, Anderson, Tatham & Black, 2010). Unfortunately, three variable outliers were caused by errors in data entry and adjusted accordingly. Because the standard deviation was not greater than the mean, there were no outliers Han et al., (2019).

Multicollinearity was not a problem in the data because the correlation coefficient value was less than 0.85 is statistically acceptable (Field, 2005).

Normality test: Second, the normality test is a precondition for testing multiple levels. One of the most important assumptions that need to be checked is normality, which refers to the shape of data that is normally distributed for a specific variable that can be assessed by graphical and/or statistical methods (Tabachnick & Fidell, 2014). First, statistical tests were employed to describe normality, skewness, and kurtosis (Hair, et al., 2010). Another statistical normality test, Kolmogorov-Smirnov and Shapiro-Wilk tests, were applied, because skewness and kurtosis tests are sensitive in large samples (Hair, et al., 2010), and they became significant in large samples, while departure from normality was not that much (slightly small) Hong et al., (2019). Second, graphically, one of the most robust visual measures of normality is a normal probability plot Iqbal & Piwowar-Sulej (2021).

<p>Table 2 SHOWS TEST FOR NORMALITY OF RESIDUALS</p>

Test	Statistics	P
Kolmogorov-Smirnov	0.0656	0.091
Shapiro-Wilk	0.9472	< .001

The Shapiro–Wilk test is a more appropriate method for small sample sizes (<50 samples), although it can also be applied to a larger sample size, where the Kolmogorov–Smirnov test is used for $n \geq 50$. Since our sample size was 360, the Kolmogorov–Smirnov test better predicted normality Jawaad et al., (2019). According to Table 2, when the P-value is greater than 0.05 (insignificant), ‘Ho’ is accepted, which means that the data are normally distributed Figure 2.

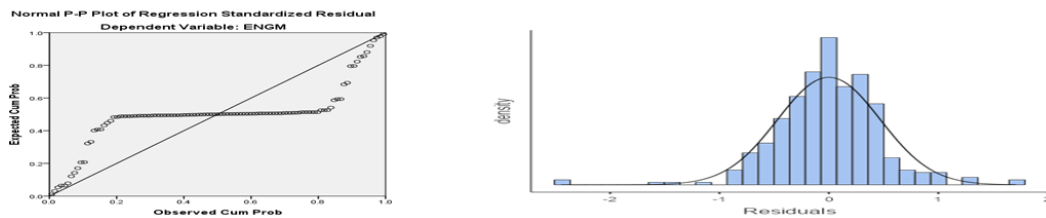


FIGURE 2
P-P PLOT (RIGHT) AND RESIDUAL HISTOGRAM (LEFT)

Model	Measures	Type	ICC	Lower C.I.	Upper C.I.
one-way random	Agreement	ICC1	0.27	0.241	0.303
two-way random	Agreement	ICC2	0.28	0.238	0.324
two-way fixed	Consistency	ICC3	0.332	0.3	0.367
one-way random	Avg. Agreement	ICC1k	0.816	0.792	0.839
two-way random	Avg. Agreement	ICC2k	0.823	0.789	0.852
two-way fixed	Avg. Consistency	ICC3k	0.856	0.837	0.874
two-way fixed	Avg. Consistency	ICC3k	0.856	0.837	0.874

According to Table 3, ICC1 is .270; ICC2 is .283 whereas ICC3 is .332 based on the above jamoi software output. The scores for all ICCs were greater than 0.2, indicating excellent consistency. A common historical rule of thumb categorizes ICC as poor (<0.4, fair 0.4–0.59, good 0.6–0.74) and excellent ≥ 0.75) (Cicchetti & Sparrow, 1981) Kiiru (2015).

Finally, confirmatory factor analysis (CFA) using jamovi-2.3.28.0 software was performed to examine the distinctiveness of employees’ engagement in the three factors. CFA was performed by using jamovi-2.3.28.0 software to examine the distinctiveness of employees’

engagement and perceived HPWS. Following the recommendation of L. Hu and Bentler (1998), we calculated multiple indices of fit, which are fit indices (J. F. J. Hair et al., 2006). With a cutoff 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) Lepak & Shaw (2008).

				95% Confidence Intervals				
Latent	Observed	Estimate	SE	Lower	Upper	β	z	p
Engagement	Afctv	1	0	1	1	0.756		
	Bhvl	1.17	0.0886	1	1.35	0.746	13.2	< .001
	Cgntv	1.11	0.0812	0.949	1.27	0.869	13.6	< .001

Variable	α	ω_1	ω_2	ω_3	AVE	CR
Engagement	0.826	0.827	0.827	0.827	0.616	0.834

The standardized beta values of the factors were all greater than the cut value of .5 (Hair et al., 2010) that verified the significance of parcelling of items for engagement variables (see Table 4) Lepak et al., (2006). In another words it shows indicator reliability significance. Moreover, composite reliability and alpha were also greater than 0.7, indicating that the measurement of engagement was reliable (Levinthal & March (1993) Levinthal & March (1993)). Construct validity (convergent validity) is significant because AVE is greater than 0.5 and CR is greater than .6 (Fornell & Larcker, 1981) (Table 5).

Third, convergent validity was established by calculating the absence of bias using statistical test tools, a post hoc procedure using Harman’s one-factor test (or all items are loaded into one common) (Harman, 1960), to show that the total variance explained less than the recommended threshold value of 50%. The cumulative explained variance in engagement with components was 33.679% Table 6.

Total Variance Explained						
Factor	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.701	39.177	39.177	4.041	33.679	33.679

RESULTS AND DISCUSSION

Result

Preliminary analysis

According to Table 7, the means, standard deviations, and inter-scale correlations of all variables at the employee level were assessed. For variables measured at the higher level, we assigned their scores to lower-level subjects, such that the higher-level variables were identical for the subjects within each higher-level unit Lin & Sanders (2017). For example, we assigned a department-level variable, manager-rated HPWS, to individual employees within the department to calculate its correlations with other individual-level variables Ling et al., (2018).

	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Marriage	1.74	0.52	0.27	-0.232	0.129	-0.365	0.256
Education	3.04	0.485	0.235	0.846	0.129	4.071	0.256
Work_expreince	2.78	0.9	0.81	0.712	0.129	-0.164	0.256
Salary	5.02	0.453	0.206	-0.989	0.129	6.936	0.256
ENGM	3.5564	0.80131	0.642	-0.158	0.129	0.001	0.256
rHPWS	3.6196	0.53244	0.283	-0.246	0.129	0.226	0.256
Valid N (listwise)	N=360						

As shown in Table 7, the skewness and kurtosis tests show that the data are normally distributed, with the exception of one variable Mihail & Kloutsiniotis (2016). According to Bryne (2010), the normality of data can be expressed using average values of -2 and +2 for skewness, and -7 and +7 for kurtosis Mushtaq et al., (2022).

	Gender	Age	Marriage	Education	Work_expreince	Salary	ENGM	rHPWS
Gender	1.000							
Age	-.091	1.000						
Marriage	-.075	.223**	1.000					
Education	-.099	.279**	.264**	1.000				
Work_expreince	-.063	.679**	.292**	.443**	1.000			
Salary	-.138**	.300**	.261**	.794**	.449**	1.000		
ENGM	-.130*	.219**	.085	.230**	.260**	.098	1.000	
rHPWS	-.113*	.177**	-.028	.141**	.073	.078	.215**	1.000

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed). rHPWS shows managerial rated High performance work system; ENGM means engagement of employees.

As shown in Table 8, inter-scale correlations show the expected direction of association and, with a few exceptions, are all significant at the p , 0.01, and p , 0.05 levels. Managerial-rated HRM was positively and significantly related to engagement ($r = .215$, $p < .001$). Therefore, descriptive analysis was conducted to test the main hypotheses Pedro et al., (2020).

Hypothesis testing

To investigate whether positive manager-rated HPWSs had a direct effect on employees' engagement, a path model was tested using R version 4.3.1 (2023-06-16 ucrt) with the help of lavaan 0.6-16 FREE software! The results are presented in Table 9.

Table 9 SHOWS HYPOTHETICAL OUTPUT							
	R2	β	SE	β^*	CI	P value	
Engagement	.086	-	-	-	-	-	Accepted
Managerial-rated HPWS >engagement		.349	.125	.293	[.104, .593]	.005	Accepted
Note: parameter estimates(fit,level=.95,boot.ci.type="perc",standardized=TRUE)							
ICC of engagement= .56							

According to Table 9, the results indicate that a positive manager-rated HPWSs predicted engagement significantly ($\beta = .349$, $SE = .125$, $\beta^* = .293$, $p = .005$ at confidence intervals .104, .593 produced by the percentile of .95. Moreover, the coefficient of determination (R2) is a measure of the model's predictive power by which it is the amount of variance in the endogenous (engagement) latent variables in the structural model explained by the exogenous (HPWSs) variable (Hair et al., 2014). Where the higher the R2 coefficient shows the better the engagement is explained by the HPWSs in the structural model (Hair et al., 2014). Accordingly, the total amount of variance in engagement accounted for by positive manager-rated HPWS was 8.6% ($R^2 = .086$) (see Table 9). The suggested value for R2 for the behavioural sciences can be assessed as 0.26 (large effect), 0.13 (moderate effect), and 0.02 (weak effect) (Cohen, 1988). Because R2 values for employee engagement was less than 0.13, the impact of HPWSs on the engagement is weak. Still, the model of this study proved the model-data fit Porter (2018).

DISCUSSION

To enhance organizational performance, it is better to focus on HRM outcome/employee outcomes (see Liao, et al., 2009; Renkema, et al., 2017; Wright & Nishii, 2007), because it has impact on both employees and organizational performance. So that SHRMP impacts on the HRM outcome including attitudes (e.g., engagement). According to a number of reviewers (see also McMackin & Heffernan, 2021; Herlina et al., 2022; Uysal, 2020; Cooke, et al., 2019) HPWS has been synthesized as it impacts employees' outcome/engagement. Even if previous studies (Crawford et al., 2013; Saks, 2006; Suan & Nasurdin, 2014; Vuonga & Sid, 2020) support that strong effect of HPWS on the engagement, their study is focused on the employees'

perception of HPWS impact on the engagement. That is single level study whereas the organizational nature is multilevel in which employees are nested within team (Renkema, et al., 2017) Ramachandra et al., (2011). Hence, recently researchers are calling researchers to employ manager-rated HPWS impact on the engagement (e.g., Sambrook, 2020). While previous multilevel researches were conducted at organizational level HPWS (Do, 2016; Xia et al., 2019), we verified the effect of departmental level HRM practices on the employees level outcome (see also Den Hartog et al., 2013; Liao et al., 2009; Nishii & Wright, 2008; Wang, Zhang, & Wan, 2022; Zhang et al., 2022), particularly engagement. Hence, this study somewhat similar with other study (Ogbonnaya & Valizade, 2018) that reveals the positive impact of firm level HPWSs on the engagement of employees Ribeiro & Gomes (2017).

On the other hand, researchers call to consider HPWSs internal fit to better impact on the engagement. Researchers have studied this assumption by blending duality/ambidexterity concepts in the manager-rated HPWSs. The findings of this research show the direct effect of manager-rated SHRMP on the engagement of employees that can be attained when HPWSs considers both the exploitive and explorative aspects of SHRMP. Therefore, this implies cross-level effect of manager-rated HPWS on the engagement is positive that is somewhat similar with the previous studies (see also Den Hartog et al., 2013; Liao et al., 2009; Nishii & Wright, 2008; Wang, Zhang, & Wan, 2022; Zhang et al., 2022). Particularly, this study somewhat similar with other studies (with organizational level HPWS, Ogbonnaya et al., 2023). However, the effect is weak with R² is less than 0.13 (Cohen, 1988). Therefore, cross-level impact of HPWS on the engagement is weak that is opposite to the strong relationship of perceived HPWS and engagement (Tensay & Singh, 2020; Vuonga & Sid, 2020) Rosseel (2012).

Theoretical and research implications

This study has some theoretical and methodological importance as discussed in the following. First, it increases the application of signal theory to study the impact of manager-rated HPWS on the engagement. Signalling theory has been predominantly used in the areas of entrepreneurship (e.g., Certo et al., 2001), financial economics (e.g., Levy & Lazarovich-Porat, 1995), labour market (e.g., Ehrhart & Ziegert, 2005), organizational behaviour (e.g., Butts et al., 2013) and strategic management (e.g., Lester et al., 2006), but it is rare to understand how organizations send signals to influence the reactions of employees to the organization (H. Wang et al., 2022).) Signal theory is recently employed in signal level studies (Nadeem & Rahat, 2021), and multilevel studies (Wang, Zhang & Wan, 2022; Xi, et al., 2021; Zhang et al., 2022), but still it is not that much applied in relation with SET, psychological contract and other exchange and occupational health theories. Therefore, this study enhances the application of signal theory particularly, to the cross-level impact of manager-rated HPWS on the engagement. Our study also supports the assertion that line managers' HPWP implementation perceptions impact employee attitudes and behaviour (Sikora, et al, 2015). This responds the call to employ manager-rated HPWS on the attitude of employees (Parent-Lamarche, et al. 2023; Saks, 2022).

Second, it will pave the way for many researchers who are ambiguous about how managerial-level HRM considers context by considering signal theory assumption of signal (HPWS) fit of commitment-and control-oriented HPWSs (Alfes, et al., 2013; Meier-Barthold, et al., 2023). This research supports SHRMP, which has employment practices and work practices strategies or performance-and-commitment-oriented human resource practices (e.g. Ahammad, Glaister & Junni, 2019; Armour, 2015; Beletskiy & Fey, 2021; Constant, et al., 2020; Diaz-Fernandez, Pasamar-Reyes, & Valle-Cabrera, 2017; Fan, et al., 2018; Plimmer, Bryson & Teo,

2017; Yap, et al., 2022) at the department level has a cross-level positive impact on the engagement of employees at lower level Yu & Egri (2005).

Third, it increases the application of multilevel HPWS on the engagement as it attends the organizational nature in which employees are nested within the department of Ethiopian public HEIs. That may be response for the call of research (Jiang & Messersmith, 2018; Peccei & Van De Voorde, 2019; Shen et al., 2018).

Practical implication

In addition to the aforesaid theoretical implications, this dissertation has implications for managers. Our study revealed that the focus of manager on the dual HPWS has positive impact on the enhancement of engagement of employees. Many researchers stressed that commitment-oriented HPWS has positive impact on the engagement whereas control-oriented has negative. But, some control-oriented HPWS such as performance-oriented payment has positive impact on the engagement because they foster competition that has win and loss among employees. Besides, since, line managers are implementers or sense makers of employees, HPWS should be focused by the department heads rather than president, vice presidents, directorates, HRM personnel of the University (see Towsen, 2022). Hence, we propose that HEIs have to focus both on the department head (Sambrook, 2021) and duality of HPWS (e.g. Ahammad, Glaister & Junni, 2019; Armour, 2015; Beletskiy & Fey, 2021; Constant, et al., 2020; Diaz-Fernandez, Pasamar-Reyes, & Valle-Cabrera, 2017; Fan, et al., 2018; Plimmer, Bryson & Teo, 2017; Yap, et al., 2022) to enhance the engagement of employees in their job role.

Limitation and future research implication

This research has above mentioned values, but that means not it is free of limitation. First, according to signal theory, our study was carried to study the direct impact of manager-rated HPWS on the engagement; however, the impact is weak. Hence, we recommend that the signal theory proposition of the employees' perception towards the same HPWS with department head between manager-rated HPWS and engagement (e.g., Connel, et al., 2011; Taj, 2016), because employees' interpretations of HRM systems, rather than managerial-rated SHRMP, have a more direct influence on employee outcomes (e.g., Den Hartog et al., 2013; Jiang et al., 2012; Jiang & Li, 2019; 29; Kehoe & Wright, 2003; Liao et al., 2009; Nishii et al., 2008; Peccei & Van De Voorde, 2019).

Second, we studied integrated dual using the measurements with mixed items that is difficult to differentiate commitment and control-oriented HPWs. Hence, future researchers have to employ differentiated constructs to and their fit effect on the engagement of employees to better understand the nexus (Meier-Barthold, et al., 2023).

Third, this research was conducted only with the academic staff of three Ethiopian public HEIs. This study has some limitations in terms of its generalizability. To bring about more rigorous outcomes, further researchers should include non-academic staff and/or some more public and/or private universities. Furthermore, research has been conducted in developing countries, particularly Ethiopia. Further research should be conducted in other developing and/or developed countries to increase the rigor of measurement.

CONCLUSION

We conclude from this research that the dual aspects of HPWSs have a direct impact on employees' engagement of in their optimal performance. Therefore, researchers have been motivated further research to search for strategies to gain an in-depth understanding of SHRMP and performance linkages.

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Data availability

The datasets generated during and/or analyzed for the current study are not publicly available due to confidentiality agreement with participants, but are available from the corresponding author on reasonable request.

Ethics Statement

A written letter was provided to legitimate for the selected universities with its reference number SMPA/471/06/2015E.C. was provided to us. Signed consent from each university academic vice president or academic affairs directorate had been gotten and also written participant consent for participation was provided for each respondent as cover page.

Authors Contributions

All the three authors (Sheref Betabo Gogsido, Demis Alamirew Getahun, Zerihun Kinde Alemu) were engaged in framing of the concept, administrating of data collection, analysis, discussion, forwarding of implications and limitations of the study. Finally, we have agreed on the manuscript to be published.

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Conflict of Interest

I The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Discloser of interest

We have no conflicts of interest to disclose.

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