

THE ROLE OF INNOVATIVE HUMAN RESOURCE MANAGEMENT PRACTICES, ORGANIZATIONAL SUPPORT AND KNOWLEDGE WORKER EFFORT IN COUNTERACTING JOB BURNOUT IN THE POLISH BUSINESS SERVICES SECTOR

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Abstract

Objectives: This study focuses on analyzing the impact of innovative human resource management practices (IHRMP) on knowledge worker burnout, and how organizational support and employee effort help explain this relationship in the context of the business services sector. To explore the problem, investigated whether IHRMP have a significant negative impact on employee burnout, and organizational support and employee effort mediate the negative impact of IHRMP on employee burnout. **Material and Methods:** A survey was conducted, collected using the computer assisted web interview method on 1000 knowledge workers employed at business services sector (BSS) organizations in Poland. The quantitative results obtained were analyzed using AMOS software to test the main statistical relationships and through structural equation modeling. **Results:** The study outlines direct and indirect mechanisms to counteract perceived burnout among knowledge workers. The article contributes to the understanding of how IHRMP reduce burnout among knowledge workers and highlights the central importance of organizational support and employee effort as mediating factors against burnout in the context of high-skill, high-intensity work. **Conclusions:** The expected results in terms of application provide a proposal of measures for managers' consideration that can be implemented in the organization with a view to counteracting the incidence of burnout among BSS employees. *Int J Occup Med Environ Health.* 2024;37(2)

Key words:

job burnout, innovative human resource management practices, organizational support, employee effort, business services sector, micro-based behavioral economics

INTRODUCTION

Organizations build their innovativeness by adapting behaviors and achieving de-sired outcomes for employees using innovative human resource management practices (IHRMP) [1,2]. Although employees are widely recognized as a valuable resource that helps organiza-

tions develop core competencies to achieve competitive advantage, little is known about how IHRMP are associated with the incidence of job burnout (JB) by knowledge workers working in the business services sector (BSS). It is also not fully known whether the IHRMP implemented by organizations, as well as the organizational

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support (OS) and employee effort (EE) put into their work, contribute to the lack of perceived burnout, employees who are the main providers of specialized and unique knowledge. Investigating these issues becomes important due to the nature of this sector, in which the work of employees is based on the constant use of specialized and innovative knowledge to create innovative services for external contractors. The nature of the work with a high degree of complexity and variability requires employees to make additional efforts, which often do not lead to the fulfillment of the established expectations. At the same time, the rationale for undertaking a study of BSS organizations is that, due to the specifics of the work, passive attitudes and behaviors, including a sense of burnout, can occur among employees there. Knowledge workers, due to the character of their high-performance work, are particularly vulnerable to emotional exhaustion and a reduced sense of personal achievement. For this reason, they are among the populations susceptible to JB. Several studies have documented the existence of burnout among different categories of employees [3,4] environments or specialties [5] and at different stages of their careers [6,7]. The JB can lead to a lack of energy for work, distancing oneself from work, cynicism about work, or low identification with work [3], and a large role in counteracting the emergence of such passive attitudes and behaviors is played by the field of HRM, and IHRMP that refer to the creation of innovative outcomes that are not yet available in the market or are new to the organization [1]. Therefore, knowledge-intensive organizations were taken as the key ones.

Given the above, conducting research on IHRMP in Polish organizations, including those with BSS, may involve the following observations. Firstly, IHRMP signal to employees which workplace activities are strategically important and expected by the organization [8] at any given time. These intentions may not necessarily be in line with current expectations or undertaken employee

attitudes and behaviors. Therefore, it becomes important to find out whether, in order to reduce the cognitive dissonance that may result from the organization's current personnel actions, employees adopt an avoidance attitude signaling job burnout. Secondly, IHRMP provide opportunities for employees to initiate change in their workplaces [9]. Consequently, employees who put a lot of effort into their work may be more sensitive to changes and potential opportunities within their jobs, making them behave more in a participatory manner to capture opportunities in their workplace. In addition, previous research has mainly focused on identifying burnout in the individual category [10], meaning that considering burnout from the organizational level has been largely beyond the interest of researchers. An analysis of the literature confirms the above observations, while highlighting the total scarcity of studies devoted to the relationship between the use of IHRMP by knowledge-intensive organizations and JB among BSS employees.

Moreover, the article offers a contribution to the existing knowledge base in several ways. Firstly, the study makes an important contribution to understanding the mechanism for counteracting the emergence of passive professional behavior, in the form of job burnout, in employees who are the main providers of specialized and unique knowledge. Secondly, the study tests the direct and indirect mechanism linking IHRMP and job burnout. This is the first study to use the concept of EE and OS as mediators between IHRMP and job burnout. Thirdly, the study shows that OS and EE contribute to stimulating IHRMP in counteracting the emergence of job burnout. Therefore, this study expands the understanding of the use of IHRMP, OS and EE, pointing to a new framework for intervening against burnout not only from the individual level, but also from the organizational level. Fourthly, the proposed research model was tested in the specific individual and organizational context of the BSS enriching the concept of job burnout.

Literature review and hypothesis development

The term IHRMP refers to those that are innovative in the sense of being radical [11]. The literature points to the following common characteristics of IHRMP: equal treatment, investment in human capital, talent management, sustainable employment opportunities, reward systems, decentralization and autonomy [2,12]. Innovative human resource management practices can be seen as an important indicator of subjective norms contributing to the initiation of active or passive attitudes and behaviors in the organizational context. In order to avoid the risk of non-reciprocity and the consequences associated with subjective interpretation of unclear work situations, an employee does not want to act actively if he or she does not receive clear information from the organization encouraging him or her to do so [13]. Therefore, it is crucial for organizations to provide clear information to prevent JB among employees. This reciprocity of relationships related to the information provided and received can be captured through the introduction of an innovative set of IHRMP in the organization, which provide direction and unambiguous messages regarding active or passive behavior [14].

Job burnout has been defined as a work-related syndrome characterized by 3 dimensions: chronic exhaustion, cynicism and reduced professional effectiveness [15]. Exhaustion refers to the depletion of one's resources and a constant feeling of fatigue. Cynicism is associated with distancing oneself from work and developing negative attitudes toward the people one works with. Finally, reduced professional effectiveness has been described as a decrease in feelings of competence and fruitful performance at work [16]. Job burnout is a persistent psychological state of malaise, signaling that employees are no longer able and willing to invest effort in their highly specialized work within the scope of employment in knowledge-intensive organizations. To the best of the author's knowledge, there is a lack of evidence to suggest that

knowledge workers in science and technology-enabled environments experience JB despite the implementation of IHRMP. Thus, based on the above reasoning, the following hypothesis was assumed H1: Innovative human resource management practices are negatively associated with job burnout.

Unlike perceived OS, which is the support an individual receives from other people, such as a supervisor, co-workers, spouse, relatives or friends, OS is what an employee receives from an organization [17]. Organizational support takes the form of an individual's thoughts and feelings about the level of support from the organization in the employee's job performance. It refers to employees' general belief that the organization respects their contributions and cares about their well-being [18]. In contrast to the extensive attention given to the impact of social support on job burnout, there is relatively less research focusing on the impact of perceived OS on job burnout. In addition, IHRMP have been shown to reduce the likelihood of perceived JB [19], but it has yet to be proven that this process can be enhanced by the support offered by the organization as part of the IHRMP introduced.

Organizational support works with social exchange theory (SET) and the concept of job demands-resources (JD-R). For example, if employees feel that their employer treats them with respect and kindness, they are likely to reciprocate with hard work and higher productivity. An important aspect in the relationship that occurs is that employees reciprocate to their employer voluntarily. In the case of the JD-R concept, OS is based on the experience of beliefs regarding the good or bad intentions of the organization's policies, norms, procedures and actions that affect employees' efforts [20]. Moreover, OS is related to employees' feelings about the job resources and recognition they receive from the organization. Work resources and recognition take various forms, including attractive compensation, respect for their rights, understanding their needs, creating a good environment, equality, fair-

ness, harassment policies and respect for their contributions. Employees who feel the high demands of their jobs and feel strongly supported develop positive perceptions of OS. It is suggested that mechanisms within SET and the JD-R concept may help explain how IHRMP are negatively related to JB via OS. Firstly, employees believe that many organizational factors, including IHRMP, can be controlled by the organization, and then attribute mutually concluded promises and commitments to support from the organization. In this way, IHRMP increase OS. Secondly, reduced OS may increase employee JB because low OS does not fully satisfy employees' expectations of the benefits of implementing IHRMP, which provides preliminary evidence for the hypothesis that OS may mediate the effect of IHRMP on burnout. Accordingly, hypothesis 2 was formulated as follows: H2: Organizational support mediates the effect of IHRMP on job burnout.

Employee effort is defined as the amount of time and energy put in by an employee to perform assigned work tasks [21]. It is also the amount of attentional resources an employee devotes to completing his or her assigned task [22]. Research indicates that effort put in by employees is voluntary, and when combined with IHRMP, employees are more likely to feel a moral obligation to put in their effort. Such action is positively associated with job satisfaction, a sense of personal worth and lower levels of JB [10,23].

When employees perceive that the IHRMP offered by their organizations are in line with their own expectations and interests, they are expected to identify their personal goals with the goals behind the idea of IHRMP and invest more effort in achieving those goals. McClean and Collins [24], based on SET and the JD-R concept, found that when organizations meet employees' needs, employees will be more likely to reciprocate and more intrinsically motivated to act in ways that benefit their organizations. As a result, EE is expected to increase when the delivery of resources (IHRMP) continues to

reach employees' preferred levels of these values. Innovative human resource management practices foster high-quality relationships with employees based on reciprocity and interdependence [25], thereby reducing the likelihood of burnout among employees. Accordingly, The SET and JD-R concept [25] is used to argue that IHRMP, with the involvement of job resources and job demands, can create a mutually beneficial environment in which organizations invest in their employees and induce them to reciprocate that investment by exerting higher levels of discretionary behavior.

The study considers the mediating role of EE between IHRMP and employee burnout. Thus, it is proposed that the effort employees put into their work strengthens the negative relationship between IHRMP and job burnout. This leads to the following hypothesis: H3: Employee effort mediates the effect of IHRMP on job burnout.

MATERIAL AND METHODS

Description of the research sample and data collection

The analysis was based on the results of an in-house survey – a nationwide questionnaire survey conducted using the computer assisted telephone interview (CATI) technique. The sample was randomly selected and consisted of 1000 knowledge workers directly supervising the work of people or creating products and services for customers. Eligibility for the survey was based on respondents' employment in BSSs, defined as shared service centers; outsourcing centers, IT centers, centers of a research and development nature, and in organizations (e.g., nonprofit or budget) where such centers operate. The survey was conducted in 2021.

The sample selection scheme for companies was random. A list of modern business service centers cataloged based on current reports prepared by the Association of Business Service Leaders (ABSL) and the Polish Investment and Trade Agency (PAIH) was used as the sampling

frame. The list contained 1513 modern business service centers (including headquarters and branches of 970 companies). A return rate of at least one-third was adopted. The database purchased for the project contained 755 records (company headquarters), which along with branches formed 1024 economic entities meeting the research criteria. Both public and private enterprises were included in the sampling frame. Based on databases developed from data published by ABSL and PAIH, using a random method incorporating criteria such as company size, industry, ownership form, and HR department structure, 178 entities were selected for the study.

The following scheme was adopted for selecting respondents for the research sample. The first level of the sampling frame was the list of 178 entities covered by the study. The selection of employees from companies for the study was left to the discretion of the interviewers – if possible, the interviewer should aim to randomly select every n th: 10th employee from the list (attendance, payroll list, etc.), so that a maximum of 10 respondents per company are selected for the study. If a selected respondent cannot be interviewed (due to absence, being a high-level manager, refusal to participate in the study), the next employee on the list is chosen. If the company does not agree to assist in the random selection (provide a list of employees), the interviewer will be responsible for selecting respondents with 1 condition – each of the ten interviewed employees should work in a different organizational unit. In case of refusal to conduct interviews on the company premises (taking into account the widespread nature of such cases), the interviewer may arrange individual interview appointments with employees before or after work. If the assumed number of ten interviews is not reached, the interviewer will supplement this number with interviews from companies on the reserve list. The selected database of companies participating in the implementation of the employee survey project was not sufficient to obtain a set of 1780 completed employee questionnaires.

The effectiveness of the database of companies accepted for the study was 56.1%. This meant that out of the list of 178 entities, only 100 agreed to be surveyed, and ultimately 1000 questionnaire interviews were conducted.

The selected sample of 1000 employees from the survey sample was representative, as the estimation error 4.38%, allowing for generalization of results to the Polish population of knowledge workers employed in BSS.

Before the survey began, respondents were informed of the purpose of the survey, the anonymity of the procedure, the process and the estimated time for completion. The survey participants also agreed to participate in the study. The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Economy and Sociology Institutional Review Board 7/2022/FT. The demographic profile of the respondents is shown in Table 1.

Data analysis was performed using PS IMAGO PRO 8.0 and (to apply confirmatory factor analysis [CFA]) AMOS 28.0.

Methodology

Innovative human resource management practices: were measured using a 10-item scale developed by adapting statements from tools for studying IHRMP [14,26]. The survey of IHRMP was conducted in relation to innovative solutions in the field, checking whether organizations use specific IHRMP that can be labeled innovative. Typical items include: “Innovative personnel actions in the area of maintaining positive employee relations related to promoting team/project work.” Respondents were asked how much (how often) IHRMP occur in their organization, rating them on a 7-point Likert scale from 1 – “never” to 7 – “always.” The Cronbach’s α coefficient reached a high level of reliability at 0.88.

Job burnout

This construct was measured using items adapted from the *Maslach Job Burnout Inventory* [15]. The items measured respondents’ feelings of burnout as a result of their job perfor-

Table 1. Characteristics of the research sample of knowledge workers employed at business services sector organizations in Poland, 2021

Variable	Participants (N = 1000)	
	n	%
Gender		
male	433	43.3
female	567	56.7
Age		
<30 years	53	5.3
30–39 years	341	34.1
40–49 years	323	32.3
50–54 years	185	18.5
≥55 years	97	9.7
Education level		
secondary	75	7.5
tertiary	824	82.4
doctoral degree	75	7.5
professor degree	26	2.6
Seniority		
total		
≤5 years	56	5.6
6–10 years	132	13.2
>10 years	811	81.1
in the workplace		
<1 year	81	8.1
1–5 years	350	35.0
6–10 years	290	29.0
>10 years	279	27.9

mance. A total of 4 items were included, covering statements such as: “I feel emotionally drained from my work.” Participants used a 7-point Likert scale (1 – “strongly disagree,” 7 – “strongly agree”) to respond to each item. The burnout scale showed a high level of internal consistency ($\alpha = 0.87$).

Organizational support

The organizational support survey used 4 items by Hayman [27]. These items assess the availability of OS

as perceived by employees within their employment. Examples of items related to perceived OS are: “In general, I feel free to use the flexible work programs provided by this organization.” The response system was based on a 7-point Likert scale, where 1 means “strongly disagree” and 7 – “strongly agree.” The reliability of the tool was checked – Cronbach’s α coefficient was found to be high at 0.86.

Employee effort

This variable was measured using a tool developed by Brown and Leigh [19] and McClean and Collins [24]. They used 4 to measure work effort, which assessed EE depending on the degree to which they completed their as-signed tasks. Sample items included “I put extra effort to achieve the quantity output set by my department.” The study variables were assessed using a 7-point scale that ranged from 1 – “strongly disagree,” to 7 – “strongly agree.” The reliability of this construct as measured by Cronbach’s α coefficient is 0.81.

Statistical data analysis

The study yielded data, which were subjected to calculations of descriptive statistics and Pearson’s correlation (along with a test of its significance) for all variables measured in the study. The distribution of each of the study’s variables is rated fairly high, and takes on a fairly homogeneous degree of variation (standard deviation – SD). The arithmetic mean and median indicate that the level of the study variables fairly high. Both the coefficients of skewness and kurtosis are significantly (in absolute value) <1. Correlations between variables were found to be statistically significant. For the studied pairs of variables, the strength of the relationship is high ($p < 0.001$). The mutual correlations of the analyzed variables found in the study formed the basis for further exploratory analyses. Table 2 contains descriptive statistics and correlations between the variables evaluated in this study.

Table 2. Descriptive statistics in the study on the impact of innovative human resource management practices (IHRMP) on knowledge worker burnout, based on survey of 1000 knowledge workers employed at business services sector organizations in Poland, 2021

Variable	M	Me	SD	Skewness	Kurtosis	p	Correlation			
							IHRMP	JB	OS	EE
IHRMP	4.78	5	1.08	-0.30	-0.49	<0.002***	1.00			
JB	4.82	5	1.19	0.09	-0.92	<0.009***	-0.345***	1.00		
OS	4.21	4	1.12	-0.01	-0.77	<0.001***	0.261***	-0.250***	1.00	
EE	4.65	5	1.00	-0.22	-0.70	<0.006***	0.316***	0.194***	-0.227***	1.00

EE – employee effort; IHRMP – innovative human resource management practices; JB – job burnout; OS – organization support.

p – Mann-Whitney test probability.

Correlation tested by Pearson’s linear correlation coefficient (r).

*** p < 0.001.

Table 3. Kaiser-Meyer-Olkin (KMO) measure, Bartlett’s sphericity test and reliability assessment of aggregated variables in the study on the impact of innovative human resource management practices (IHRMP) on knowledge worker burnout, based on survey of 1000 knowledge workers employed at business services sector organizations in Poland, 2021

Variable	KMO	Bartlett’s sphericity test		Cronbach’s α
		χ ²	p	
Innovative human resource management practices	0.598	526.3	<0.001**	0.881
Job burnout	0.787	721.4	<0.001**	0.874
Organization support	0.764	618.2	<0.001**	0.867
Employee effort	0.686	524.1	<0.001**	0.815

P-value at the level of statistical significance ** p < 0.001.

Reliability and validity analysis

In the next research step, the prerequisites for evaluating the metric properties of the tool used for the study were assessed. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett’s sphericity test [28] were used for this. The reliability of each of the aggregated variables was assessed using Cronbach’s α scores [29]. All analyzed constructs are characterized by high reliability, which each time takes a value >0.7. A synthetic evaluation of the relationships using Bartlett’s test of sphericity and the KMO measure of adequacy confirms that for all of each scale (IHRMP, JB, OS, EE), the data meet the conditions for using factor analysis. The KMO measure exceeds the threshold value of 0.5, and the sphericity test result is significant at the significance level of p < 0.001 (Table 3).

The research procedure was based on using a structured survey questionnaire. To verify whether the obtained data are free from common method bias, a single-factor Harman test was conducted, grouping all items into one factor for the common method bias test [30]. The total variance accounted for by the factor analysis did not exceed 35.2%, which is <50% [31], indicating an acceptable result and suggesting a low likelihood of common method bias in this study. Below, a χ² difference test was conducted for each pair of factors with correlation values >0.40, using the common method factor [32]. In all cases, a significant difference was obtained, further indicating that these pairs are not collinear, thus confirming the discriminant validity between the research constructs.

Table 4. Measures of fit of the measurement model in the study on the impact of innovative human resource management practices (IHRMP) on knowledge worker burnout, based on survey of 1000 knowledge workers employed at business services sector organizations in Poland, 2021

Measures	Value
χ^2	594.73
df	369
p	<0.0001***
χ^2 df	2.340
RMSEA	0.046
90% CI	0.034–0.072
CFI	0.922
GFI	0.920
AGFI	0.933
SRMR	0.049

90% CI – 90% confidence interval for RMSEA; AGFI – adjusted goodness of fit index; CFI – relative fit index; df – number of degrees of freedom; GFI – goodness of fit index; RMSEA – root mean square error of approximation; SRMR – standardized root mean square residual.
 *** p < 0.0001.

The scale validation of the measurement model

As part of the scale validation, the relevance of the scale was assessed and statistics of goodness of fit, convergent validity (e.g., both composite reliability [CR] and average variance extracted [AVE]) and discriminant validity

were conducted to determine the psychometric properties of the measurement model of the tested constructs. In the structural path analyses, the direct effect of IHRMP on JB was tested using goodness of fit statistics.

Model testing was conducted using CFA, in which all 4 study constructs were linearly interdependent and run simultaneously to test the goodness of fit. The estimation was done using the maximum likelihood method due to its attractive statistical properties (i.e., asymptotic unbiasedness, normality, consistency and maximum efficiency) [33]. The model tests all 4 constructs (IHRMP, JB, EE and OS). All recommended fit measures were significant and within acceptable limits [34] (Table 4).

Table 5 shows the convergent and dissimilarity relevance for each of the 4 confounded variables. Both CR and AVE, which measure the convergent relevance of the constructs, show satisfactory results that fall within the recommended threshold values of 0.75 and 0.50 for CR and AVE, respectively [35]. In addition, all factor loadings (also referred to as path coefficients) are statistically significant, reaching values close to 0.8, confirming their high degree of association with the latent variable. The results of the discriminant validity analysis further confirmed that all AVE square roots indicate a higher

Table 5. Convergent validity in the study on the impact of innovative human resource management practices (IHRMP) on knowledge worker burnout, based on survey of 1000 knowledge workers employed at business services sector organizations in Poland, 2021

Dimension	Item reliability		Convergence validity		Discriminant validity			
	factor loading	error variance	CR	AVE	IHRMP	JB	OS	EE
IHRMP	0.609***	1.091***	0.924	0.653***	0.808			
JB	0.711***	0.910***	0.843	0.715***	-0.296***	0.845		
OS	0.692***	1.128***	0.769	0.595***	0.344***	-0.323***	0.771	
EE	0.798***	1.077***	0.854	0.645***	0.251***	-0.513***	0.496***	0.803

EE – employee effort; IHRMP – innovative human resource management practices; JB – job burnout; OS – organization support.
 AVE – average variance extracted; CR – composite reliability.
 CR value >0.75 is acceptable.
 AVE preferred value >0.50; discriminant validity is achieved when the resulting heterotrait-monotrait ratio values are less than the suggested threshold of 0.85.
 Bolded are the square root of AVE.
 *** p < 0.0001.

correlation than the correlation for other constructs, confirming the validity of the 4 constructs studied.

In conclusion, CFA confirmed the hypothesized measurement model and showed that IHRMP, JB, EE and OS can be considered as 4 separate constructs.

RESULTS

Subsequently, the research hypotheses were tested using structural equation modeling (SEM) and the direct effects of latent and observed variables were demonstrated (Table 6). The SEM uses a 2-step approach involving validation of the measurement model scale (as demonstrated above) and structural path analysis. A bootstrapping procedure using AMOS was run to test the intermediate effects of the study.

The result of the structural model analysis has satisfactory statistical properties and indicates a very good fit of the model to the data. The root mean square error of approximation (RMSEA), reflecting the model's level of fit to the covariance matrix given the number of degrees of freedom and sample size, reaches 0.054, the 90% confidence interval (CI) for the RMSEA is 0.051–0.058. Probability of close fit (PCLOSE) determines the probability that the RMSEA is <0.05 , allows to consider the fit of this model as good. The model's fit indices – both the goodness of fit index (GFI) and its adjusted goodness of fit index (AGFI), as well as the relative fit index (CFI) – reach values >0.9 , indicating acceptance of the model [36].

The model also confirms significant direct and indirect relationships between the study variables. Table 6 shows that IHRMP have a significant negative direct relationship with JB ($\beta = -0.351$, $p < 0.001$). This statistically significant negative relationship received empirical support, so it is consistent with the postulated hypothesis H1.

To test the hypotheses H2 and H3, regression modeling with 5000 bootstrapping sampling was used to indirectly influence EE and OS on the negative association between IHRMP and job burnout. To examine this effect, it was

necessary to compare both the total direct effect of IHRMP on JB ($\beta = -0.267$, $p < 0.001$) and the indirect effect, in the form of EE, occurring between the 2 ($\beta = -0.365$, $p < 0.001$). The calculations performed indicate that the 95% percentile of the 5000 boot-strap value CI was >0 , meaning that there is a statistically significant direct negative relationship between IHRMP and job burnout. Similarly, statistical significance and a 95% CI of 500 boot-strap values greater than zero were noted for the mediating effects of EE and OS on the relationship between IHRMP and JB. Considering EE as a mediator, the effect of IHRMP on JB strengthens the existing negative relationship ($\beta = -0.294$, $p < 0.001$).

To validate hypothesis H3, we examined both the direct impact of IHRMP on JB ($\beta = -0.354$, $p < 0.001$) and the indirect influence mediated by OS ($\beta = -0.740$, $p < 0.001$). The analysis revealed that the 95% percentile of the CI from 5000 bootstrap samples was >0 , indicating a significant negative association between IHRMP and burnout. Similarly, significant results were found for the mediating role of OS, with the 95% CI from 500 bootstrap samples also exceeding zero. When considering OS as a mediator, it was found that IHRMP further reinforce the negative relationship with JB ($\beta = -0.337$, $p < 0.001$). Hence, hypothesis H3 was fully substantiated in this scenario as well.

A similar mechanism can be observed by adding EE as a mediator. In this case, too, the impact of IHRMP through EE maintains its negative relationship. Therefore, hypothesis H2 and H3 are also fully confirmed.

DISCUSSION

Theoretical implications

This manuscript makes an important contribution to the study of JB [37]. In line with previous research [38], this study found a negative and significant association between IHRMP and JB thus confirming hypothesis H1. The negative impact of innovative practices on JB is also

Table 6. Direct and indirect effects of the measurement model, model fit statistics in the study on the impact of innovative human resource management practices (IHRMP) on knowledge worker burnout, based on survey of 1000 knowledge workers employed at business services sector organizations in Poland, 2021

Model	Result
Path coefficients of direct relationships	
assumed effect IHRM → JB	
β	-0.351
SE	0.142
CR	-2.959
p	<0.001***
R ²	0.364
verification effect	H1 supported
Mediating relationships	
assumed effect IHRMP → OS → JB	
effect	
direct	
without mediator (x → y)	-0.267***
with mediator (x → m → y)	-0.365***
indirect	
95% CI	0.179–0.532
verification effect	H2 supported (full mediation)
assumed effect IHRMP → EE → JB	
effect	
direct	
without mediator (x → y)	-0.354***
with mediator (x → m → y)	-0.740***
indirect	
95% CI	0.191–0.496
verification effect	H3 supported (full mediation)
χ ²	939.6
df	239
p	<0.001
χ ² /df	3.932
RMSEA	0.054
90% CI	0.051–0.058
PCLOSE	0.029
SRMR	0.0652
GFI	0.924

Model	Result
AGFI	0.904
CFI	0.913

EE – employee effort; IHRMP – innovative human resource management practices; JB – job burnout; OS – organization support.
 90% CI – 90% confidence interval for RMSEA; AGFI – adjusted goodness of fit index; CFI – relative fit index; df – number of degrees of freedom; GFI – goodness of fit index; RMSEA – root mean square error of approximation; SRMR – standardized root mean square residual.
 *** p < 0.001.

highlighted by Kloutsiniotis et al. [39] proving that IHRMP tend to reduce employee burnout, and this relationship is strengthened when these IHRMP are increased. In addition, some researchers emphasize the central importance of IHRMP in helping employees cope with job pressures [40]. Mutual commitment and trust resulting from the HRM systems and practices put in place will reduce the burden of employee burnout [41].

The article makes a key empirical contribution through its insights on the application of IHRMP in the context of highly skilled employees working in a high-intensity environment. Knowledge workers typically work for organizations engaged in creating innovative solutions and creating new knowledge in the economy. Accordingly, knowledge workers respond reasonably well to implemented IHRMP [42]; therefore, the greater the variety of HR activities introduced, the more regulated the workplace may seem, which can lead to a reduced desire to leave the organization [8] and a sense of burnout in the context of BSS organizations.

The impact of IHRMP on JB is fully mediated by OS (H2), which focuses on how work and rewards are organized along with consideration of individual employee needs regarding work and personal life. The OS plays a key role in linking IHRMP to improved work life [43]. Thus, IHRMP not only help employees recover lost personal effort put into work and regenerate work resources, but, through OS, foster the internalization of organizational

goals and increase employee commitment [44], thereby reducing job burnout.

Another finding of this study was to illustrate the effect of an indirect relationship in which EE acts as a mediator in the negative relationship between IHRMP and JB thus confirming hypothesis H3. According to the theory of job demands and resources, burnout can be caused by job demands that consume EE and generate psychophysiological costs that initiate the burnout process. The results of the study proved that the working conditions that counteract burnout are situations in which employees experience high work demands (e.g., the employee's effort related to the nature of work in BSS), while at the same time they themselves have a sense that work provides them with sufficient resources (adequately implemented IHRMP) to cope with these demands effectively. This study indicates that the sense of effort put into work plays a significant role in reinforcing the negative impact of IHRMP on job burnout. Among knowledge workers, IHRMP empower employees and develop a sense of confidence, job control and intrinsic motivation, so that employees do not perceived burnout. The findings made are in line with research by other authors, indicating that even if an employee experiences high demands, but at the same time has high resources to cope with them, the demands do not necessarily lead to JB [45].

Managerial implications

The implication of IHRMP in a highly skilled, intensive work environment to counteract the onset of JB requires commitment from all stakeholders. When employees perceive an HR policy that is not focused on their needs and a lack of commitment from the organization, they may feel that their weaknesses are being exploited. Such perceptions reduce motivation and contribute to the emergence of perceived burnout. The development, training, remuneration and benefits offered to knowledge workers employed by BSS may not be adequate for the effort put in. Intensification and specialization of work, rising cost

of living and uncertain economic conditions undermine the perception of the mutual benefits of implementing IHRMP. Accordingly, managers should emphasize OS that encourages active and highly specialized work by offering adequate work arrangements, flexible benefits and rewards to instill commitment values into the organization and give employees a degree of control over their work lives. To counteract the incidence of burnout among knowledge workers working in large organizations in technology-intensive industries, the structure of the work itself and the implementation of IHRMP should be reorganized to ensure that, to the greatest extent possible, they are compensated for the effort they put into their work and offered ongoing development opportunities, increasing their individual flexibility and uniqueness, thereby reducing the likelihood of fatigue and burnout. Therefore, managers should provide some control over the labor resources provided, high flexibility and empowerment to employees performing specialized and innovative knowledge to create innovative services for external contractors, in order to increase their proactive attitudes and behavior in the spirit of IHRMP and help reduce the effects of burnout.

Although the study provides valuable insight into the negative impact of IHRMP on job burnout, it is not without limitations. Further research should examine IHRMP in different contexts and include a range of HR measures in addition to those included in this study. Typically, IHRMP include a range of practices that on the surface may appear similar, but their importance and implementation change depending on the size of the organization, or the sector studied. Further research should also include larger samples, and it would be worthwhile to expand the circle of research, which would allow us to determine how the studied relationships develop in other organizations. In addition, data was collected in BSS organizations operating only in Polish cultural conditions. Although this allowed the collection of valuable empirical material, expanding knowledge regarding the group of knowledge

workers, it is worth expanding the circle of re-studies, which appears to be an interesting direction for further research, taking into account cross-sector and cross-cultural comparisons. In also, individual country-specific exogenous factors, such as the economic recession in Poland, lack of funds, intense competition and other similar factors after the COVID-19 pandemic, may influence the more frequent occurrence of feelings of job burnout. Conducting a study in several similar countries would allow comparison and generalization of the results to other emerging and developed economies.

In addition, the author is aware of further limitations of the completed research procedure, such as the use of single-source data (i.e., data from knowledge workers) through survey methods. It would therefore be advisable to conduct further studies, such as longitudinal ones, which could provide a more precise picture of the relationship.

CONCLUSIONS

In conclusion, this study contributes to the literature on the role of IHRMP in counteracting the occurrence of perceived burnout among knowledge workers. It provides insight into the negative relationship between IHRMP and job burnout, also indicating the role of OS and EE in reinforcing the negative relationship between the two.

For BSS organizations, this appears to be an important finding to guide managers in understanding the conscious use of IHRMP, steering OS and compensating the effort of knowledge workers, pointing to a new framework for intervening JB not only from the individual level, but also from the organizational level. This justifies the derivation of a positive prediction as to the topicality of the issue addressed and the adoption of this research as a starting point for further scientific exploration. Research confirmation of the relationship between these variables may prove useful for organizational practice in BSS organizations, which, like the subject of the research, are looking for solutions to counteract the appearance of JB.

REFERENCES

1. Shipton H, Sparrow P, Budhwar, P, Brown A. HRM and innovation: looking across levels. *Hum Resour Manag J*. 2017; 27(2):246-263. <https://doi.org/10.1111/1748-8583.12102>.
2. Koster F. Innovative HRM. A review of the literature. *J Technol Manag Innov*. 2019;14(2):1-29. <https://doi.org/10.4067/S0718-27242019000200097>.
3. Ahola K, Honkonen T, Isometsä E, Kalimo R, Nykyri E, Koskinen S, et al. Burnout in the general population: Results from the Finnish Health 2000 Study. *Soc Psychiatry Psychiatr Epidemiol*. 2006;41(1):11-17. <https://doi.org/10.1007/s00127-005-0011-5>.
4. Zina MR, Talet NA. Empirical evidence of frequency of change and job burnout. *SAJBM*. 2016;47(4):27-33. <https://doi.org/10.4102/sajbm.v47i4.72>.
5. Bocheliuk VY, Zavatska NY, Bokhonkova YO, Toba MV, Panov NS. Emotional burnout: Prevalence rate and symptoms in different socio-professional groups. *J Intellect Disabl Diagn Treat*. 2020;8(1):33-40. <https://doi.org/10.6000/2292-2598.2020.08.01.5>.
6. Innstrand ST, Langballe EM, Falkum E, Aasland OG. Exploring within-and between-gender differences in burnout: 8 different occupational groups. *Int Arch Occup Environ Health*. 2011;84(7):813-24. <https://doi.org/10.1007/s00420-011-0667-y>.
7. Ahola K, Toppinen-Tanner S, Seppänen J. Interventions to alleviate burnout symptoms and to support return to work among employees with burnout: Systematic review and meta-analysis. *Burn Res*. 2017;4:1-11. <https://doi.org/10.1016/j.burn.2017.02.001>.
8. Rogozińska-Pawełczyk A. The Effect of HR Practices and Psychological Contract on Employee Performance: The Polish Experience in Business Services Sector (BSS). In: Husein M, Hakan D, Eds. *Eurasian Studies in Business and Economics*. Berlin/Heidelberg: Springer; 2021. pp. 3-20.
9. Lee HW, Pak J, Kim S, Li LZ. Effects of human resource management systems on employee proactivity and group innovation. *J Manage*. 2019;45(2):819-846. <https://doi.org/10.1177/014920631668002>.

10. Liu W, Zhou ZE, Che XX. Effect of workplace incivility on OCB through burnout: The moderating role of affective commitment. *J Bus Psychol.* 2019;34(5):657-669. <https://doi.org/10.1007/s10869-018-9591-4>.
11. Som A. Organizational response through innovative HRM and re-design: a comparative study from France and India. *Int J Hum Resour.* 2012;23(5):952-976. <https://doi.org/10.1080/09585192.2012.651323>.
12. Gerxhani K, Koster F. Making the right move: investigating employers' recruitment strategies. *Pers Rev.* 2015;44(5): 781–800. <https://doi.org/10.1108/PR-12-2013-0229>.
13. Yan JJ, Luo J, Zhong J. High-commitment organization and employees' job performance: The roles of the strength of the HRM system and taking charge. *Int J Manpow.* 2019;40:1305-1318. <https://doi.org/10.1108/IJM-08-2018-0243>.
14. Bowen DE, Ostroff C. Understanding HRM–firm performance linkages: the role of the “strength” of the HRM system. *Acad Manage Rev.* 2004;29:203-221. <https://doi.org/10.2307/20159029>.
15. Maslach C, Schaufeli WB, Leiter MP. Job burnout. *Annu Rev Psychol.* 2001;52:397-422. <https://doi.org/10.1146/annurev.psych.52.1.397>.
16. Maslach C, Leiter M.P. Early predictors of job burnout and engagement. *J Appl Psychol.* 2008;93(3):498-512. <https://doi.org/10.1037/0021-9010.93.3.498>.
17. Cropanzano R, Howes JC, Grandey AA, Toth P. The relationship of organizational politics and support to work behaviors, attitudes, and stress. *J Organ Behav.* 1997;18:159-180.
18. Kinicki A, Fugate, M. *Organizational Behavior: A Practical Problem Solving Approach.* New York: McGraw-Hill; 2016.
19. Miao R, Cao Y. High-performance work system, work wellbeing, and employee creativity: Cross-level moderating role of transformational leadership. *Int J Environ Res Public Health.* 2019;16(9):1640. <https://doi.org/10.3390/ijerph16091640>.
20. Eisenberger R, Armeli S, Rexwinkel B, Lynch PD, Rhoades L. Reciprocation of perceived organizational support. *J Appl Psychol.* 2001;86:42–51.
21. Brown SP, Leigh TW. A new look at psychological climate and its relationship to job involvement, effort, and performance. *J Appl Psychol.* 1996;81(4):358-368. <https://doi.org/10.1037/0021-9010.81.4.358>.
22. Yeo GB, Neal AA. multilevel analysis of effort, practice, and performance: Effects of ability, conscientiousness, and goal orientation. *J Appl Psychol.* 2004;89:231-247. <https://doi.org/10.1037/0021-9010.89.2.231>.
23. Bos-Nehles AC, Meijerink JG. HRM implementation by multiple HRM actors: A social exchange perspective. *Int J Hum Resour.* 2018;29(22):3068-3092. <https://doi.org/10.1080/09585192.2018.1443958>.
24. McClean E, Collins CJ. High-commitment HR practices, employee effort, and firm performance: Investigating the effects of HR practices across employee groups within professional services firms. *Hum Resour Manag.* 2011;50(3):341-363. <https://doi.org/10.1002/hrm.20429>.
25. Sun L, Aryee S, Law KE. High performance human resource practices, citizenship behavior, and organizational performance: A relational perspective. *Acad Manage J.* 2007; 50:558-577. <https://doi.org/10.5465/AMJ.2007.25525821>.
26. Tsai Ch-J. High performance work systems and organizational performance: an empirical study of Taiwan's semiconductor design firms. *Int J Hum Resour.* 2006;17(9):1512-1530. <https://doi.org/10.1080/09585190600878121>.
27. Hayman JR. Flexible work arrangements: Exploring the linkages between perceived usability of flexible work schedules and work/life balance. *Community Work Fam.* 2009;12(3): 237-338. <https://doi.org/10.1080/13668800902966331>.
28. Field, A. *Discovering Statistics using SPSS for Windows,* London: Sage Publications; New Delhi: Thousand Oaks; 2000.
29. Cronbach LJ. Coefficient alpha and the internal structure of tests. *Psychometrika.* 1951;16(3):297–334. <https://doi.org/10.1007/BF02310555>.
30. Podsakoff PM, MacKenzie SB, Lee J-Y, Podsakoff NP. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *J Appl*

- Psychol. 2003;88:879-903. <https://doi.org/10.1037/0021-9010.88.5.879>.
31. Spector PE. Method variance as an artifact in self-reported affect and perceptions at work: Myth or significant problem? *J Appl Psychol.* 1987;72(3):438-443. <https://doi.org/10.1037/0021-9010.72.3.438>.
32. Conger JA, Kanungo RN, Menon ST. Charismatic leadership and follower effects. *J Organiz Behav.* 2000;21(7):747-767.
33. Li CH. Confirmatory factor analysis with ordinal data: Comparing robust maximum likelihood and diagonally weighted least squares. *Behav Res Methods.* 2016;48(3):936-949. <https://doi.org/10.3758/s13428-015-0619-7>.
34. Hair JE, Sarstedt M, Ringle CM, Mena JA. An assessment of the use of partial least squares structural equation modeling in marketing research. *J Acad Mark Sci.* 2012;40(3):414-433. <https://doi.org/10.1007/s11747-011-0261-6>.
35. Su Z, Guo H, Sun W. Exploration and firm performance: The moderating impact of competitive strategy. *Brit J Manag.* 2017;28(3):357-371. <https://doi.org/10.1111/1467-8551.12218>.
36. Brown, T. A. *Confirmatory Factor Analysis for Applied Research.* New York: The Guilford Press; 2006.
37. Peccei R, Van De Voorde K. Human resource management-wellbeing-performance research revisited: Past, present, and future. *Hum Resour Manag J.* 2020;29(4):539-563. <https://doi.org/10.1111/1748-8583.12254>.
38. Jiang K, Takeuchi R, Jia Y. Taking Peers Into Account: Adoption and Effects of High- Investment Human Resource Systems. *J Appl Psychol.* 2020;106(10):1539-1556. <https://doi.org/10.1037/apl0000836>.
39. Kloutsiniotis PV, Mihail DM, Mylonas N, Pateli A. Transformational Leadership, HRM practices and burnout during the COVID-19 pandemic: The role of personal stress, anxiety, and workplace loneliness. *Int J Hosp Manag.* 2022;102:103177. <https://doi.org/10.1016/j.ijhm.2022.103177>.
40. Kang SW, Kang SD. High-commitment human resource management and job stress: Supervisor support as a moderator. *Soc Behav Pers Int J.* 2016;44(10):1719-1731. <https://doi.org/10.2224/sbp.2016.44.10.1719>.
41. Meng H, Luo Y, Huang L, Wen J, Ma J, Xi J. On the relationships of resilience with organisational commitment and burnout: A social exchange perspective. *Int J Hum Resour.* 2019;30(15):2231-2250. <https://doi.org/10.1080/09585192.2017.1381136>.
42. Gadomska-Lila K, Rogozińska-Pawełczyk A. The Role of Pro-Innovative HR Practices and Psychological Contract in Shaping Employee Commitment and Satisfaction: A Case from the Energy Industry. *Energies.* 2021;15(1):255. <https://doi.org/10.3390/en15010255>.
43. Grote G, Guest D. The case for reinvigorating quality of working life research. *Hum Relat.* 2017;70(2):149-167. <https://doi.org/10.1177/0018726716654746>.
44. Chen C-C, Wang Y, Chen S-J, Fosh P, Wang R. High commitment work system and firm performance: Impact of psychological capital and environmental uncertainty. *Asia Pacific J Hum Resour.* 2019;59(1):132-151. <https://doi.org/10.1111/1744-7941.12246>.
45. Schaufeli WB, Desart S, De Witte H. Burnout Assessment Tool (BAT) – development, validity, and reliability. *Int J Environ Res Public Health* 2020;17(24):9495. <https://doi.org/10.3390/ijerph17249495>.