JOB DEMANDS AND RECOVERY EXPERIENCE: THE MEDIATION ROLE OF HEAVY WORK INVESTMENT

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Abstract

The evolving labor market is increasingly competitive and more demanding for most occupations and especially pertinent to health professionals investing many resources to provide excellent care service. However, the nature of the external factors, such as organizational culture and workload, seemed to be related to heavy work investments (HWI) and health outcomes, such as recovery experiences. This study aims to explore among Colombian health professionals, the effect of job demands (JD) on recovery experience (RE), mediated by HWI. The proposed model was assessed through Partial Least Squares Structural Equation Modelling (PLS-SEM) and an importance-performance map analysis was performed to expand the initial results. Results support the stated hypotheses regarding direct and indirect effects among JD, RE and HWI. This study contributes to understanding job demands within the health sector. Moreover, it pinpoints opportunities to foster adequate management of work investment and recovery experiences that protect well-being while maintaining a quality care service.

Keywords: job demands; recovery experience; heavy work investment; health sector; PLS-SEM

JEL Classification: M54, M12, J81, O15, O32

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Introduction

Current working conditions are increasingly demanding for most occupations. Some occupations are more demanding than others, which is the case of health professionals. Consequently, employees must invest substantial efforts (physical and mental) with fewer possibilities of distancing themselves mentally from work issues (Sandoval-Reyes, Acosta-Prado and Sanchís-Pedregosa, 2019).

Health workers are a diverse workforce, and some professions or specializations in the medical arena are particularly demanding (Abushaikha and Saca-Hazboun, 2009). For example, nurses experience many job demands (Mealer et al., 2007; Lee et al., 2015). Nevertheless, health professionals are expected to deliver high-quality work that pushes their skills and knowledge. Notably, their on-the-job performance impacts their physical and mental health.

Organizations may act both as pushers or enablers that demand from their employees a heavy work investment (Holland, 2007). Either way, the health sector fits the definition of an "always-at-work" culture where job demands are a natural part of the job (Montgomery et al., 2011). Because the term "health" covers a state of complete physical, mental, and social well-being (WHO, 1948), quality healthcare service is expected to cover a range of medical activities. These include medical diagnosis, treatment, confidentiality, empathy, and sensitivity (Donabedian, 1988) that, in the long-term, demand diverse skills at their maximum level.

The workload is high, partly because the number of health professionals is not sufficient. Among the several causes of this state of affairs can be counted population increases and high desertion rates (De Gieter, Hofmans and Pepermans, 2011; Sawatzky and Enns, 2012; Heinen et al., 2013; Gao et al., 2017). In our analysis, these types of factors are considered as external predictor of the heavy work investment demanded (Snir, 2018) that can be defined collectively as "situational heavy work investment" (Harpaz and Snir, 2014), a term we shall employ in this study.

The response behavior of working health professionals implies a high investment of resources. The work investment is high in terms of both time and effort (Paškvan and Kubicek, 2017). To explain this phenomenon, Snir and Harpaz (2012) proposed the heavy work investment model. Through this approach, those authors seek to explain the determinants and consequences of HWI (Harpaz and Snir, 2014). Specifically, regarding the work of health professionals, culture and workload are two very relevant determinants of the high work investment.

In this sense, recovery from the work investment is crucial, as it accounts for positive psychological outcomes. According to Meijman and Mulder (1998), effort recovery is an essential part of well-being. However, the recovery experience is undermined when the employee presents difficulties detaching from work. The off-work time is supposed to benefit a life balance and to allow the recovery experience (Sonnentag and Fritz, 2007). Nevertheless, this is not always possible.

The contribution of this study is threefold. First, we seek to expand the literature on *situational* investors because studies on this subtype of investor are still scarce: Researchers have focused their attention on the influence of internal factors of the HWI and have underestimated the impact of external factors (Harpaz and Snir, 2014). Second, to the best

of our knowledge, the model has not yet been addressed in the Latin-American context. Therefore, we developed a study with professionals from the health sector in a private clinic in Bogota, Colombia. Third, we explore the recovery experience, aiming to help organizations and their managers to design strategies to improve the levels of employees' psychological distance from work.

Based on the above, this study is designed to examine the mediating role of heavy work investment in the relationship between job demands and recovery experience. This objective leads to the following research question: What are the direct effect of job demands on recovery experience and what are its indirect effect, mediated by heavy work investment, in health sector workers from Bogota, Colombia.

1. Review of the scientific literature

This section elaborates on the theoretical and conceptual framework underlying the research variables that inform the research model in this study. For that purpose, job demands, heavy work investment, and recovery experience are explained as the general factors that interplay with healthcare professionals. Further clarification of each component is presented below.

1.1. Job demands

Heavy workload is a reality in many occupations and will remain or even increase across the pass of time (Smith et al., 2011). Notably, some organizations have a culture defined by highly demanding clients regarding the quality of service they expect. In the job demands-resources theory (Bakker and Demerouti, 2014), job demands are aspects of the job that require physical and psychological effort associated with physiological and psychological costs (Demerouti et al., 2001).

The particular characteristics of the health sector are such that both the organizational culture and workload are job demands that impact the work investment. Moreover, these two factors may also have positive or negative implications on health issues regarding the resources available for employees (Bakker and Demerouti, 2014). For Harpaz and Snir (2014), there are external aspects that play a predictor role of heavy work investment and define the situational heavy work investors, which, in this case, is relevant for health professionals.

Workloads are referred to as excessive assignments or customer demands (Barnard, Deakin and Hobbs, 2003). For Harpaz and Snir (2014), workloads imply a high volume of work and might predict the amount of work investment. As already mentioned, workloads in a hospital context are highly demanding (Happell et al., 2013).

Prior literature suggests that intensification of work negatively affects health indicators (Krause, Scherzer and Rugulies, 2005). High workload or overload causes the employee to face a level of uncertainty about his or her ability to perform the entire job, which can generate feelings of anxiety and worry (Spector and Jex, 1998). For example, Pinquart, Silbereisen and Körner (2009) report that in a German sample, a high level of perceived work demands was related to lower levels of psychological well-being. In a similar vein,

Franke (2015) reports that the perceived increase in work intensification generates effects beyond the need to generate additional efforts to achieve goals: The subjective feelings cause psychosomatic distress.

Regarding organizational culture, the boundaries between the world of work and personal life are defined as a function of the work context (Ashforth, Kreiner and Fugate, 2000). Thus, organizations might establish norms that determine their members to be available for work, even outside of the established working day set in their formal contract (Derks, van Mierlo and Schmitz, 2014).

As indicated, organizational cultures that value and promote employees that devote considerable time to work are known as "always-on work culture". This type corporate culture is more likely to impact on heavy work investment (Burke and Koksal, 2002; Harpaz and Snir, 2003). Notably, the health sector fits an always-on work culture where job demands are part of the job (Montgomery et al., 2011) and are related to adverse health outcomes such as burnout.

1.2. Heavy Work Investment

To integrate the existing knowledge on HWI, Snir and Harpaz (2012) proposed the HWI model. Two main dimensions of HWI have delineated, namely *time commitment* and *intensity of work*. Moreover, Harpaz and Snir (2014) posit that HWI might be predicted by both internal and external elements. Internal predictors include propensities such as addiction to work or passion to work. External predictors incorporate factors such as financial needs, employer demands, or organizational culture. As mentioned, this study is concerned with job demands as external predictors.

We now explain further the terms "time investment" and "effort investment" in the context of healthcare workers. Regarding time investment: According to Golden (2013), over employment refers to long work hours that are beyond the initially preferred extent of time commitment. An imbalance schedule of labor and personal life jeopardizes boundaries between those different settings and may lead to breaking other limitations as well. The boundaries that used to limit work activities to specific times and places have disappeared, giving way to the need for people to integrate their no-working time to work (Moen et al., 2013).

The possibility of a permanent connection to work implicitly entails an extension of the working day (Demerouti et al., 2014), causing employees to arrive at an undesirable state, "always in work mode". They are now susceptible to working at any time and place, extending the working day to night, weekends, and holidays (Sandoval-Reyes, 2016). Moreover, health professionals commonly have demanding schedules that are often compounded by having to meet them in several different workplaces. In other words, "time is every time more insufficient" for those professionals who need to provide quality care (Milisen et al., 2006; Berland, Natvig and Gundersen, 2008).

Effort investment refers to the physical and mental exertion employees invest in work (Snir and Harpaz, 2012). Effort investment associates with variables different from those related to time investment, such as overtime and burnout. This distinction may be a function of the necessary levels effort investment presents (Rabenu and Aharoni-Goldenberg, 2017), including the degree of heavy job demands or, following Harpaz and Snir (2014), the extent

of internal predictors. Specifically, however, this study focuses on the external factors impinging on health workers in the health sector.

The ever increasing tasks and actions perceived by the workers during their working day (Kubicek, Paškvan and Korunka, 2015) demand an intense effort on their part (Paškvan and Kubicek, 2017). Green's (2008) found in a set of different professions that effort investment in work and well-being are negatively associated. However, only a few studies have explicitly focused on the dimension of HWI.

The HWI model has explained diverse outcomes of work investment, including both adverse effects (such as those discussed in this study) and positive impacts. For example, Houlfort et al.'s (2014) review found various positive and negative outcomes with respect to worker's "passional" or motivational goals. Another study assessed the differing influences of HWI dimensions in burnout, revealing that investment of time finding that the investment of time is not consistently associated with burnout, while effort investment links with it negatively (Rabenu et al., 2019).

1.3. Recovery experience

Recovery refers to process of restoration in which the attrition level as a reaction to a stressor or any demand from work returns to the individual's previous level (Craig and Cooper, 1992; Meijman and Mulder, 1998). Recovery can be seen as the opposite of process attrition; More specifically, recovery is a process, and the result of one or more of various experiences, namely, detachment, relaxation, mastery, and control (Sonnentag and Fritz, 2007).

Sometimes, workers feel continuously connected to and available for work, while trying to detach themselves mentally from that experiences (Hahn and Dormann, 2013; Sonnentag and Bayer, 2005; Ohly and Latour, 2014). This disturbing phenomenon is often extant but restrained when predictors, such as psychological detachment or relaxation, act in a way that impacts the health issues positively.

Psychological detachment from work is understood as the sense of being away from the work situation (Etzion, Eden and Lapidot, 1998). According to Sonnentag and Bayer (2005), achieving psychological detachment does not only require changing or moving away from the physical workplace, but it also requires a shift away from thinking about issues related to work situations. Detachment from work creates the opportunity to engage in activities that provide new resources that can also be invested in the job (Sonnentag and Kruel, 2006). Notably, following Sonnentag and Fritz (2007), psychological detachment is the most critical aspect of any recovery process. This observation aligned with job demands-resources theory (Bakker and Demerouti, 2014) because the depleted resources are expected to be recovered to find a balance with job demands.

Psychological detachment from work is associated both positively and negatively with well-being and strain symptoms, respectively (Wendsche and Lohmann-Haislah, 2017; Bennett, Bakker and Field, 2018). Empirical research indicates that demanding job situations are negatively related to psychological detachment from work (Cropley and Millward Purvis, 2003; Grebner, Semmer and Elfering, 2005). Sandoval-Reyes, Acosta-Prado and Sanchís-Pedregosa (2019) found that work cultures characterized by high levels of connectivity also represent an antecedent to the psychological detachment from work.

Relaxation is considered a process that is associated with pleasure and rest activities; it is characterized by a state of low sympathetic activation and increased positive affect (Sonnentag and Fritz, 2007). Relaxation has the essential effect of reducing the wear and tear that results from facing situations of work stress; it facilitates reaching states of pre-stress, allowing for the restoration of the organism.

Employees who experience high levels of relaxation during rest time report several positive outcomes. These include lower levels of stress and physical complications (Shimazu et al., 2012), burnout (Fritz et al., 2010), and family-work conflict (Molino et al., 2015); they also achieve greater satisfaction with their life in general (Park and Fritz, 2015). In addition, there is evidence that relaxation experiences help reduce stress-related conditions in both the short and long term (Sonnentag and Fritz, 2007) and that they are associated with improved performance levels (Binnewies, Sonnentag and Mojza, 2010).

1.4. Theoretical model and hypotheses

In line with the above, the theoretical model proposed in this paper is a construction based on the following statements: Healthcare professionals are part of an environment where external aspects such as organizational culture and workload are higher than the workers' capacity to cope. Consumers, the patients, expect a quality care service because that care impacts directly to their lives. For this reason, job demands are high in this sector. Health professionals are expected to invest highly in time and effort; that is, in their work investment. Based on the previous literature, it is hypothesized that the recovery experience of these professionals could be jeopardized due to the presence of these stressful job demands and heavy work investment.

In line with the HWI model and the job demands-resources theory, the organizational culture, workload, effort investment, and time investment are variables that, under the circumstances prevailing in the healthcare professions, diminish the possibility of a proper recovery. Furthermore, as indicated by the HWI model, these variables are often found to play a mediation role between predictors of HWI, such as job demands, health issues, and recovery experience (figure no. 1). The above leads to the following hypotheses:

- Hypothesis 1: Job demands have a significant direct effect on recovery experience.
- Hypothesis 2: Job demands have a significant direct effect on heavy work investment.
- Hypothesis 3: Heavy work investment has a significant direct effect on recovery experience.
- Hypothesis 4: Heavy work investment has a significant mediating effect on the effect of job demands and recovery experience.

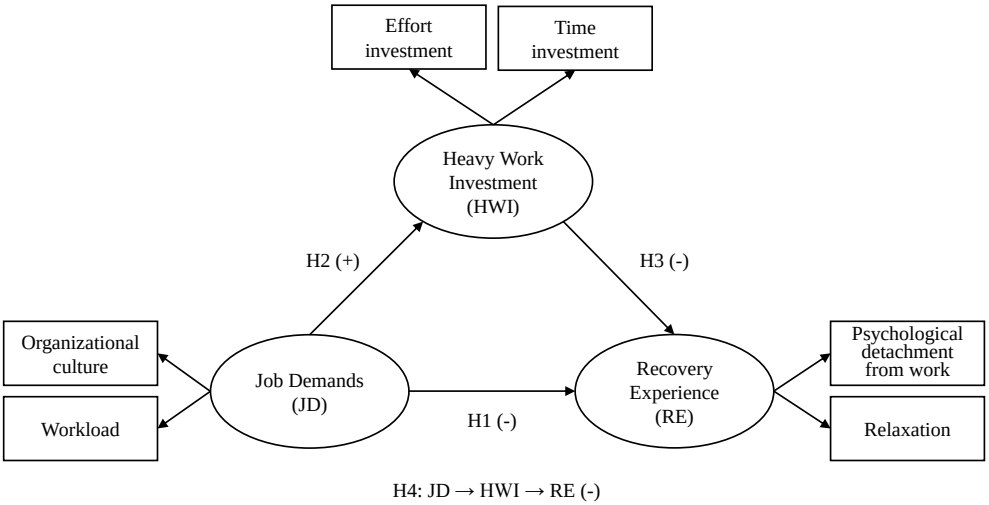

Figure no. 1: Structural model for this study

2. Research methodology

Participants in this study were selected through intentional non-probability sampling (Kerlinger and Lee, 2000). The sample size was calculated from an a priori statistical power analysis. For the statistical power analysis, a one-tailed test was used, with an expected effect size of 0.020 following the recommendations of Lakens, Scheel and Isager (2018), namely, significance level 0.050 (conventional value), expected statistical power of 0.800, and establishing the number of predictors at 2. From the results obtained, the minimum recommended sample size was 311. Notably, a greater number of instruments were applied because of the possible presence of outliers or missing values in some of them.

The initial sample was made up of 394 health sector workers from Bogota, Colombia. In none of the cases were missing values reported. The examination of outliers was carried out in a univariate and multivariate way in the R software version 3.6.3 (R Core Team, 2020) through the Tidyverse 1.3.0 (Wickham et al., 2019) and MASS 7.3-51.5 (Venables and Ripley, 2002) packages. The univariate analysis consisted on visual inspection of the boxplots for each variable, where no outlier was found. Detection of multivariate outliers was performed with a robust variant of the Mahalanobis distance, using the MCD75 estimator (Leys et al., 2018). Eight multivariate outliers were detected and eliminated with their respective cases. The final sample was made up of 386 participants (table no. 1).

Table no. 1: Sociodemographic characteristics of participants

Variable	*n*	*%*	*M*	*DE*
Gender				
Male	97	74.870		
Female	289	25.130		
Marital status				
Unmarried	153	39.637		
Married	233	60.363		
Number of children				
Zero	161	41.710		
One	115	29.793		
Two	99	25.648		
Three	8	2.073		
Four	3	0.777		
Position held				
Coordinators	43	11.140		
Managers	28	7.254		
Directors	64	16.580		
Professionals	119	30.829		
Assistant managers	5	1.295		
Technicians	127	32.902		
With staff in charge				
No	199	51.554		
Yes	187	48.446		
Type of charge				
Administrative	260	67.358		
Assistance	86	22.280		
Executive	24	6.218		
Operative	16	4.145		
Age			36.111	8.729
Years of work experience			14.057	8.084
Years of experience in office			6.573	5.978

To measure JD – the effect of job demands – the Quantitative Workload Inventory (Spector and Jex, 1998) was employed for workload, which has five items on a Likert scale with ranges between 1 ("less than once a month" or "never") and 5 ("several times a day"). For organizational culture, seven items were developed for this study on a five-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5).

The HWI measurement was carried out using two instruments. For *effort investment*, five items from the Intensification of Job Demands Scale were used (Kubicek, Paškvan and Korunka, 2015). The items are represented on a Likert scale of five response options (1 = "strongly disagree" to 5 = "strongly agree"). For *time investment*, three items were developed for this study on a five-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5).

Regarding RE – recovery experience – the Spanish version of the Recovery Experience Questionnaire (Sonnentag and Fritz, 2007) was used. Two subscales, Psychological detachment from work and relaxation, were employed, each consisting of three items using a 5-point Likert scale (1 = "strongly disagree" to 5 = "strongly agree"). All the instruments had the psychometric properties required for the measurement scales in the behavioral and health sciences (Acosta-Prado, Romero and Tafur-Mendoza, 2020). All instruments are presented in the Appendix.

Data collection was performed using measurement instruments together with the presentation of the informed consent that guaranteed the confidentiality and anonymity of the participants' responses. The tool for data collection was presented in Google Forms. Participation was strictly voluntary and online-based (via email). It is important to note that the ethical guidelines designated in the Declaration of Helsinki and by the American Psychological Association for working with human beings were followed at all times (American Psychological Association, 2016). Thus, after obtaining the database, it was consequently wiped out.

Statistical analysis was performed by variance-based structural equation modeling (PLS-SEM). These models consist of two parts, namely, the measurement and structural models, respectively. The measurement model was reflective, meaning that the indicators reflect the constructs. In the structural model, job demands are treated as an exogenous variable, while heavy work investment and recovery experience are endogenous variables. All the analyzes were performed using SmartPLS 3.2.9 (Ringle, Wende and Becker, 2015).

Due to the complexity of the constructs (figure no. 1), the hierarchical component model (HCM) was used to test a higher-order structure containing two levels of constructs (figure no. 1). Accurately, the reflective-reflective HCM depicts the relationships between lower-order and higher-order components that are reflective. The specification of higher-order constructs was performed using the disjoint two-stage approach (Agarwal and Karahanna, 2000; Becker, Klein and Wetzels, 2012). From this approach, the scores in the lower-order components were obtained in the first stage and the second stage. These scores were then used to measure the higher-order constructs. This procedure was performed for the three constructs (namely, Job Demands, HWI, and Recovery Experience).

The PLS-SEM results were evaluated for the two models. For the *measurement model*, the reliability was estimated through the composite reliability (CR), the convergent validity using the outer loadings and the average variance extracted (AVE), and the discriminant validity using the criterion of Fornell and Larcker (1981) and the heterotrait-monotrait ratio, HTMT (Henseler, Ringle & Sarstedt, 2015). The structural model was assessed using R^2 (explained variance), f^2 (effect size), $Q^2_{predict}$ (predictive performance), and the magnitude and statistical significance of the path coefficients.

Also, an importance-performance map analysis (IPMA) was carried out at the level of constructs and indicators (Höck, Ringle and Sarstedt, 2010). The IPMA seeks to identify the antecedent variables (constructs and items) that represent relevant importance in the prediction of the target variable (Recovery Experience), but, at the same time, show low performances, to propose improvements for these antecedent variables (Nigel, 1994).

3. Results

3.1. Measurement model evaluation

Reliability was evaluated through the internal consistency method. The three study variables showed adequate levels of reliability; the CR obtained values above 0.700 (Nunnally and Bernstein, 1994), indicating that the constructs are reliable (table no. 2). Convergent validity means how closely a construct is found to alternate measures of that construct; it was tested at the level of constructs and indicators. To estimate the convergent validity of the constructs, the AVE was used, where values greater than 0.600 indicate an outstanding level of convergent validity (Moral, 2019). At the indicator level, outer loadings were used, considering values above 0.708 as appropriate (Fornell and Larcker, 1981). The results indicated that the constructs and indicators have convergent validity (table no. 2).

Table no. 2: Reliability and validity statistics

Variable	Outer loadings	Outer weights	CR	AVE	$Q^2_{predict}$
Job demands			0.784	0.645	
Organizational culture	0.845***	0.681***			
Workload	0.759***	0.559***			
Heavy work investment			0.865	0.762	
Effort investment	0.857***	0.539***			0.327
Time investment	0.888***	0.606***			0.347
Recovery experience			0.846	0.734	
Psychological detachment from work	0.899***	0.664***			0.175
Relaxation	0.812***	0.497***			0.125

Notes: ***p < 0.001, two-tailed test. CR = composite reliability; AVE = average variance extracted; Q^2predict = predictive performance.

Discriminant validity seeks to determine to what extent a construct is different from others. The criterion usually employed is proposed by Fornell and Larcker (1981), indicating that the square root of the AVE must be greater than the correlations between the constructs. However, this procedure has some limitations that are overcome by the HTMT ratio (Henseler, Ringle and Sarstedt, 2015), where values less than 0.85, and whose confidence intervals do not contain 1, are considered appropriate. The results meet the established criteria to affirm that the constructs have discriminant validity (table no. 3) because the constructs met at least one of the criteria.

Table no. 3: Discriminant validity assessment

Construct	JD	HWI	RE
Job demands (JD)	0.803	1.199 [1.089; 1.348]	0.827 [0.699; 0.959]
Heavy work investment (HWI)	0.671	0.873	0.718 [0.619; 0.812]
Recovery Experience (RE)	-0.459	-0.492	0.857

Notes: On the diagonal, the square root of AVE; Intercorrelations between constructs are presented below the diagonal; HTMT is shown above the diagonal; Numbers in brackets represent the 95% bias-corrected and accelerated confidence intervals derived from bootstrapping with 10,000 samples.

3.2. Structural model evaluation

Table no. 4 presents the results of the structural model. Regarding the direct effects on recovery experience, heavy work investment indicates a higher path coefficient than job demands. However, all the other direct effects were statistically significant ($p < .01$). Together, both constructs explained 27.2% of the variability in recovery experience (figure no. 2). The effect size was assessed according to the criteria of Cohen (1988), weak ($f^2 > 0.02$), medium ($f^2 > 0.15$) and large ($f^2 > 0.35$). The effect of job demands on heavy work investment was large ($f^2 = 0.817$).

Table no. 4: Structural model estimates

Hypothesis	Path coefficient	*t*-statistic	*p*-value	95% CI BCa	f^2	R^2	$Q^2_{predict}$
H1 (JD → RE)	-0.234	4.005	0.000	[-0.326; -0.134]	0.041	0.272	0.205
H2 (JD → HWI)	0.671	24.531	0.000	[0.622; 0.712]	0.817	0.450	0.445
H3 (HWI → RE)	-0.335	5.919	0.000	[-0.426; -0.237]	0.085		
H4 (JD → HWI → RE)	-0.225	5.632	0.000	[-0.289; -0.158]			

Notes: 95% CI BCa = 95% bias-corrected and accelerated confidence intervals; f^2 = effect size; R^2 = explained variance; Q^2predict = predictive performance.

Regarding the indirect effect tested (H4), it was found that this was statistically significant ($t = 5.632$, $p < 0.01$). That is, HWI mediates the effect of JD on RE. This mediation is complementary because all the *direct* effects on RE, and the *indirect* effect, obtained statistically significant results and in the same negative direction (Nitzl, Roldán and Cepeda, 2016). Finally, the predictive performance evaluation ($Q^2_{predict}$) was carried out both for the constructs (table no. 4) and for the indicators (table no. 2). Values of 0.01, 0.25 and 0.50, indicate a small, medium and large relevance, respectively (Hair et al., 2019). In terms of constructs, JD and HWI were of small and medium relevance, respectively. At the indicator level, effort and time investment showed medium relevance, while psychological detachment from work and relaxation indicated little relevance.

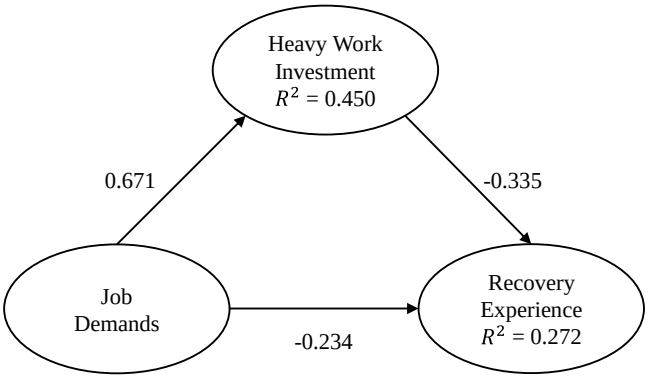

Figure no. 2: Reflective-reflective stage two specification and PLS-SEM results

3.3. Importance-performance map analysis (IPMA)

Two terms are relevant in this analysis, namely, *importance* and *performance*. Importance is equivalent to the total effects of the constructs and indicators when explaining the variable of interest in this study, namely, *recovery experience*. Performance is the mean scores of the constructs and indicators (Höck, Ringle and Sarstedt, 2010). According to the results obtained, at the level of constructs, JD presents a higher *performance* to predict RE, but HWI presents higher *importance* (table no. 5). At the indicator level, *workload* presents a higher performance, and *effort investment* reveals greater importance in the explanation of RE (table no. 5). Thus, effort investment is the indicator to consider for improvement actions in the health sector since it has relative importance for predicting RE and has a lower performance than workload (figure no.3).

Table no. 5: Summary of importance-performance map analysis (IPMA) data

Variable	Importance	Performance
Job demands	-0.459	57.960
Organizational culture	-0.312	50.646
Workload	-0.256	66.863
Heavy work investment	-0.335	56.776
Effort investment	-0.181	64.103
Time investment	-0.203	50.252

4. Discussion

According to the research objectives, the following are the implications of the findings. The results obtained from the model analysis offer empirical support for the hypothesis concerning the negative effect of JD on RE through a significant coefficient. Similarly, the hypothesis of a positive effect of perceived JD on HWI, and the negative impact of HWI on RE, also obtain empirical support. Additionally, there is a significant indirect effect of JD on RE through HWI. These results indicate that there is good reason to accept the four hypotheses delineated in the study.

The findings support the proposal that the health sector can be counted among those organizational cultures where people are highly subjected to work demands and assignments and where consumer demands are high. As denoted by Harpaz and Snir (2014), the employees cannot control stressful conditions such as these that, to cope, requires a heavy investment of effort (Kubicek and Tement, 2016; Fenner and Renn, 2010; Franke, 2015). In the same vein, the investigation supports the supposition that the job demands under study are antecedents that negatively influence the recovery from a work shift, through the experiences of psychological detachment and relaxation (Sonnentag and Fritz, 2007; Snir and Harpaz, 2012).

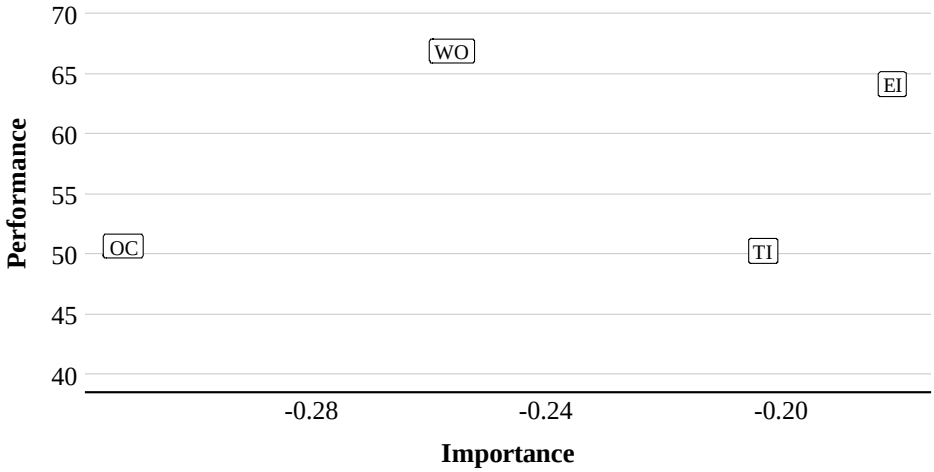

Figure no. 3: Importance-Performance map for indicators
Notes: OC = organizational culture; WO = workload; EF = effort investment; TI = time investment

This study contributes to the validation of the HWI model as it corroborates the claims related to external predictors of HWI. However, it is evident that the possibility of establishing JD driven by social acceleration phenomena will keep uncontrollable and stable in a mid-term (Franke, 2015). For these reasons, JD mentioned in the HWI model could complementary be considered into the theoretical approach of job demands-resources (Bakker and Demerouti, 2014) in order to bear in mind the balance that both elements make explicit.

The investigation results also lend support to the conception that the external predictors, namely, organizational culture and workload, illustrate the need to increase the investment of effort levels in health service delivery. Regarding investor types (Harpaz and Snir, 2014), the study expands the literature on management. It appears that people working in the health sector are pushed to invest (even) higher levels of time and effort to meet their job goals and duties. This phenomenon might explain the high level of presenteeism so embedded in the medical workforce (e.g., Miraglia and Johns, 2016).

Regarding the consequences of HWI, the results help to broaden understanding of the potential adverse effects of increased and continuing activation on health workers' efforts to meet the demands of the healthcare sector. Increased levels of work intensity lead to the need to invest more time and energy in maintaining productivity and performance, which in turn negatively impacts the individual's ability to achieve satisfactory recovery experiences and thereby limit the restoration of physical and mental resources in the short term (Bakker and Demerouti, 2007; Sonnentag and Fritz, 2007; Sandoval-Reyes, Acosta-Prado and Sanchís-Pedregosa, 2019). However, it is important to keep in mind the evidence of the potentially positive outcomes of HWI in various settings, such as the positive association of HWI with low levels of burnout, as recalled in the introductory section (Rabenu et al., 2019).

This study contributes to the understanding of the phenomenon of HWI predictors and consequences in a new population group (Snir and Harpaz, 2012), it also indicates the significance of research on a global scale. As with previous studies conducted with diverse samples (e.g., Romania, United States, Israel), our findings demonstrate that the *situational* investors uniform and that the external factors faced in the world of work are similar in different geographical regions. Additionally, it would be interesting to include additional internal factors in this model, such as addiction to work or passion to work, as they are found to predict positive personal outcomes (Schaufeli, 2016; Houlfort et al., 2014). There is also a need to continue to expand the cross-cultural perspective considering the different job settings.

This study is not exempt from limitations. The use of self-reporting measures at a single moment in time does not enable us to realize generalizations. Therefore, future studies should better focus on longitudinal studies in which people can determine workloads, effort levels, and recovery experiences in time windows associated with their productive cycles or their performance goals and objectives. It would also be useful to have direct measures for the analysis of invested effort (e.g., hours/days worked; task volumes, supervisor reports).

Finally, we note the efficacy of the technology-supported management models with which we examined the role of industry in achieving high level of productivity in the short term. Based on these findings, human resources management practitioners can develop various initiatives that enable them to reduce the impact of job demands on recovery levels. First, they can train their leaders and supervisors to promote an organizational culture that diminishes the demanding nature of the sector by including more supportive leadership or network assistance. Second, HR could also assist supervisors to assume an individual perspective that prevents heavy work investment when unnecessary or when HWI may jeopardize the employee's health. Third, human resources can apply management systems that (a) facilitate effort intensity and time commitment in a regular manner and (b) provide employees the space for recovery experiences. A work pace that requires multitasking and demanding deadlines is common in healthcare services; moreover, the tasks also entail different skills and investments. Consequently, it behooves HR in the healthcare domain to ensure that employees have a good measure of self-control over their assignments, their goals, and the means to achieve them.

Conclusions

The study aimed to examine the mediating role of heavy work investment in the relationship between job demands and recovery experience. Based on the theoretical foundation, four hypotheses were proposed. The hypothetical associations were empirically contrasted and confirmed. PLS-SEM and PLSpredict methods were used to achieve the study objective.

The results found a significant indirect effect of HWI mediating the relationship between high job demands and recovery experience. The study allows academics and practitioners to broaden the understanding of the background and consequences of HWI and gives empirical support to the postulates of the model proposed by Snir and Harparz in Latin America. Furthermore, the investigation contributes to the job demands-resources theory that complements the explanations in the proposed research model.

The findings would have us propose that the management of hospitals and healthcare institutions pay attention to their organizational culture and job demands and how they influence employees' work investment. We further suggest that those healthcare organizations carefully adopt managerial practices that balance work investment and recovery experiences, such as relaxation and psychological detachment from work.

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Appendix

Construct/dimension/indicator	Outer loadings	Outer weights	rho_A	CR	AVE
Job demands					
Organizational culture			0.871	0.891	0.538
1. People are expected to always be available to address work issues beyond their workday.	0.707	0.206			
2. Those who always answer calls, messages and emails are valued even on rest days.	0.715	0.172			
3. People are expected to extend their work time beyond the workday stipulated in their legal contract.	0.777	0.205			
4. People are contacted beyond workday for work matters.	0.799	0.255			
5. It is customary to assign additional work to solve beyond the workday.	0.721	0.236			
6. Those who work longer are considered more productive, even beyond the workday.	0.702	0.128			
7. Those who put their work before their personal life are positively valued at work.	0.711	0.152			
Workload			0.877	0.883	0.603
8. How often does your job require you to work very fast?	0.680	0.156			
9. How often does your job require you to work very hard?	0.777	0.218			
10. How often does your job leave you with little time to get things done?	0.854	0.347			
11. How often is there a great deal to be done?	0.762	0.230			
12. How often do you have to do more work than you can do well?	0.799	0.316			
Heavy work investment					
Effort investment			0.794	0.852	0.537
13. It is increasingly rare to have enough time for work tasks.	0.786	0.318			
14. It is increasingly harder to take time for breaks.	0.825	0.291			
15. The time between the more intense work phases has decreased.	0.663	0.243			
16. One has more often to do two or three things at once (such as eating lunch, writing emails, and talking on the phone).	0.722	0.270			
17. Ever more work has to be completed by fewer and fewer employees.	0.654	0.236			
Time investment			0.787	0.870	0.691
18. Generally, my workday extends beyond my working hours.	0.805	0.391			
19. My responsibilities force me to spend more time depending on my work, even on rest days.	0.898	0.445			
20. It is natural to bring some work to finish it at home.	0.787	0.363			
Recovery experience					
Psychological detachment from work			0.890	0.931	0.819
21. I forget about work.	0.892	0.364			
22. I don't think about work at all.	0.913	0.376			
23. I distance myself from my work.	0.910	0.365			
Relaxation			0.873	0.907	0.765
24. I do relaxing things.	0.833	0.326			
25. I use the time to relax.	0.890	0.454			
26. I take time for leisure.	0.900	0.361			