Examining the "dark-side" of High Performance Work Systems in the Greek manufacturing sector

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Abstract

Purpose: The present study follows the conflicting outcomes perspective of Human Resources Management (HRM) and examines the effects of employees' perceptions of high performance work systems (HPWS) on job demands (role conflict, role ambiguity, and work pressure) and work engagement (vigor and dedication).

Design/methodology/approach: Structural Equation Modeling (SEM) was used on a sample of 524 front-line employees across three Greek manufacturing companies.

Findings: The findings show that HPWS is negatively associated with all three job demands. Hence, the "critical perspective" is not supported. In turn, role conflict and role ambiguity reduce employees' work engagement, although the third job demand included in the study (work pressure) showed a positive relationship on dedication. Last but not least, this study calculates HPWS as both a system and as subsets of HRM practices, and provides useful insights regarding the differences between the two different measurement methods.

Practical implications: The present study brings further empirical evidence in the HRM field by examining whether HPWS is good or bad for employee well-being. Moreover, the findings underscore the detrimental impact that job demands may have on employees' work engagement, and highlights the fact that HPWS might not necessarily be a "win-win" scenario for employees and employers.

Originality/value: This study follows the most recent developments in the HRM literature and examines the dark (negative) approach of HPWS in the Greek manufacturing sector. Finally, theoretical and managerial implications are drawn for improving our understanding of how HPWS influences job demands and ultimately employees' work engagement.

Keywords: High performance work systems; HPWS; job demands; JDR; Work Engagement
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Introduction

Over the past three decades, there has been a vast amount of research linking systems of Human Resource (HR) practices with positive organizational performance outcomes (e.g., Camps and Luna-Arocas, 2012; Messersmith and Guthrie, 2010). The most common term characterizing such a relationship is known as High Performance Work Systems (HPWS). In a nutshell, HPWS has been described as a system of coherent HR practices that are supposed to improve organizational performance through enhanced employees' skill, motivation, and opportunity to participate at work (Appelbaum et al., 2000).

As far as the past two years are concerned, HPWS still lies at the forefront of the Human Resource Management (HRM) literature (e.g., Brinck et al., 2019; Han et al., 2017; Kim et al., 2018; Messersmith et al., 2018). Overall, most recent research has shifted to the positive contribution of HPWS towards employee attitudes and behaviors, and well-being (e.g., Ananthram et al., 2018; Beltran-Martin et al., 2017; Schmidt et al., 2017) in an effort to unlock the so-called "black-box" (Messersmith et al., 2011). Towards this path, different theoretical perspectives have been used, such as the "human capital path" and the "behavior motivation approach" (Jiang et al., 2012, 2013). In detail, the "human capital path" (Wright et al., 2001) underscores the vital and central role of the human capital in the HPWS – organizational performance relationship. This perspective essentially underscores the importance of HPWS in attracting and developing an organization's human capital, with the ultimate goal to differentiate itself from the competition and to achieve a sustainable competitive advantage (Raineri et al., 2017, p. 3153; see also Jiang and Messersmith, 2018, p. 9). In addition, the "behavior motivation approach" (Jackson et al., 1989) proposes that HPWS essentially impacts organizational outcomes by affecting first individual performance, motivating employees to respond in turn with positive attitudes and behaviors such as "affective commitment", "job

satisfaction" and "work engagement" (e.g., Ang et al., 2013; Messersmith et al., 2011; van de Voorde et al., 2016).

On the other hand, most of the research ignores the consequences of HRM on employee health (Oppenauer and van de Voorde, 2018, p. 313; van de Voorde et al., 2012; van de Voorde et al., 2016, p. 192). Indeed, there are two competing views in the HRM literature with regard to the position of employee well-being in the HRM-organizational performance relationship, namely the "mutual gains" and the "conflicting outcomes" perspectives (van de Voorde et al., 2012). The "mutual gains" perspective suggests that employees and employers both benefit from HRM, and thus HRM fosters employee well-being, which results in improved operational and financial performance. In contrast, the "conflicting outcomes" perspective suggests that HRM has a negative effect on employee well-being. In detail, the main argument is that these high performing HR systems that aim at increasing organizational effectiveness can lead to work intensification, make work more challenging, and increase employee feelings of being exploited (e.g., Jensen et al., 2013; Kroon et al., 2009, p. 510). As a result, employee health outcomes are being reduced (Oppenauer and van de Voorde, 2018, p. 313). For instance, of the HRM practices that are included in the HPWS construct, increased "employee autonomy" may create a more challenging task environment enhancing the levels of stress, depending on the level of workloads imposed on employees by management (Ogbonnaya and Messersmith, 2019, p. 524). In addition, "performance evaluation systems" pressure employees to perform. Hence, they might operate as potential stressors stemming from the continuous improvement in work quality (Topcic et al., 2016, p. 48). Similarly, "continuous education and training" might increase employees' stress via enhanced complexity, as well as via enhanced supervisor expectations. Taking into consideration the manufacturing context and the excessive work that

is required, it can be argued that the extra effort that is asked of employees might lead to increased workload and strain (Topcic et al., 2016, p. 49).

Taking the preceding discussion into consideration, the present study responds to researchers' calls (Boxall et al., 2016) and follows the “critical perspective” (dark aspect) of HPWS. To the best of our knowledge, the majority of HPWS research still focuses on the positive effects on employee outcomes and organizational performance, whereas research focusing on the possible negative effects of HPWS on employees’ health is still in its infancy (e.g., Kilroy et al., 2016; Ogbonnaya and Messersmith, 2019; van de Voorde et al., 2016). However, following the arguments made by Wang and colleagues (2019, p. 2), examining the possible detrimental effects that HPWS might have on employee health will help us acquire a balanced understanding of HPWS. Indeed, there is a necessity to examine not only the “what”, the “why”, and the “how” of HPWS (Boxall, 2012) but also the possible dilemma that organizations might face regarding the benefit or drawback of implementing such systems. Hence, the first goal of the present study is to examine the effects of employees’ perceptions of HPWS on job demands (role conflict, work pressure, and role ambiguity) and work engagement (vigor and dedication) by integrating the Job Demands theory (Demerouti et al., 2001). In doing so, this research is based on data obtained from frontline employees working across three Greek manufacturing companies.

In general, the overall context in which organizations operate contributes to a large extent to the HPWS successful implementation due to the unique situations that characterize economies across the world, and as a result the overall employment (Farndale and Paauwe, 2018). Indeed, the inability to generalize the findings of previous HPWS research has been regarded as a serious limitation that is rooted in the “context” in which studies are being conducted (Boxall and Macky, 2009; Raineri, 2017, p. 3172). For instance, with regard to

Greece, the economic crisis since 2010 caused devastating consequences to the broader Greek economy. Indeed, the "Memorandum of Understanding" altered the working conditions massively (Kouzis, 2016) bringing to the forefront new labor legislations (e.g., disintegration of the collective bargaining system; flexible working schedules; rise of part-time and fixed term contracts). As a result, the HPWS implementation might face the barrier of the state legislation, not to mention that its adoption by manufacturing companies might have the opposite results (i.e. increased pressure and work stress). To the best of our knowledge, the HPWS research in the Greek sector is extremely limited, it is focused solely on the "mutual gains" perspective, and has been mostly conducted in the service sector (e.g., Katou et al., 2014), with one exception (Kloutsiniotis and Mihail, 2020). Hence, it is our belief that the present research will provide the overall HRM literature with additional and useful insights regarding the "mutual gains" vs "conflicting outcomes" dichotomy as it takes place in the Greek manufacturing context.

Finally, according to the HRM literature, the vast majority of researchers calculate HPWS as a unitary index by following a subscale aggregation approach (e.g., Zacharatos et al., 2005), which represents the overall HRM system. However, Jiang et al. (2012) challenge this method based on the argument that different types of HR practices influence important outcomes through different paths, suggesting that the components of HR systems are not perfectly interchangeable with one another in terms of the mechanisms of their impact on the workforce (Jiang et al., 2013, p. 1449). Therefore, Jiang et al. (2012) suggest that the HR practices forming the HPWS construct should be categorized into several sub-dimensions. Hence, through drawing on the "Ability-Motivation-Opportunity" (AMO) framework (Appelbaum et al., 2000), an additional aim of this study is to decompose HPWS into three bundles of practices. Thus, although this study focuses on the overall contribution of HPWS as a system, it also

examines – additionally – the heterogeneous effects of bundles of HRM practices on the relationship between HPWS, job demands and work engagement.

Theory and conceptual framework

HPWS and job demands

The relationship between HPWS and organizational performance has been well established since 1995 and the hallmark study of Huselid (1995). Nevertheless, the most recent HRM literature still focuses largely on the significant role that HPWS has to play on organizational performance (e.g., Fu et al., 2019; Schmidt and Pohler, 2018), on service performance (e.g., Ubeda-Garcia et al., 2017), on employees' performance and productivity (e.g., Cooper et al., 2019; Han et al., 2017; Kim et al., 2018), as well as on the creation of positive employee well-being effects (e.g., Ananthram et al., 2018; Tremblay, 2019; Veld and Alfes, 2017). The latter positive relationships are usually explained by the social exchange theory (Blau, 1964) and the norm of reciprocity. According to these theories employees show the tendency to reciprocate the positive treatment they receive from their employers with positive job attitudes and behaviors (Ang et al., 2013, p. 3091; Hughes et al., 2018). Moreover, implementing HPWS is usually interpreted by employees as a sign that they are valued and respected by the organization. Thus, showing loyalty to the organization is one way for employees to reciprocate the positive treatment they receive from the organization, even if their jobs are emotionally demanding (Bartram et al., 2012, p. 1575). As a result, researchers argue that the "black-box" is essentially deciphered by the positive employee attitudes and behaviors that are generated based on the HR practices that employees experience (Messersmith et al., 2011).

The past few years, however, studies started shifting their focus on the negative well-being effects that may result from the increased employee exploitation that these high performing

systems of HR practices could create (e.g., Behravesh et al., 2020; Kilroy et al., 2016; Meijerink et al., 2018; Ogbonnaya and Messersmith, 2019; Oppenauer and van de Voorde, 2018; van de Voorde et al., 2016; Wang et al., 2019). Most of these studies follow the "critical perspective" of HRM which argues that HPWS can be a management tool to control employees in order to increase organizational performance (Legge, 1995), leading to work intensification, work demands and more stress. As a result, the implementation of HPWS influences negatively employee outcomes (Behravesh et al., 2020, p. 826; see also Garcia-Chas et al., 2016). Overall, this new stream of research that focuses on the critical view of HPWS is generally based on the Job Demands – Resources (JD-R; Bakker and Demerouti, 2014; Demerouti et al., 2001) and the Job Demands-Control (JD-C; Castanheira and Chambel, 2010) models.

According to the central assumption of the JD-R model, two categories of job characteristics are distinguished, namely job demands and job resources (Bakker and Demerouti, 2007). Job demands refer to those "physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological effort and are therefore associated with certain physiological and/or psychological costs". In contrast, job resources refer to those "physical, psychological, social, or organizational aspects of the job that are functional in achieving work goals" (Demerouti et al., 2001). Overall, it is suggested that job demands initiate an energy depletion process that might result in job strain and health complaints, whereas job resources essentially stimulate personal growth and accomplishment and initiate a motivational process (Breevart and Bakker, 2018, p. 346). Similarly to the JD-R framework, the JD-C model suggests that employees will be able to deal with their job demands and reduce any possible negative health outcomes that may occur through their greater levels of control.

Based on the aforementioned paragraph, the main argument of the "critical perspective" is that high levels of HPWS provide employees with increased job demands (see Jensen et al.,

2013; Kroon et al., 2009; van de Voorde et al., 2012), such as increased stress and greater levels of anxiety (e.g., Wood et al., 2012) and work intensification (Ramsay et al., 2000), which in turn cause great harm to the physical and psychological well-being of employees (van de Voorde et al., 2016, p. 194). For instance, selecting skilled and qualified employees increase managers' expectations for higher productivity and organizational performance. Hence, efforts to meet these expectations might lead to strain for employees (Wang et al., 2019, p. 5; see also Ogbonnaya and Messersmith, 2019). Similarly, "training" that does not focus on improvement in employees' skills but feels like a requirement to cover organizational standards might lead to psychological costs among employees causing exhaustion from work load (Behravesh et al., 2020, p. 830). Added to that, extensive training might increase job complexity, not to mention that developing programs that occupy regular working hours will cause issues to employees completing their work tasks. Hence, strain is increased (Wang et al., 2019, p. 5). The same stands for "performance management" practices. Indeed, these practices essentially encourage employees to pursue higher ratings, thus demanding sustained effort and – as a result – increased strain (Oppenauer and van de Voorde, 2018). Furthermore, "participation in decision-making", and "information sharing" provide employees with opportunities to make decisions with regard to their work tasks. However, these practices require additional responsibilities and effort from employees, which will lead to higher levels of strain (Wang et al., 2019, p. 6). Hence, the basic argument is that HPWS has the potential to operate as a contextual stressor due to its intense requirement for greater effort and increased performance that ultimately leads to intensification of job demands (Bartram et al., 2012; Kroon et al., 2009). As a response to these increased job demands, employees are forced to invest additional energy resources which might lead to a number of health problems, such as psychological and physical illness (Wang et al., 2019, p. 6).

Taking the preceding discussion into consideration, the present study focuses solely on the job demands aspect of JD-R theory, and includes three job demands as potential stressors to employees working across three Greek manufacturing companies, namely role conflict; work pressure; and role ambiguity. In detail, role conflict results from violation of the two classical principles (chain of command and unity of command), and refers to the incompatibility of expectation and demands associated with the work role (Rizzo et al., 1970, pp. 150-151; see also Kilroy et al., 2016, p. 6). Role ambiguity, on the other hand, refers to the lack of the necessary information available to a given organizational position, role functions and responsibility (Rizzo et al., 1970, p. 151). Hence, employees experiencing role ambiguity will be unable to determine their role in a given company and how the role performance is measured (Kahn et al., 1964). Overall, role conflict and role ambiguity are considered as "hindrance stressors" (Cavanaugh et al., 2000) that thwart personal growth and goal achievement. These hindrance stressors are detrimental to employee motivation and performance, constraining thus individual development and work accomplishment (Breevart and Bakker, 2018, pp. 342-343). Finally, work pressure has been categorized as a health-related well-being dimension that is related to stressors (Heffernan and Dundon, 2016, pp. 212-213). Van de Voorde et al. (2012, p. 399) concluded that the preliminary evidence obtained from their analysis was in line with the "conflicting outcomes" perspective, suggesting a negative relationship between HRM and health-related well-being. Similarly, Heffernan and Dundon (2016) showed that HPWS was a strong predictor of increased work pressure.

All in all, following the "critical perspective" of HRM, it is expected that HPWS will increase job demands due to the work intensification that these HR systems create and the exploitation they cause on employees (Kroon et al., 2009; Ramsay et al., 2000). Hence, we formulate the following hypothesis.

Hypothesis 1: Employees' perceptions of HPWS will be positively associated with (a) role conflict, (b) role ambiguity, and (c) work pressure.

The relationship between job demands and work engagement

Work engagement has been defined as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (Demerouti et al., 2010, p. 210). In this study, we follow Schaufeli and Bakker (2004) argument who suggest that vigor and dedication are the core components of engagement. Hence, similarly to the van de Voorde et al. (2016) study, absorption is excluded from the present study. In detail, vigor refers to high levels of energy and mental resilience while working, and is characterized by the willingness to invest effort in one's work and persistence even in the face of difficulties. Dedication, on the other hand, refers to a sense of significance, enthusiasm, inspiration, and pride, and is characterized by being strongly involved in one's work (Demerouti et al., 2010, p. 210). At this point it should be noted that vigor and dedication have been characterized as the direct positive opposite of exhaustion and cynicism, the two main dimensions of burnout (Demerouti et al., 2010, p. 210; see also Gonzalez-Roma et al., 2006; van de Voorde et al., 2016, p. 195).

Taking into consideration the negative effects of job demands on employees' health outcomes, one would expect job demands to reduce employees' work engagement. However, it should be noted that the relationship between job demands and work engagement is not clear. According to Breevart and Bakker (2018, p. 346), the inconsistent findings can be explained by the challenge stressor – hindrance stressor framework (Cavanaugh et al., 2000). According to this theory, all job demands cost energy. However, some demands – called hindrance demands - hinder personal development and goal achievement, whereas others – challenge demands -

create opportunities for personal growth and achievement. For instance, hindrance demands (e.g., role conflict, and role ambiguity) can be regarded as unnecessary obstacles toward goal achievement and personal learning that demotivate employees. In contrast, challenge demands (e.g., workload and time pressure) result in a sense of accomplishment when they are overcome. Indeed, studies have validated the negative relationship between hindrance demands and employee engagement (e.g., Breevart and Bakker, 2018; Crawford et al., 2010).

Moving a step further, the negative effects of job demands on work engagement could also be explained by taking a closer look at the JD-R model. Indeed, according to the "health impairment" process, high job demands may exhaust employees' mental and physical resources and may therefore lead to the depletion of energy, emotional exhaustion, and overall burnout as an individual stress response (Bakker and Demerouti, 2007; Maslach et al., 2001), which is considered as the direct opposite of work engagement (Demerouti et al., 2010 p. 211; van de Voorde et al., 2016, p. 195; see also Gonzalez-Roma et al., 2006). In other words, high efforts to compensate for the high job demands to achieve work goals comes with physical and psychological costs, which exhaust employees and eventually cause burnout (e.g., Schaufeli and Bakker, 2004). Thus, employees feel unable to overcome these job demands, and as a result they can no longer dedicate their efforts to the work task (Crawford et al., 2010). Indeed, studies seem to validate these findings. For instance, van de Voorde et al. (2016) showed that work demands (work overload and time pressure) are negatively associated with vigor and dedication, whereas Oppenauer and van de Voorde (2018) confirmed the positive relationship of work overload on emotional exhaustion. Similarly, Kilroy et al. (2016) showed a positive relationship between job demands (role conflict and role overload) emotional exhaustion and depersonalization, although this relationship was not significant for role ambiguity. Taking the

above discussion into consideration, we expect job demands to be negatively associated with work engagement. Hence, we formulate the following hypotheses.

Hypothesis 2a: Role conflict will be negatively associated with (i) vigor, and (ii) dedication.
Hypothesis 2b: Role ambiguity will be negatively associated with (i) vigor, and (ii) dedication.
Hypothesis 2c: Work pressure will be negatively associated with (i) vigor, and (ii) dedication.

The mediating role of job demands

In light of the previous analyses, we expect employee perceptions of job demands to mediate the relationship between HRM practices encompassing the HPWS construct and employees' work engagement (see Castanheira and Chambel, 2010; Jensen et al., 2013; Kroon et al., 2009). However, it should be noted that research linking HPWS and work engagement through job demands is still in its infancy, whereas the so-far evidence is inconclusive. What seems to be clear, however, is the fact that exposure to high job demands will ultimately diminish individual's resources. Hence, prolonged exposure to such job demands will inevitably lead to burnout, and feelings of lack of personal achievement and emotional exhaustion (Behravesh et al., 2020, p. 832). Put differently, when employees feel unable to deal with these demands, they will become unable to dedicate their efforts to their work tasks (Crawford et al., 2010). Hence, under such cases where employees experience high levels of quantitative workloads, their work engagement will likely decrease (van de Voorde et al., 2016, p. 196). To our knowledge, van de Voorde et al. (2016) examined the mediating effect of job demands in the relationship between HPWS and work engagement. In their study, although they confirmed the negative relationship between job demands and work engagement, the effect of HRM on job demands was not significant precluding thus any mediation effect. Similarly, Meijerink et al. (2018)

showed that employee perceptions of HRM systems had no effect on hindering job demands. Hence, they concluded that work engagement depends on the extent that these systems activate employees to pro-actively increase job resources or seek challenging job demands. Ogbonnaya and Messersmith (2019), on the other hand, showed that perceptions of the HPWS (measured as both system of practices and bundles of practices) were associated with increased job demands, which contributed in turn to higher levels of stress among employees. To move a step further, other researchers examined the mediating effect of job demands on the relationship between HPWS and burnout. For instance, Kilroy et al. (2016) confirmed the mediation effect of two types of job demands (role conflict, and role overload) on emotional exhaustion and depersonalization, whereas Oppenauer and van de Voorde (2018) showed that work overload positively mediates the relationship between HPWS practices and emotional exhaustion.

In accordance with the previous paragraph, based on the "critical perspective", we anticipate a positive relationship between employees' perceptions of HPWS and job demands, which in turn will reduce employees' feelings of work engagement (vigor and dedication). Overall, taking into consideration the "health impairment" process of the JD-R model, we expect HPWS to have an impact on work engagement through the shaping of job demands (role conflict, role ambiguity, and work pressure). Hence, we hypothesize as follows.

Hypothesis 3a: Role conflict will mediate the relationship between employees' perceptions of HPWS and (i) vigor, and (ii) dedication.

Hypothesis 3b: Role ambiguity will mediate the relationship between employees' perceptions of HPWS and (i) vigor, and (ii) dedication.

Hypothesis 3c: Work pressure will mediate the relationship between employees' perceptions of HPWS and (i) vigor, and (ii) dedication.

Figure 1 depicts our conceptual framework

FIGURE 1 near here

Method

Procedure and sample

The data reported in this paper are drawn from a survey conducted in three manufacturing companies based in the broader areas of Athens and Thessaloniki, Greece, in spring 2019. The specific companies are among the most advanced companies in Greece, while the two of them engage over 1500 employees. For the purposes of our study, data was collected from the companies located in one area of Greece only, whereas the HR manager of each company was personally informed about the purpose of the study. The paper-based questionnaires were handed personally to the HR manager, while it was kindly asked of him/her to distribute these questionnaires to all employees with a focus on front-line staff (Boxall et al., 2016; Pass, 2017). Finally, all employees were informed regarding the anonymity of their responses, as well as on the voluntary nature of participation.

Overall, a total of 747 questionnaires were distributed (433 to company A, 153 to company B, and 161 company C) and 524 were returned (369 from company A, 82 from Company B, and 73 from company C), yielding a 70.1% response rate, in a closed envelope. Of these respondents, 69% were male and 31% female. The average age of the participants was 38 years (SD = 9.1). In addition, 23% of the employees held a bachelor's degree, while 16% held postgraduate qualifications. 45% of the employees were high school graduates, while the remainder (16%) had other qualifications. Employees had worked on average for about 10.7 years in their current job (SD = 10.2). Finally, all employees had a fulltime contract.

Measures

Exploratory Factor Analysis (EFA) was performed for all measures used in this study (maximum likelihood extraction method; promax rotation) with a cutoff value of 0.50 to indicate satisfactory loading.

High performance work systems

For this study, HPWS was calculated first as a system of HR practices. Specifically, the HR practices used were adapted from established scales or existing measures of HR systems (Delery and Doty, 1996; Prieto and Santana, 2012; Sun et al., 2007; Zacharatos et al., 2005) and taking into consideration the Greek context. Overall, a total of 25 items were used encompassing seven subscales, including recruitment and selection; training and development; employment security; performance management; incentives and rewards; participation in decision making; and employee autonomy. Employees were asked to report the extent to which these HR practices are experienced by them on a five - point scale ranging from 1 (totally disagree) to 5 (totally agree). For this analysis, the seven subscales were used to create and calculate a unitary index for HPWS by following a subscale aggregation approach (see Ang et al., 2013; Zacharatos et al., 2005). The HPWS scale yielded a coefficient alpha of 0.919.

In addition, HPWS was also calculated as bundles of practices (Appelbaum et al., 2000; Lepak et al., 2006) that include Abilities (Recruitment and selection; Training and development; $\alpha = 0.884$), Motivation (Employment security; Performance management; Incentives and Rewards; $\alpha = 0.879$), and Opportunities (Participation in decision making; Employee autonomy; $\alpha = 0.737$). This "bundling" approach has attracted significant attention during the past two years (e.g., Cooke et al., 2016; Fu et al., 2015; Heffernan and Dundon, 2016; Jiang and Messersmith, 2018; Ogbonnaya and Messersmith, 2019).

Job demands

Three types of job demands were included in this study, namely role conflict, role ambiguity, and work pressure. For all three job demands, participants responded on a five – point scale ranging from 1 (totally disagree) to 5 (totally agree).

Role conflict was assessed by an eight-item scale based on Rizzo et al. (1970). Sample items include "I have to ignore and even break a rule or policy in order to carry out a task". Cronbach's alpha was 0.805.

Role ambiguity was assessed by a six-item scale developed by Rizzo et al. (1970). Sample items include "It is clear what the objectives of my job are". Similarly to Rizzo et al. (1970), the role ambiguity variables were considered inversely. Hence, higher numbers represented lower levels of ambiguity. Cronbach's alpha was 0.823.

Work pressure was assessed by a nine-item scale that was adapted from the Job Content Questionnaire (Karasek, 1985). Sample items include "I'm required to do excessive work". Cronbach's alpha was 0.784.

Work engagement

Work engagement (vigor and dedication) was measured based on the Oldenburg Burnout Inventory (OLBI; Demerouti et al., 2010) scale. Participants responded on a five – point scale ranging from 1 (totally disagree) to 5 (totally agree). Specifically, *vigor* was assessed by using four items, including "After work, I tend to need more time than in the past in order to relax and feel better" (R). Cronbach's alpha was 0.820. (R) means reversed item. Similarly,

dedication was assessed by using three items, including "I find my work to be a positive challenge". Cronbach's alpha was 0.757.

Control variables

We controlled for a number of individual-level variables, including gender (male or female), age (in years), education (1 = High school graduate, 2 = Bachelor's degree, 3 = Master's degree or doctorate, 4 = other), tenure (in years), type of employment (1 = full time, 2 = part time), job position (1 = Top level manager, 2 = Managerial staff, 3 = Front-line employee, 4 = other), working hours per week, and children at home (yes / no). The set of variables that are included in this study is consistent with previous research (e.g., Macky and Boxall, 2007; Ogbonnaya and Messermith, 2019). According to the analysis, however, none of the above-mentioned demographic variables had any effect on our model. Hence, the reported results are presented with the demographic variables omitted.

Method of Analysis

In assessing our proposed model (see Figure 1), we used structural equation modeling (SEM) with the use of AMOS (version 20) statistical software. SEM has the advantages of performing a simultaneous test of the causal relationships among multiple variables in a model, while controlling of measurement error and providing information on the degree-of-fit of the tested model (Williams et al., 2009; see also Kloutsiniotis and Mihail, 2017, p. 43). For measurement and baseline SEM analyses, multiple model fit indices were assessed and reported as generally suggested by SEM scholars (Hair et al., 2010; Hu and Bentler, 1999), namely the ratio of the χ^2 statistic (CMIN) to its degrees of freedom (df), the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI),

and the Standardized Root Mean Square Residual (SRMR). The recommended thresholds are χ^2/df ratio < 5, RMSEA < 0.08, CFI > 0.90, TLI > 0.90, SRMR < 0.08.

Analytical strategy, common method bias and evaluation of full measurement model

Taking into consideration that all measures in the present study were collected from a single source (employee surveys) at one-time point, a number of steps were followed so as to mitigate the threats of Common Method Variance (CMV). To begin with, we followed Podsakoff et al. (2003) procedural remedies during the questionnaire design. For instance, proximal separation was used in the questionnaire design, positively and negatively worded items were used throughout the questionnaire where possible, whereas established scales were used in keeping questions simple, specific, and concise so as to avoid ambiguous items which are considered as main sources of CMV. Moreover, two additional tests were applied. First, a series of confirmatory factor analyses (CFAs) were performed. Specifically, a full measurement model was tested in which the seven HRM practices loaded onto one HRM factor while the indicators for all other variables loaded onto their respective factors. All factors were allowed to correlate. The six-factor model showed a good model fit (x^2/df = 3.683; RMSEA = 0.072; CFI = 0.946; TLI = 0.912; SRMR = 0.074). Next, sequential χ^2 difference tests were carried out. Specifically, the full measurement model was compared to alternative nested models where (a) role conflict, role ambiguity, and work pressure (x^2/df = 9.870; RMSEA = 0.130; CFI = 0.883; TLI = 0.845; SRMR = 0.094), and b) all variables (x^2/df = 10.816; RMSEA = 0.137; CFI = 0.865; TLI = 0.829; SRMR = 0.12) were combined into a single factor. Results of the measurement model comparison revealed that the full measurement model fitted the data better and obtained a better fit than all other models. Overall, this suggests that the variables in this study are distinct. Moreover, as an additional test to further assess CMV we used the Common Latent Factor

(CLF) method in AMOS. According to the results, the chi-square difference test between a zero-constrained and unconstrained model showed no indication of method bias. Therefore, and based on the results of both tests, CMV is not likely to be an issue in our analysis.

Results

Table 1 shows the means, standard deviations, reliabilities (in parentheses) and bivariate correlations among the study variables.

TABLE 1 near here

As can be evident by table 1, all of the Cronbach's alpha coefficients were greater than 0.70, while the majority were greater than 0.80. Hence, it can be concluded that internal consistency reliability of the study measures was excellent. In addition, as was stated on the preceding section the CFA for the full measurement model yielded acceptable fit to the data.

<u>HPWS, and job demands</u>

Hypothesis 1 proposed that HPWS will be positively associated with (a) role conflict, (b) role ambiguity, and (c) work pressure. However, as is shown in Table 2 HPWS is negatively associated with all three job demands, namely (a) role conflict ($\beta = -0.520$, $p < 0.001$), (b) role ambiguity ($\beta = -0.383$, $p < 0.001$), and (c) work pressure ($\beta = -0.211$, $p < 0.001$), respectively. Hence, in contrast to the "critical perspective" of HRM, HPWS does not seem to cause any increase to employees' perceived job demands via work intensification. On the contrary, HPWS reduces all three job demands. Hence, hypothesis 1 is rejected.

TABLE 2 near here

Job demands, and work engagement (vigor and dedication)

Hypothesis 2 proposed that all three job demands will be negatively associated with work engagement (vigor, and dedication). According to the findings, role conflict is negatively associated with vigor (β = -0.190, $p < 0.001$) and dedication (β = -0.408, $p < 0.001$), respectively. Hence, hypothesis 2a is supported. Role ambiguity, in turn, is negatively associated with dedication (β = -0.331, $p < 0.001$). However, although the relationship between role ambiguity and vigor is negative, the effect is not statistically significant (β = -0.048, ns). Hence, hypothesis 2b is partly supported. Finally, the findings show that although work pressure is negatively associated with vigor (β = -0.406, $p < 0.001$), its effect on dedication (β = 0.288, $p < 0.001$) is positive. Thus, hypothesis 2c is partly supported.

Mediation analyses

Hypotheses 3a, 3b, and 3c proposed that all three job demands (role conflict, role ambiguity, and work pressure) will mediate the relationships between employee perceptions of HPWS and work engagement (vigor, and dedication). In order for mediation to exist, the indirect effects between the independent (HPWS) and the dependent (work engagement) variables should be statistically significant (MacKinnon et al., 2007; Zhao et al., 2010, p. 200). Following previous studies (Ogbonnaya and Messersmith, 2019, p. 518) the indirect relationships via all three job demands were estimated on the basis of the product-of-coefficient ($\alpha\beta$) approach (MacKinnon et al., 2002), whereas the statistical significance for the indirect relationships was validated by using the bootstrap analysis (2.000 samples) option in AMOS. As table 3 shows, the indirect paths from HPWS to vigor ($\alpha\beta$ = 0.073, $p < 0.001$) and dedication ($\alpha\beta$ = 0.103, $p < 0.001$) via

role conflict are significant and positive. Hence, H3a is supported. Similarly, the indirect path from HPWS to dedication via role ambiguity is significant and positive ($\alpha\beta = 0.061$, $p < 0.001$). Hence, hypothesis 3b(ii) is supported. However, since the relationship between role ambiguity and vigor is not statistically significant, no mediation can exist. Hence, hypothesis 3b(i) is rejected. Finally, the indirect path from HPWS to vigor via work pressure is significant and positive ($\alpha\beta = 0.063$, $p < 0.001$), supporting thus hypothesis 3c(i). However, the indirect path from HPWS to dedication via work pressure is significant and negative ($\alpha\beta = -0.029$, $p < 0.001$). Hence, although H3c(ii) is supported, it should be noted that in contrast to our initial prediction HPWS reduces work pressure which in turn positively affects dedication. Hence, work pressure mediates negatively the proposed relationship.

TABLE 3 near here

The AMO framework

Finally, as was stated in the introduction section of this article, an additional goal of this study is to examine HPWS as separate bundles of practices by following the abilities-motivation-opportunities framework (Demerouti et al., 2001; Jiang et al., 2012; Jiang et al., 2013). The new model that was based on the AMO framework showed acceptable fit to the data ($x^2/df = 3.687$; RMSEA = 0.072; CFI = 0.951; TLI = 0.912; SRMR = 0.074). However, and following the study of Ogbonnaya and Messersmith (2019, p. 518), we decided to examine the AMO framework by estimating three separate structural models for each HRM subdimension (that is the Abilities, Motivation, and Opportunities HRM subdimensions respectively) in an effort to isolate the effects of each HRM subdimension and ensure that they do not suppress one another. Control variables were also included for each model.

As can be evident by Table 4, the three HRM subdimensions show similar results as compared to the HPWS construct. Specifically, the findings of the "Abilities" HRM sub-dimension (direct and indirect effects) are very similar to the HPWS ones, followed by the "Motivation" sub-bundle. Although still statistically significant, the direct and indirect effects of the "Opportunities" HRM sub-dimension were the smaller ones. Moving a step further, in an effort to be consistent with the broader literature in the HRM field of study (see Ogbonnaya and Messersmith, 2019, p. 521), we also examined the effects of all three subdimensions in a single analysis. According to this analysis, the "Abilities" bundle showed the only significant effects, decreasing all three job demands. Indeed, the other two remaining bundles (Motivation and Opportunities) showed no significant effect on neither job demands. Hence, it seems that the "Abilities" bundle of practices has the most significant association with the "role conflict", "role ambiguity", and "work pressure" job demands, suppressing the effects of the other two bundles. Hence, in line with the Ogbonnaya and Messersmith (2019, pp. 522-523) study, our findings also underscore the necessity for more contingency-driven models to better understand the mechanism through which these HR systems operate.

TABLE 4 near here

Discussion and conclusions

The current study contributes to the HRM literature by providing empirical evidence linking HPWS to work engagement through the mediating role of job demands. In particular, this study finds that HPWS is negatively associated with job demands such as role conflict, role ambiguity and work pressure. Accordingly, this study rejects the "exploitation hypothesis" or the "conflicting hypothesis", and is in line with studies following the "optimistic" or "mutual gain" perspective (e.g., Kilroy et al., 2016). Indeed, HPWS seems to act as a necessary resource (Demerouti et al., 2001) making employees able to mitigate the negative effects of job demands. Hence, our findings are in line with the mainstream literature of HRM, suggesting that these systems of HR practices help employees experience greater control over their work (Oppenauer and van de Voorde, 2018, p.316). As a result, employees are enabled to overcome any stressful work conditions that they might experience (Ogbonnaya and Messersmith, 2019, p. 515). Thus, consistent with the "JD-R" model, this study validates the role of HPWS as an important resource instrumental to employee well-being (Kilroy et al., 2016, pp. 420-421).

Although the findings of the present study provide support to the "mutual gains" perspective, a debate seems to be emerging across the HRM literature as to why that is the case. Specifically, following the qualitative study of Peccei and van de Voorde (2019), two particularly importance issues are coming to the surface regarding the relationship between HPWS and job demands (see also Kloutsiniotis and Mihail, 2020, pp. 572-573). The first issue is related to the boundary conditions in the HPWS approach (Han et al., 2020, pp. 6-8). In detail, employees' individual resources (i.e.. human capital; psychological capital; social capital) might influence their perceptions regarding the usefulness of HPWS which lead in turn to the negative effects of HPWS on job demands (see also Bowen and Ostroff, 2004). On the other hand, employees who do not possess an adequate amount of resources might not be able to overcome the workloads

that are imposed by HPWS. Hence, the relationship between HPWS and job demands will become positive. For instance, Wang et al. (2019, p. 22) showed that employees' "Core self-evaluations (CSE)" and "Servant leadership (SL)" acted as boundary conditions. Indeed, their findings showed that both CSE and SL have the ability to protect employees from the harm of HPWS. Thus, they concluded that the undesirable outcomes stemming from HPWS cannot be regarded as unconditional or inevitable, rejecting both the "optimistic" and "pessimistic" perspectives (p. 22). Similarly to the preceding discussion, the second crucial issue concerns the possible existence of curvilinear relationships or reversed causal relationships (see Han et al., 2020; Ogbonnaya and Messersmith, 2019; Oppenauer and van den Voorde, 2018, p. 332;). Based on the argument made by Ho and Kuvaas (2019, p. 2), HPWS might be beneficial up to a certain point. However, the excessive implementation of HPWS over and beyond this level might cause negative effects on employee well-being and firm performance resulting in a U-shaped relationship. Put simply, based on this theory, after a certain level of implementation the negative relationship between HPWS and job demands might become positive. Indeed, Ho and Kuvaas (2019) did provide support for such an effect, although Oppenauer and van de Voorde (2018, p. 323) did not find evidence of such a curvilinear effect of HPWS. Hence, even though this theory seems promising and needs increased attention, it is yet to be confirmed.

Moving a step further, the current study supports the "homology" perspective (Kozlowski and Klein, 2000), in the sense that sub-bundles of HPWS such as "Ability", "Motivation" and "Opportunities", influence neighboring factors such as role conflict, role ambiguity and work pressure, following the same structure. Indeed, the results in this study indicate that the three HPWS sub-bundles used influence directly (in absolute terms) the neighboring factors under the same degree of importance. In other words, irrespectively of the sub-bundle of HPWS role conflict is influenced the most, followed by role ambiguity and lastly by work pressure. This

result is particularly important with respect to previous studies' arguments which suggest that different sets of HR practices may impact the same outcomes in a heterogenous way (e.g., Jiang et al., 2012, van de Voorde et al., 2012). Thus, in contrast to the Oppenauer and van de Voorde's (2018, p. 313) argument, this study reveals the same effects of HPWS - measured either as a "system" or as "bundles of practices" - on all three job demands. This finding is of extremely crucial for developing HRM strategies with respect to job demands. Indeed, all three bundles of practices are directly related to job demands, which in turn influence work engagement. As a result, extreme caution should be paid to the careful implementation of these HR practices (Kloutsiniotis and Mihail, 2020, p. 574).

In addition, the current study contributes further to the HRM field, by examining the underlying mediating mechanism of job demands in the relationship between HPWS and work engagement. First of all, our study does not support the partially mediating mechanism, but instead, is supporting the full mediating mechanism through job demands. In particular, the "Abilities", "Motivation" and "Opportunities" enhancing HRM practices by reducing employees' stress experiences due to lower levels of role conflict improve employees' vigor and dedication (Ogbonnaya and Messersmith, 2019). The impact of the three HRM sub-bundles practices, through the lower levels of role ambiguity, found to be non-significant on vigor and positive on dedication, indicating that employees' stress experiences were not reduced enough to at least improve employee vigor. Finally, the impact of the three HRM sub-bundles practices, through the lower levels of work pressure, found to increase employees' vigor but to decrease dedication, indicating that employees' stress experiences were not changed enough to at least improve employee dedication. Nevertheless, the similarity of the impact on employee's vigor and dedication of each job demand individually as a mediating mechanism in the relationship between the three HRM sub-bundles and work engagement, support also the homology

perspective of the mediating mechanism of job demands. In general, the current study supports that lower levels of role conflict have a positive impact on vigor and dedication, lower levels of role ambiguity have independent impact on vigor and dedication, and work pressure have a trade-off impact between vigor and dedication (Ogbonnaya and Messersmith, 2019).

Theoretical Implications

Overall, our study has theoretical implications for HRM research. First, it adds to the debate whether HRM practices developed for improving employee behaviors such as employee engagement, and in turn organizational performance, are the same that promote employee well-being (van de Voorde et al., 2012). Our study produced empirical evidence that these HRM practices are in general the same. Second, it adds debate whether separate HRM bundles have differential impacts on job demands. Our study produced empirical evidence that although the structure of the separate HRM bundles impact on job demands is homological between bundles, the actual impact on well-being is differential. Third, it adds debate whether employee well-being improves employee behaviors. Our study produced empirical evidence that although the structure of each job demand individually is homological across HRM bundles, the impact of job demands on employee engagement is differential ranging from positive, independent or trade-off impact with respect to vigor and dedication. Fourth, it adds debate whether, in view of the critical school of thought, increases in job demands signify that employees are being exploited and according to reciprocity they show lower work engagement. On the contrary, our study produced empirical evidence that decreases in job demands produced differential impact on employee vigor and dedication.

Last but not least, by taking into consideration the crucial role that the context plays in the HPWS literature, it can be argued that the present study contributes in a number of ways as it

takes place in the Greek context. To the best of our knowledge, previous studies that have followed a similar approach with the present study have been conducted in different contexts and countries. Although limited, the so-far literature provides mixed findings, which might be related up to certain level to the actual context in which these studies have been conducted (Farndale and Paauwe, 2018). For instance, Heffernan and Dundon (2016) provided support for the "critical" perspective in the Irish context. In turn, although Oppenauer and van de Voorde (2018) confirmed the heightened demands that HPWS (as a system) transfers on Dutch employees, only "Abilities" and "Motivation" were related to enhanced workload. On the other hand, van de Voorde et al. (2016) confirmed the "mutual gains" perspective in a study conducted in the healthcare sector of the Netherlands. Similarly, Kilroy et al. (2016) rejected the "exploitation hypothesis" in a survey conducted in a Canadian general hospital. Wang et al. (2019), on the other hand, underscored the boundary conditions in the HPWS approach in the Chinese healthcare context and adopted a neutral point of view, neither supporting the "optimistic" perspective nor supporting the "pessimistic" one. In contrast, Ogbonnaya and Messersmith (2019) conducted a study in Finland and found support for both the "mutual gains" and "conflicting outcomes" perspectives, underscoring additionally the heterogenous effects of the subsets of HRM practices. Behravesh et al. (2020) confirmed both perspectives in the Iranian private banking sector. Finally, of significant importance to the present study, Kloutsiniotis and Mihail (2020) provided no support for the critical arguments regarding HPWS in the Greek manufacturing sector. All in all, the preceding mixed findings lead us to the conclusion that generalizations not only should be avoided, but further research is mandatory in order to acquire a more balanced view (Ogbonnaya and Messersmith, 2019, p. 524) with regard to both the "mutual vs conflicting outcomes" perspectives and the "systems vs bundling approach" debate.

Practical Implications

The current study has practical implications for organizations. To begin with, the findings clearly show that job demands have a direct and negative effect on work engagement. Taking into consideration the economic situation of the Greek context, it goes without saying that work pressure is present regardless of the successful HPWS implementation. Hence, management should pay the required attention to the appropriate implementation of HPWS in an effort to maintain the relationship between HPWS and job demands negative. Otherwise, a positive relationship will lead to devastating consequences for both the employees and the organization. (see Kloutsiniotis and Mihail, 2020, p. 575). Following this argument, it has been argued that HPWS is not necessarily a "win-win" project for organizations and employees (Topcic et al., 2016, p. 59). Indeed, improvements in employees' productivity might be at the expense of their well-being. As a result, managers must view HPWS with real caution while paying attention to employee well-being in the decision-making process (Wang et al., 2019, p. 26). For instance, policy makers and managers should reduce job demands and allocate enough resources (e.g., social support by other colleagues and supervisors; flexible schedules) in the HPWS implementation in an effort to buffer the negative effects of job demands and improve work engagement (Behravesh et al., 2020, p. 839).

Moving a step further, the "AMO" approach provides additional information to management and practitioners. Indeed, in cases where organizations may be incapable of adopting an extensive range of HRM practices due to limited resources, they might focus on particular bundles of HR practices for addressing specific business goals (Ogbonnaya and Messersmith, 2019). For example, if the intension of the organization is to develop high dedication among employees, say for expanding in new markets, then it would be more appropriate to develop the abilities HRM bundle. Second, managers should know whether the HRM bundles of

practices they develop send the expected messages to employees. In practical terms to achieve this they should plan a communication process for delivering the larger HRM message that utilizes three attribution features of the so-called "HRM system" (Ostroff and Bowen, 2016; see also Katou, 2013; Katou et al., 2014): "distinctiveness" (refers to features that allow the event-effect relationship to stand out in the environment, thereby capturing attention and arousing interest); "Consistency" (refers to features that allow the event-effect relationship to present itself the same over time, people, and contexts); and "Consensus" (refers to features that produce agreement among an employee's views of the event-effect relationship). These three attribution features of the "HRM system" will ease the level of job demands. Last but not least, considering that role conflict, role ambiguity and work pressure are contingent on HPWS bundles of HRM practices managers should manage appropriately these bundles because they are in fact the resources employees face.

Limitations

This study has some limitations. First, the data was collected using a questionnaire at a single point in time. As a result, the study does not allow for dynamic causal inferences. Researchers, however, argue that "a lot of good work can still be done cross-sectionally, as in the exploration of different theories of employee well-being, especially when a strong theory-driven model is tested through structural equation modelling" (Boxall et al., 2016, p. 109). In our case, the "model fit" indices underscore the robustness of our model. Nevertheless, it goes without saying that the field would greatly benefit from time series or longitudinal studies in the future. Second, all variables were reported in retrospect and based on front-line employees only, raising measurement concerns about recall bias (Blou-Llusar et al., 2016; Lippman and Mackenzie, 1985). Third, the study assumes that the relationship between HPWS and job demands is linear.

As a result it rejects the critical school of thought. However, the field would greatly benefit assuming a curvilinear relationship between HPWS and job demands, giving thus the opportunity to test segments of this relationship (Ogbonnaya et al., 2017). Fourth, the study was applied in the context of the manufacturing sector in Greece, and thus the findings from the Greek sample may not generalize across borders. Future research should consider including other countries that are experiencing similar economic and financial crises.

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Table 1. Means, SDs and correlations (Cronbach's α is in parentheses)

	Mean	***SD***	1	2	3	4	5	6	7	8	9
1. HPWS	3.34	.57	**(0.919)**								
2. Abilities	3.38	.70	.847**	**(0.884)**							
3. Motivation	3.17	.70	.903**	.683**	**(0.879)**						
4. Opportunities	3.54	.66	.693**	.420**	.414**	**(0.737)**					
5. Role Conflict	2.80	.72	-.333**	-.395**	-.305**	-.104*	**(0.805)**				
6. Role Ambiguity	2.05	.59	-.320**	-.291**	-.257**	-.253**	.338**	**(0.823)**			
7. Work Pressure	3.09	.71	-.079	-.118**	-.106*	.058	.577**	.185**	**(0.784)**		
8. Vigor	3.03	.82	.324**	.267**	.346**	.146**	-.404**	-.193**	-.394**	**(0.820)**	
9. Dedication	3.53	.74	.355**	.273**	.332**	.258**	-.235**	-.312**	-.052	.359**	**(0.757)**

Note: *N=524*.

SD, standard deviation,

**p<0.05*

***p<0.01*

****p<0.001*

ns = not significant

Table 2. Results of the hypothesized mediation model (HPWS)

Corresponding paths		beta estimates	Hypotheses Support
Role Conflict	← HPWS	-0.520***	H1 not supported
Role Ambiguity		-0.383***	
Work Pressure		-0.211***	
Vigor	← Role Conflict	-0.190***	H2a supported
Dedication		-0.408***	
Vigor	← Role Ambiguity	-0.048ns	H2b partly supported
Dedication		-0.331***	
Vigor	← Work Pressure	-0.406***	H2c partly supported
Dedication		0.288***	

Note: Standardized coefficients are reported (beta estimates)
*indicates significant paths: *p<0.05, **p<0.01, ***p<0.001, ns = not significant

Table 3. Mediation tests for the HPWS construct

IV	Mediator	DV	Indirect effect (αβ)	Bootstrap 95% Lower level	Confidence interval Upper level	Hypotheses Support
HPWS	Role Conflict	Vigor	0.073***	0.030	0.122	H3a Supported
		Dedication	0.103***	0.074	0.138	
HPWS	Role Ambiguity	Vigor	--	--	--	H3b(i) not supported
		Dedication	0.061***	0.044	0.084	H3b(ii) supported
HPWS	Work Pressure	Vigor	0.063 ***	0.037	0.098	H3c supported
		Dedication	-0.029***	-0.046	-0.017	

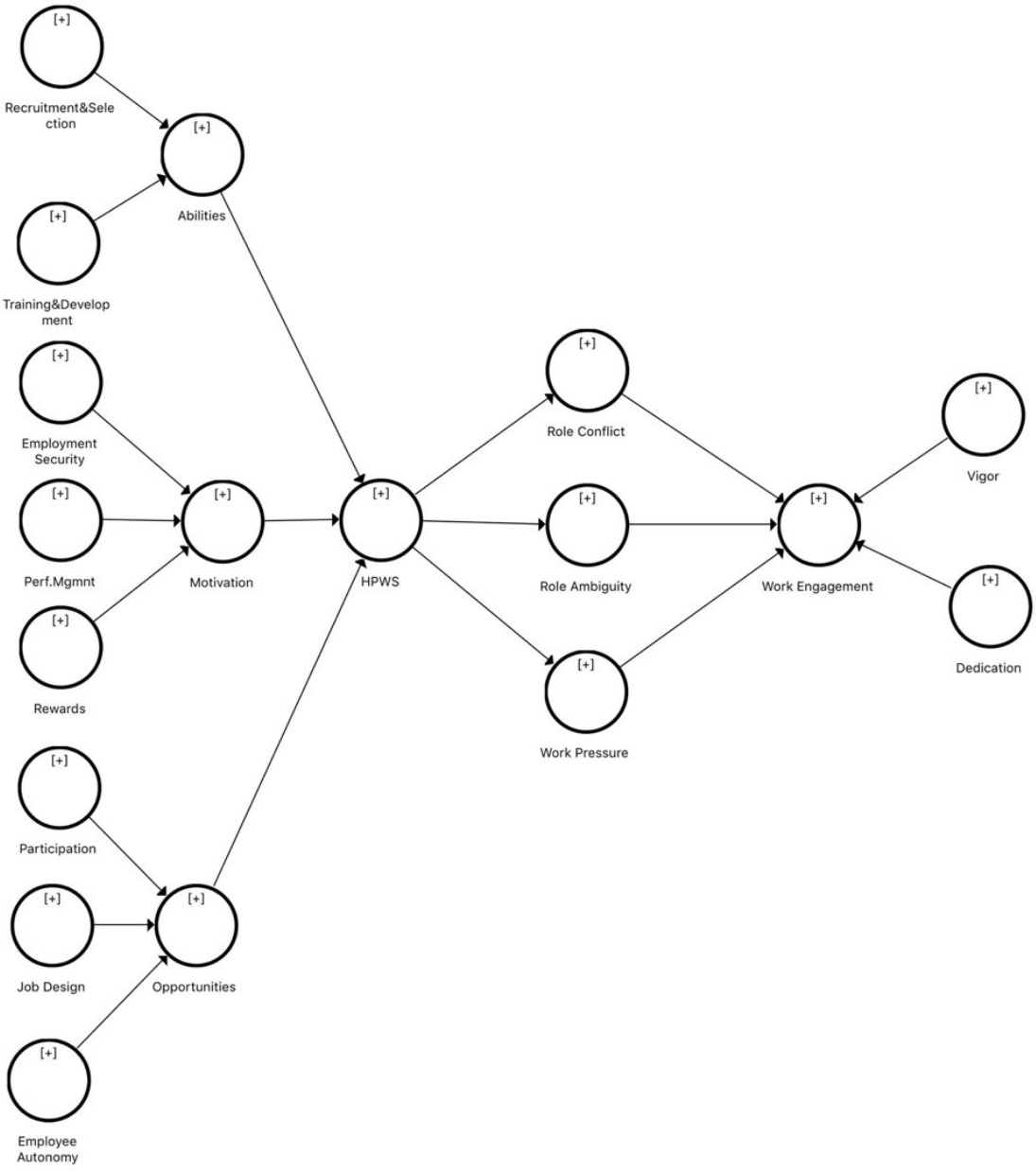
Note: Standardized coefficients are reported (beta estimates)
*indicates significant paths: *p<0.05, **p<0.01, ***p<0.001, ns (not significant)
IV = Independent Variable, DV = Dependent Variable

Table 4. Results of the hypothesized mediation model (AMO framework)

IV	Mediator	Direct Effect	DV	Indirect effect (αβ)	Bootstrap 95% Lower level	Confidence interval Upper level
Abilities	Role Conflict	-0.532***	Vigor	0.075**	0.031	0.124
			Dedication	0.105***	0.076	0.140
	Role Ambiguity	-0.377***	Vigor	--	--	--
			Dedication	0.060***	0.043	0.083
	Work Pressure	-0.218***	Vigor	0.066***	0.039	0.101
			Dedication	-0.030***	-0.047	-0.018
Motivation	Role Conflict	-0.471***	Vigor	0.066**	0.027	0.111
			Dedication	0.093***	0.066	0.128
	Role Ambiguity	-0.368***	Vigor	--	--	--
			Dedication	0.059***	0.041	0.084
	Work Pressure	-0.187***	Vigor	0.056***	0.028	0.093
			Dedication	-0.026***	-0.042	-0.014
Opportunities	Role Conflict	-0.361***	Vigor	0.051**	0.018	0.093
			Dedication	0.071***	0.036	0.108
	Role Ambiguity	-0.266***	Vigor	--	--	--
			Dedication	0.043**	0.016	0.077
	Work Pressure	-0.158**	Vigor	0.048***	0.025	0.089
			Dedication	-0.022***	-0.039	-0.011

Note: Standardized coefficients are reported (beta estimates)
*indicates significant paths: *p<0.05, **p<0.01, ***p<0.001, ns = not significant
IV = Independent Variable, DV = Dependent Variable

Figure 1 The conceptual framework



APPENDIX A **HPWS Measures**

Item loadings are based on Exploratory Factor Analysis for all measures used in this study (maximum likelihood extraction method; promax rotation) with a cutoff value = 0.50)

Abilities (α = 0.884)		
Dimension	Item	Loading
Recruitment & Selection Zacharatos et al. (2005)	The recruitment and selection processes in this organization are impartial	0.502
	All appointments in this unit are based on merit (i.e. the best person for the job is selected regardless of his/her personal characteristics	0.771
	Only the best people are hired to work in this unit	0.797
	Cronbach's α	**0.802**
Training & Development Zacharatos et al. (2005)	Providing employees with training beyond that mandated by government regulations is a priority in this organization	0.574
	This organization subsidises, assists or reimburses employees for training or courses taken outside of the workplace	0.531
	Employees are encouraged to extend their abilities	0.631
	This organization has provided employees with training opportunities enabling them to extend their range of skills and abilities	0.830
	Employees get the opportunity to discuss their training and development requirements with their immediate manager	0.569
	This organization is committed to the training and development of its employees	0.679
	Cronbach's α	**0.860**
Motivation (α = 0.879)		
Dimension	Item	Loading
Employment Security Delery and Doty (1996)	Employees can expect to stay in the organization for as long as they wish	0.614
	It is very difficult to dismiss an employee in this organization	0.782
	Job security is almost guaranteed to employees in this organization	0.921
	Cronbach's α	**0.846**
Perfor. Management Sun et al. (2007)	Performance is more often measured with objective quantifiable results	0.764
	Performance appraisals are based on objective quantifiable results	0.889
	Employee appraisals emphasize long term and group-based achievement.	0.623
	Cronbach's α	**0.851**

Incentives and Rewards Prieto and Santana (2012)	Employees in this organization receive monetary rewards based on their individual performance.	0.679
	Employees in this organization receive monetary rewards based on their group performance.	0.859
	Employees in this organization receive monetary rewards based on the organizational performance.	0.659
	Our company's pay system reflects employees' contribution to the company.	0.624
	Cronbach's α	**0.825**
Opportunities (α = 0.737)		
Dimension	Item	Loading
Participation in Decision Making Delery and Doty (1996)	Employees in this job are allowed to make many decisions	0.749
	Employees in this job are often asked by their supervisor to participate in decisions	0.815
	Employees are provided the opportunity to suggest improvements in the way things are done	0.653
	Cronbach's α	**0.822**
Employee autonomy Zacharatos et al. (2005)	In general, how much influence or input do you have about …	
	The type of work you do	0.794
	How you do your work	0.880
	The pace at which you do your job	0.657
	Cronbach's α	**0.822**
HPWS (α = 0.919)		

APPENDIX B **Job demands, and Work Engagement**

Item loadings are based on Exploratory Factor Analysis for all measures used in this study (maximum likelihood extraction method; promax rotation) with a cutoff value = 0.50)

Job demands		
Dimension	Item	Loading
Role Conflict Rizzo et al. (1970)	I have to do things that should be done in a different way.	0.673
	I receive tasks without having the human resources necessary for completing them.	0.496
	I have to ignore and even break a rule or policy in order to carry out a task.	0.446
	I receive incompatible requests from two or more people at the same time.	0.697
	I receive a task without the adequate materials to carry it out.	0.608
	I work on unnecessary things.	
	Cronbach's α	**0.805**
Role ambiguity Rizzo et al. (1970) *(R) means reverse coded*	It is clear what the objectives of my job are (R)	0.588
	I know what my responsibilities are (R)	0.783
	I know exactly what is expected of me (R)	0.912
	The explanation of what needs to be done is clear (R)	0.650
	Cronbach's α	**0.823**
Work Pressure Karasek (1985)	I'm required to do excessive work	0.513
	I don't have enough time to finish my work	0.642
	I'm exposed to conflicting demands from others	0.547
	My tasks are often interrupted before completion, which requires me to resume them later	0.762
	I'm always in a hurry in my work	0.613
	Requiring the work of other individuals or other services often slows me	0.626
	Cronbach's α	**0.784**
Work Engagement		
Vigor Demerouti et al. (2010) *(R) means reverse coded*	There are days when I feel tired before I arrive at work (R)	0.767
	After work, I tend to need more time than in the past in order to relax and feel better (R)	0.738
	During my work, I often feel emotionally drained (R)	0.648
	After my work, I usually feel worn out and weary (R)	0.681
	Cronbach's α	**0.820**
Dedication Demerouti et al. (2010)	I always find new and interesting aspects in my work	0.654
	I find my work to be a positive challenge	0.695
	I feel more and more engaged in my work	0.765
	Cronbach's α	**0.757**