This is the peer reviewed version of the following article:

Garmendia, A., Elorza, U., Aritzeta, A., & Madinabeitia-Olabarria, D. (2020). High-involvement HRM , job satisfaction and productivity: A two wave longitudinal study of a Spanish retail company. *Human Resource Management Journal*, 1748-8583.12307

which has been published in final form at https://doi.org/10.1111/1748-8583.12307.

This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Use of Self-Archived Versions.

High-involvement HRM, job satisfaction and productivity: a two-wave longitudinal study of a Spanish retail company

Alaine Garmendia[1], Unai Elorza[1], Aitor Aritzeta[2], Damian Madinabeitia-Olabarria[1]

[1]Innovation, Organisational Model and Strategic HR Management, Mondragon Unibertsitatea, Mondragon, Spain

[2]Basic Psychological Processes, University of the Basque Country, San Sebastian, Spain

Abstract

The strategic human resource management (SHRM) literature lacks longitudinal studies, and the causal associations between human resource management (HRM) and organisational performance (OP) remain underexplored. We tested cross-lagged relationships between high-involvement-work-systems (HIWS), job satisfaction and store productivity based on a large longitudinal dataset from the retail sector comprising two waves of data. The first wave (2011) included 6,016 employee responses from 104 stores, and the second wave (2015) included 5,842 employee responses from 94 stores. The quantitative study suggested counterintuitive negative associations. A subsequent qualitative study indicated that the association may have been conditioned by the recessionary action taken by the company in response to financial difficulties. The longitudinal research design, the compilation of data during difficult economic situations, and in a relatively unexplored sector such as the retail industry, helps to shed some light on the universalism of the HRM-OP relationship and its boundary conditions.

What is currently known

• Employee attitudes towards the retail company may determine how they approach customers, and they can be a determining factor in company success.

• There is little empirical evidence regarding the effect of advanced HR practices on employee attitudes and organisational outcomes in retail settings.

• Scholars have questioned the universalism of advanced HR systems and have highlighted the need to understand them in context.

• One area of criticism concerns the poorly understood causality in the HRM-OP relationship and the lack of longitudinal studies in the field.

What this paper adds

• Empirical data to test the HRM-OP linkage in retail.

• Longitudinal data combined with qualitative interviews with the company's management in order to understand the whole process from a temporal perspective.

• Analysis of the HRM-OP linkage in an employee-owned company in a difficult economic situation, i.e. considering two contextual factors, ownership and crisis.

The implications for practitioners

• Retail managers should not expect a direct increase in sales from the implementation of high-involvement HR practices in all contexts or at all time periods.

• Over the long run, however, investment in HRM is crucial given its clear positive relationship with employee job satisfaction in retail.

Keywords: causality; economic crisis; high-involvement work systems; productivity;

retail; strategic human resource management

Introduction

The field of strategic human resource management (SHRM) has demonstrated that advanced HR systems are positively related to organisational performance (OP) (Combs, Liu, Hall, and Ketchen, 2006; Jiang and Messersmith, 2018; Subramony, 2009). However, as the field has evolved, several scholars have identified methodological limitations due to the absence of longitudinal studies (e.g. Fabling and Grimes, 2010; Guest, 2011; Jiang and Messersmith, 2018; Saridakis, Lai, and Cooper, 2017). To date, most studies have been based on cross-sectional data (with some exceptions such as Roca-Puig, Bou-Llusar, Beltrán-Martín, and García-Juan, 2018; Shin and Konrad, 2017), and so do not allow any inference of causality. Thus, the first aim of this study was to make a methodological contribution to the debate on causality. To this end, we tested the causal effect of an advanced HR system, namely high-involvement-work-system (HIWS), on store productivity from a longitudinal perspective, based on a two-wave dataset including a total of 11,858 responses from employees at 104 branches of a large Spanish retail company.

Most studies have focused solely on the analysis of a forward causality relationship (i.e., the effect of HIWS on OP). Based on the idea that more profitable organisations have more resources to invest in HRM, empirical research has provided support for testing reverse causality as well, i.e., the effect of OP on HRM (Guest, Michie, Conway, and Sheehan, 2003; Piening, Baluch, and Salge, 2013; Shin and Konrad, 2017; Wright, Gardner, Moynihan, and Allen, 2005). Scholars have deemed it crucial to include the reverse causality path, because the effect sizes shown in the literature may have been inflated by the failure to consider the effects of prior performance measurements (Gerhart, Wright, McMahan, and Snell, 2000). The second aim of the present study, therefore, is to consider two measurements of both dependent and independent variables and to test the reverse causal path, i.e., the effect of store productivity on HIWS.

The relationship between HRM and OP is assumed to be connected through linking mechanisms that make up what is known as the "Black Box". The supposition is that employees' perceptions of the HR system implemented will impact their attitudes and behaviours, and that these in turn will influence OP (Wright and Nishii, 2013). This rationale assumes two causal associations. First, it has been argued that higher involvement (i.e., job enrichment, which provides employees with opportunities to take responsibility in their work and make what they do more meaningful: Wood and De Menezes, 2011) has a positive impact on job satisfaction (Boxall and Macky, 2014). Second, according to the service-profit chain model (Heskett, Jones, Loveman, Sasser, and Schlesinger, 1994), satisfied employees are more productive and more customer-oriented (Piening et al., 2013) which is likely to increase customer loyalty and thus improve sales. Hence, our third aim is to analyse first the causal linkage between HIWS and job satisfaction, and then the causal influence of job satisfaction on store productivity.

At the same time, OP may influence employee attitudes. Paauwe and Boselie (2005) identified some signalling effects through which this may occur. High performance can be a sign of organisational health, and consequently, of job security. Employees also feel proud of being part of a winning team. Schneider, Hanges, Smith, and Salvaggio (2003) argued that high-performing organisations provide superior benefits to employees, thus raising levels of job satisfaction. The directionality explored in the SHRM literature to date has been from job satisfaction to performance; therefore, to test the possible reverse directionality, the fourth aim of the study is to assess the impact that store productivity may have on employee job satisfaction.

Finally, it is well known that employees are key to company success – especially in retail, where they are the face of the business and have a direct interaction with customers (Kumar and Pansari, 2015). The nature of the retail sector means that customer behaviours

are influenced by the attitudes and behaviours of the employees (Bayraktar, Karacay, Araci, and Calisir, 2018). Customer satisfaction depends strongly on the direct interaction of front-line employees, and these interactions determine whether the customer will or will not return to the service offered (Peccei and Rosenthal, 1997). However, few studies have empirically tested the effect of HRM on OP in the retail sector (Cook, MacKenzie, and Forde, 2016; Jones, Kalmi, and Kauhanen, 2010) and this theoretical rationale remains unsupported. Therefore, the fifth contribution of this paper is to extend the currently limited body of research on the causal association between HRM and OP in the retail sector.

The retail sector

Retail trade is an important source of income in Spain. According to the Spanish Trade Confederation, it represents 5.3% of the gross domestic product (CEC, 2016) and it employs more than 1.67 million people (INE, 2018). Within this sector, 40% of the market share belongs to food retail (CEC, 2016). The company analysed in this study is a Basque cooperative retail chain which comprises cooperative stores (i.e., employee-owned) and subsidiaries. In the cooperative stores the majority of employees are co-owners and, compared with the ordinary employees of subsidiaries, they have certain benefits such as the opportunity to participate in profits, greater involvement in strategic management and job security, among other aspects. The complete network of stores is located around Spain and each has an average of 100 employees assigned to three main divisions – food, clothing and domestic goods – of which the food division is the most important.

The sector is characterised by the presence of low-skilled workers on relatively low salaries. Employees perform repetitive and low value-added tasks such as receiving deliveries, stocking shelves, keeping the store clean and organised, and attending customers at the checkout. Scholars have highlighted the importance of understanding advanced HR

systems in context (Jones et al., 2010). Globalisation and increased competition have compelled service providers to offer something different to their customers and thus, the role of HRM and its impact on employees has become crucial. Therefore, studies of this kind are especially relevant today for retail managers.

Theoretical background and the hypotheses

HIWS and productivity: a two-way relationship

Forward causality refers to the impact that HRM has on OP. One of the most frequently applied models for understanding the HRM-OP relationship is the Ability-Motivation-Opportunity (AMO) model (Appelbaum, Bailey, Berg, and Kalleberg, 2000). According to this model, employees perform well (i.e., for the benefit of the organisation) when they have the necessary capability and adequate motivation, and when their work environment provides opportunities to participate (Marin-Garcia and Tomas, 2016)**.** AMO-enhancing HR practices are considered to impact employee performance and thus contribute to increasing OP (Hauff, Guerci, Dul, and Van Rhee, 2019).

In this study, an AMO-enhancing HR system was measured. We examined four high-involvement HR practices that are regarded as key factors by the company under analysis: (i) training, (ii) work methods autonomy, (iii) information, and (iv) participation in strategic decision-making. Following Boxall and Macky (2009), we assumed that for a HIWS to work it has to positively affect the three dimensions of the AMO model.

The first of these practices, *training*, refers to the company's investment in the professional development of its employees through the learning process. Training comes under the "ability" dimension in AMO and is commonly known as employees' "knowledge, skills and abilities" (KSA) (Boxall and Purcell, 2003). When employers provide training, they are investing in company-specific employee KSA, which enhances the value added by

employees and increases their development, performance and advancement opportunities (Ng, Eby, Sorensen, and Feldman, 2005). For Batt (2002), the knowledge and abilities obtained enable employees in retail to interact effectively with customers. Companies that compete in sales and service delivery (e.g., those in the retail sector) may use a "relationship management" strategy in which they seek to build long-term relationships with customers through the services delivered by employees (Bartel, 2004). The more capable the employees are, the better service they are believed to deliver (e.g., by responding efficiently to customer questions), which is likely to increase sales (Jones et al., 2010).

The second HR practice, employees' *work methods autonomy*, refers to the extent to which employees can determine what they do and how to do it. The freedom to decide how certain activities are carried out may have a favourable impact on workplace motivation (Boxall and Macky, 2014; Gagné and Deci, 2005). Employees are more motivated when they choose what to do and how to do it rather than when these decisions are imposed on them. Therefore, work methods autonomy comes under the motivation dimension of AMO. It also provides employees with opportunities to choose, empowering them to apply their skills and motivation to achieve organisational goals (Jiang, Lepak, Hu, and Baer, 2012); so work methods autonomy can also be seen as an opportunity-enhancing practice. Participation in job design enables employees to learn about the content of their work, and encourages them to be creative and offer suggestions that could increase productivity (Gallie, 2013).

The third HR practice is *information*. Information provided by employers increases employees' understanding of their job, how it creates value, and how it fits into workplace operations. This reduces the impact of hindrance stressors and increases motivation (LePine, Podsakoff, and LePine, 2005). Thus, information could come under the motivation dimension of AMO; equally, as it enhances the opportunity to perform, it can also be considered as an opportunity-enhancing practice (Boxall, Huo, Macky, and Winterton, 2019; Jiang et al.,

2012). More informed employees are likely to have a better understanding of their customer profiles and are thus better placed to address their needs, again contributing to a possible increase in sales.

Participation in strategic decision-making, the fourth HR practice, concerns the leeway given to employees to determine important decisions and targets within the division. Employees may possess valuable information about the service process that management may lack (Jones et al., 2010). Participation in decision-making provides employees with opportunities to leverage their KSA in order to add value and to put forward ideas that could help increase productivity. It therefore comes under the opportunity dimension of AMO. Equally, the leverage of their KSA might increase the willingness of employees to exert efforts and enhance their ability. Therefore, participation in decision-making could also come under the motivation and ability dimensions.

Together, these four HR practices – training, information, work methods autonomy and participation in strategic decision-making – combine skill- and motivation-building with opportunities for engagement in higher-level decision-making. All of this can empower and engage employees by promoting their efficacy and their impact in the workplace (Spreitzer, 1995). Therefore, this study considered the joint effect of these four practices in the implementation of HIWS.

One theme that emerges from the SHRM literature is that while managers claim to put considerable effort into HRM, this effort may not be perceived by employees (Nishii and Wright, 2008). Few analyses of the HRM-OP relationship have considered the HR system as experienced by employees (i.e., perceived HRM, or, in this paper, perceived HIWS). This is a critical area of study, since it is what employees experience that subsequently influences their attitudes, behaviours, and outcomes (Jiang, Hu, Liu, and Lepak, 2017). Therefore, the best way to research this relationship is to understand the processes that underpin it in the manner

in which they are perceived by employees (Boxall and Macky, 2009). To do so, this paper measures employees' perceptions of HIWS.

The assumption that HIWS influences store productivity is a causal one: in order to test it empirically, time precedence is a *sine qua non* condition (Shadish, Cook, and Campbell, 2002). Hence, we expect that:

Hypothesis 1: Perceived HIWS at an earlier time point is positively related to subsequent store productivity

Within the reverse causality approach, however, OP is considered as the cause and HRM is considered as the effect. Better OP is a signal of organisational slack, and previous performance indicators determine the level of slack resources a company can invest in social domains such as HIWS or other advanced HR systems (Shin and Konrad, 2017). On this basis, it has been argued (and empirically demonstrated) that, rather than HRM leading to superior OP, it is organisations that are already high-performing that can afford to implement high-involvement HR practices (e.g., Boselie et al., 2005; Boselie, Paauwe, and Jansen, 2001; Katou, 2012). In this specific case, higher productivity ratios serve as evidence of store efficiency: the more productive a store is, the more effective the service process. Productivity gains can create the organisational slack needed to sustain the implementation of HIWS (Shin and Konrad, 2017). When the store is in financial difficulties, these practices are less likely to be implemented since managers usually focus on the short term and are not willing to invest time and dedication in high-involvement practices (Boselie, 2014). According to the process model of SHRM (Nishii and Wright, 2008), the perception level of practices will depend on their intention and implementation: we assume that the better the economic circumstances in which the practices are implemented, the more likely it is that they will be perceived by employees. Therefore, the second hypothesis is:

Hypothesis 2: Store productivity at an earlier time point is positively related to subsequent perceived HIWS

Service-profit chain

The service-profit chain model (Heskett et al., 1994) describes the relationship between the variables of employee satisfaction and loyalty, productivity, customer loyalty and store profitability. Customer loyalty is a result of customer satisfaction. Customer satisfaction is something that derives from a valued service, and at the same time, this valued service derives from satisfied employees. The service sector has particular characteristics of its own, which mean that customer behaviours are defined by the attitude and behaviours of the service provider's employees (Bayraktar et al., 2018). The fact that customer satisfaction depends on direct interactions with front-line employees influences both present and future customer decisions regarding whether or not to return to the service offered (Peccei and Rosenthal, 1997).

Since the role of the front-line staff is crucial, the creation of a pleasant work environment that seeks to motivate employees is a key issue for retail. Social exchange theory (SET) (Blau, 1964) suggests a norm of reciprocity in which employees reciprocate offerings from their employers. When organisations implement HR practices that invest in employees and provide them with benefits such as development opportunities and advancement, these employees reciprocate these offerings with positive attitudes towards the organisation (Takeuchi, Lepak, Wang, and Takeuchi, 2007).

The positive effect materialises because these practices are experienced by employees as a commitment on the part of the management towards them (Kuvaas, 2008). If through HRM employees feel this commitment, their attitude will be more dedicated to organisational goals. This means that when the HIWS mentioned above are implemented, employees will

perceive them as an investment in their well-being and they may reciprocate with positive attitudes and behaviours towards the organisation. Job enrichment provides employees with opportunities for taking responsibility for their work and for making their work meaningful, and thus increases job satisfaction (Wood and De Menezes, 2011; Zatzick and Iverson, 2011). Therefore, the third hypothesis is:

Hypothesis 3: Perceived HIWS at an earlier time point is positively related to subsequent employee job satisfaction

Walton (1985) claimed that systems like HIWS elicit satisfaction, which in turn increases OP. A satisfied employee might feel the need to reciprocate, for example by being more helpful to their co-workers and customers. When employees are in the store doing a regular activity (e.g., shelving) customers often approach them asking about product locations or for other information; in this situation, a satisfied employee is more likely to attend to the customer in a friendly manner, which is vital for customer satisfaction and for ensuring the return of that customer to the store. The more customers return, the more sales the store will have, and these increased sales will improve its productivity ratios. For example, Schlesinger and Heskett (1994) found that two thirds of customers who abandon service organisations do so because of low-quality interactions with employees. Thus, the fourth hypothesis is:

Hypothesis 4: Employee job satisfaction at an earlier time point is positively related to subsequent store productivity

The effect of store productivity on employee job satisfaction

High-performing organisations are expected to have more slack resources to devote to social domains. This means that they can provide more benefits to their employees. High performance is a sign of organisational health that may lead to both extrinsic and intrinsic rewards. Firstly, organisations with higher performance may have more resources for

increasing employee pay (Paauwe and Boselie, 2005; Schneider et al., 2003). Secondly, high productivity signals that the company is performing well and is achieving the desired objectives (Van De Voorde, 2010). From a positive perspective of "how" these good ratios are achieved, we can argue that this sign of good productivity ratios can motivate employees and help to make them feel proud of being part of the organisation (Paauwe and Boselie, 2005) and satisfied with their work. It can thus be concluded that employees in more productive stores will be more satisfied due to the extrinsic and intrinsic rewards that the company provides. Consequently, our final hypothesis is:

Hypothesis 5: Store productivity at an earlier time point is positively related to later employee job satisfaction levels.

Method

Sample

Data for this study were obtained from the Spanish retail industry, specifically from a large retail chain based in the Basque Country. All the stores analysed were small and medium-sized enterprises with an average headcount of 100 people per store. The dataset was longitudinal, containing two waves of data with a 4-year lag in between. For the first wave (T_1=year 2011), we gathered 6,320 employee responses from 104 stores, with an average response rate of 63%. For the second wave (T_2= year 2015), we gathered 5,958 employee responses from 94 stores. with an average response rate of 66%. The staff was relatively stable during this time; according to the archive data provided by the company, 80% of the staff were employed throughout the four-year period.

We obtained data from two different sources: (i) perceived levels of HIWS and job satisfaction were attained from survey questionnaires, and (ii) productivity measurements were obtained from archive data. Subjects were briefly informed that the study focused on

how they felt about their job environment, their supervisors, and the company they worked for, and they were also told that participation was voluntary. The surveys were part of the organisational culture assessment that the company carries out every four years and included other questions apart from the ones analysed in this study. Participants were asked to answer honestly, and absolute anonymity was guaranteed. The ethical requirements set out by the investigating institution were met.

Measurements

HIWS. Employees' perceptions of their participation in four different high-involvement HR practices were captured as an additive index including *training, participation in decision-making, information* and *autonomy levels*. These perception levels were based on a Likert scale from 1 (strongly disagree) to 6 (strongly agree). One sample item for *training* ($\alpha_{2011\ \text{individual level}}$ =.917, $\alpha_{2015\ \text{individual level}}$ =.926), was "*I feel that the company dedicates sufficient resources to foster my professional development*". *Participation in decision-making* ($\alpha_{2011\ \text{individual level}}$ =.855, $\alpha_{2015\ \text{individual level}}$=.852) included questions referring to whether employees feel that they really have a say in higher level decisions. For example, one item was "*I participate in the definition of the annual targets for my department/section"*. *Information* ($\alpha_{2011\ \text{individual level}}$=.77, $\alpha_{2015\ \text{individual level}}$ =.756) measures perceptions of the amount of information employees received. For example, "*I frequently receive updated information about the performance of my department/section (sales, results, project status, etc.)*". The last dimension, *autonomy* ($\alpha_{2011\ \text{individual level}}$ =.933, $\alpha_{2015\ \text{individual level}}$ =.935) included questions such as "*My job allows me a chance to use my personal initiative or judgement in carrying out my work*". The items in each practice are listed in the appendix. The scales have been validated in previous studies (e.g., Elorza, Aritzeta, and Ayestarán, 2011).

Job Satisfaction. Job satisfaction refers to an individual's overall feeling regarding their job (Spector, 1997). It is composed of three items. One sample item is *"Overall, I am satisfied with the kind of work I do"*. The assessment was based on the validated scale of Rafferty and Griffin (2006) which captures both the affective or emotional feeling associated with the job and the cognitive or rational component related to beliefs about the job. (Scores for the two waves were: α2011 individual level =.827, α2015 individual level =.812). Details of the items can be found in the appendix.

Productivity. We used an operational archival productivity indicator (transformed for normality) calculated as the total sales volume per working hours. It reflects the productivity ratio at the end of the year.

Control variables. Store size and previous measurements of productivity (2009) were used as controls. Company size is one of the most widely used control variables, since the implementation of HR practices is more likely in large companies due to economies of scale. In this study, company size was based on the logarithm of the number of employees per store. Data for past productivity (T_0=year 2009) are included as an independent variable in the model.

Analyses

The final sample consisted of 97 stores and 6,016 responses in 2011, and 85 stores and 5,842 responses in 2015. The stores with a participation below 40% were removed from the analysis; we felt that below this level the sampling error was too high and that setting the threshold at a higher cut-off value (e.g., 60% of participation) would have reduced the final sample considerably.

The sample was split randomly into two subsamples for each wave of analysis to minimise common method bias (Wright et al., 2005). The first half of the sample was used to

measure employees' perception of HIWS and the other half to measure employees' job satisfaction level.

Since no individual follow-up of the respondents was available, employee-related data were aggregated at the company level for the analysis. In order to justify the aggregation statistically, we calculated intraclass correlations (ICC, 1,k) indexes (Shrout and Fleiss, 1979) for each of the items and the scales. For the values in the first wave, the ICC (1,k) for the items ranged from .72 to .86 with a mean of .81, whereas values for the scales ranged from .81 to .86 with a mean of .84. For the values in the second wave, the ICC (1,k) for the items ranged from .69 to .81 with a mean of .80, and values for the scales ranged from .80 to .87 with a mean of .83. All values were above or at the level of the acceptable cut-off value of .70 (Klein and Kozlowski, 2000).

We tested the hypotheses with structural equation modelling (SEM), using a cross-lagged model (CLM) using Mplus software (version 8). A CLM was chosen as this is considered to be one of best techniques for testing causality (Hamaker, Kuiper, and Grasman, 2015). As there were only two waves of data, we decided to build three different CLM models to test all the hypotheses (Figure 1).

[Figure 1 here]

Model 1 included the variables perceptions of HIWS and store productivity. This model was valid to test hypothesis 1 (H1) and hypothesis 2 (H2). Model 2 included the variables perceptions of HIWS and employee job satisfaction levels. This second model was used to test hypothesis 3 (H3). Model 3 included the variables store productivity and employee job satisfaction level and was used to test hypothesis 4 (H4) and hypothesis 5 (H5). In each model, the control variables were modelled as predictors of the first wave variables.

Results

Means, standard deviations, and correlations at the organisational level are shown in Table 1.

[Table 1 here]

For each of the constructs gathered via the surveys, we tested measurement invariance with three confirmatory factor analysis nested models: (i) a configural invariance model; (ii) a weak invariance model, and (iii) a strong invariance model (Little, 2013). Cheung and Rensvold (2002) proposed a ΔCFI of .01 as a threshold for invariance between nested models. In the current study, the results for the measurement invariance tests were satisfactory (see Table 2).

[Table 2 here]

Related to the three CLM, we evaluated four competing models for each of the three models to test causal relationships between variables (Table 3). The first competing model (referred to as P1 in Table 3) is a stability model without cross-lagged effects. The second possible model (P2) is a model including only forward causal cross-lagged effects (e.g., the path from earlier perceptions of HIWS towards later productivity). The third possible model (P3) included only reverse causality as a cross-lagged effect (e.g., the path from earlier productivity towards later HIWS). Reciprocal causal paths were included in the fourth possible model (P4). For the three CLM, chi-square difference tests were considered in order to decide the preferred statistical fit.

In model 1 (Table 3A), P2 referred to H1 and P3 to H2. As the chi square difference test was insignificant, all the possibilities fitted equally well statistically, and none resulted in the preferred model. This meant that the inclusion of the forward causal path hypothesised in H1 had no impact, and nor did the inclusion of the reverse causal path hypothesised in H2. The cross-lagged relationships were not significant, and so H1 and H2 were rejected.

In model 2 (Table 3B), P2 referred to H3. Based on the chi square difference test results, P2 was not the preferred model, indicating that including this path did not improve the statistical fit. This cross-lagged path was not significant and H3 was rejected. Nevertheless, in model 2, the reverse causal path (i.e., the effect of earlier job satisfaction level on later perceived HIWS), P3 appeared to be significant and to improve the model's statistical fit.

In model 3 (Table 3C), P2 referred to H4 and P3 to H5. As the chi square difference test was insignificant, all the possibilities fitted equally well statistically, and none resulted in the preferred model. This meant that the inclusion of the forward causal path hypothesised in H4 had no impact, and nor did the inclusion of the reverse causal path hypothesised in H5. The cross-lagged relationships were not significant and so H4 and H5 were rejected.

[Table 3 here]

Figure 1B presents these results graphically: (i) none of the hypothesised cross-lagged effects were significant, (ii) the variables presented stability since the auto-regressive coefficients were significant (.27 for HIWS, .38 for job satisfaction and .91 for productivity), (iii) control variables were positively related (.53), (iv) HIWS and job satisfaction were positively correlated in both waves (.57 for 2011 and .54 for 2015) and the earlier job satisfaction level positively predicted later HIWS (.27), (v) there was a negative association between HIWS and productivity in 2011 (.-28), (vi) productivity in 2009 (used as a control variable) showed a negative influence on the HIWS (-.28) and job satisfaction levels (-.41) in 2011, and finally, (vii) job satisfaction and productivity were not correlated in either wave.

The results did not confirm our hypotheses, and some of them were counterintuitive: negative associations were found between HIWS and productivity in 2011, between productivity in 2009 and HIWS in 2011, and between productivity in 2009 and job satisfaction in 2011. To explore these issues further, we conducted semi-structured interviews

with two regional managers of the stores. The conclusions extracted from these interviews are detailed below.

Discussion

Our initial conceptual model hypothesised that all the associations would be positive. For instance, we hypothesised that the greater the perception of HIWS among employees, the higher the productivity of the stores (H1). We also assumed that this is a two-way relationship in which the more productive stores have more organisational slack, thus enabling greater investments in HIWS (H2). We also posited that the more enriching the job, the greater the employees' job satisfaction (H3) and thus, the greater their contribution to productivity (H4). The last hypothesis was related to the positive influence that productivity gains are likely to have on employees, making them feel more satisfied when the stores were more productive (H5).

We found support for the idea that more enriched job environments are related to higher job satisfaction values. Results show that HIWS and job satisfaction were positively correlated in both waves. This means that more autonomy, training, information and the ability to participate in strategic-decision making in combination are positively associated with employee job satisfaction. Therefore, these results strengthen the value of HRM.

However, one of the most intriguing findings of the quantitative study was that none of the cross-lagged hypothesised relationships were significant. The qualitative study indicated that the theoretical two-way positive relationship between HIWS, employee job satisfaction and store productivity was negatively affected by recessionary action taken in response to financial difficulties and the ensuing uncertainty. This recessionary action (for example, cost-cutting labour-related measures to offset the organisation's poor financial performance: Wood and Ogbonnaya, 2018) has a negative and direct effect on employees.

The regional managers interviewed stated that 2009 was a difficult economic year and they had been obliged to take recessionary action (e.g., increasing working hours, pay cuts, etc.) to improve their stores' productivity ratios. The effects of this were felt at different time points by different types of employees. In 2011, the employees of cooperatives were the most affected. Co-owners are employed on a one-person one-vote basis, and hence they are considered vital and crucial for the company. The cuts sent employees inconsistent messages about their importance and violated the psychological contracts that they had with the company as co-owners. This in turn contributed to a notable fall in their levels of satisfaction and coloured their attitudes towards their working environment. Scholars agree that in order for employee ownership to generate positive attitudes among staff, it needs to be combined with high employee involvement practices (Blasi, Freeman, and Kruse, 2008). According to Kaarsemaker and Poutsma (2006), for a HR system to work inside a cooperative, it has to send a consistent message to employees and make them feel like real owners.

In 2015, it was the employees of the subsidiaries who were the most affected. Regional store managers stated that the economic situation had not improved since 2011 and that they had had to take stronger measures such as downsizing, closing, or selling subsidiary stores. These restrictive measures applied between 2011 and 2015 seriously damaged the social climate among the staff, which was based on mutual commitment; inevitably, employees' anger and frustration affected their view of the company and their attitudes, behaviours and feelings towards it. As a result, levels of job satisfaction fell notably among the employees of subsidiaries. In this tense situation, the management team started to hold information sessions for the employees of the cooperatives to explain the situation of the company from 2011 because they realised that information was a staple for cooperative members. Furthermore, within the same period, the cooperative stores were transformed into a new model (i.e., more sustainable, more local and more customer-oriented). Thanks to the

implementation of high-involvement management, which provided information and offered greater certainty about the future (Wood and Ogbonnaya, 2018) the level of job satisfaction among the employees of the cooperatives remained stable over this period.

As previously mentioned, in 2011 the level of job satisfaction was significantly lower in employees of the cooperatives. As these were the most productive stores, they presented a negative association between productivity and job satisfaction. However, between 2011 and 2015, the job satisfaction level of the employees of subsidiaries fell to the level of those of the cooperatives, which had remained stable during this period. Therefore, in 2015, there was no clear association between productivity and job satisfaction in either group of employees.

On the other hand, due to its high autoregressive effects, most future productivity was explained by past productivity, thus leaving little margin for HRM to exert an effect. This is consistent with the findings of other researchers who have considered past performance in their analysis (e.g., Guest, 2011). Customers are usually loyal to a specific brand of retail stores because they look for what that store offers (e.g., price, brand identification, quality, etc.). The retail chain analysed in this study was founded 50 years ago in the Basque Country and it could be said that Basque people feel a sense of belonging to these stores. Indeed, the company's market share is six times higher in the Basque Country than in the rest of Spain (Kantar WorldPanel, 2018). One can therefore conclude that store productivity is highly conditioned by external factors such as tradition, feeling of belonging, and branding, and that these factors impose a kind of ceiling effect on productivity levels. This evidence supports the contingency view that retail might not benefit economically from the implementation of HIWS. For Combs et al. (2006), productivity levels of stores are highly conditioned by buyers' decisions and not so much by employees' contributions. In addition, these arguments suggest that productivity may not be a good dependent variable to analyse; in fact, previous

studies have also demonstrated that results of productivity were not supported in the same way as those of other performance indicators (e.g., Guest et al., 2003; Wright et al., 2005).

In addition, Model 2 shows that job satisfaction at an earlier point in time had a positive impact on the perceived levels of HIWS at a later time. This association was unexpected and is not usually included in the models that explain the HRM-OP relationship. A possible explanation of this link is that employee attitudes and behaviours may drive the implementation of HIWS (Wood and Ogbonnaya, 2018). According to the trust cycle, the more positive the attitudes and behaviours employees have towards the organisation, the more the management will trust them and will tend to implement policies that involve them in the business project (Cardona and Elola, 2003).

Moreover, productivity did not influence either the investment in HIWS or employee job satisfaction, so no evidence for reverse causality was found. First, it was hypothesised that the better the productivity ratios, the more likely a company would be to implement HIWS. However, financial difficulties may stop investment even in highly productive stores, due to countervailing financial interests (Thompson, 2011). The qualitative study showed that the retail company opted for direct cost-cutting labour related decisions and other recessionary actions to ensure its survival and did not consider advanced HR practices to overcome financial difficulties. During recessions companies are often under considerable pressure, and so their commitment to employees is always contingent.

It was also argued that the better productivity ratios the store achieved, the more positive signals it would deliver towards its employees, thus raising job satisfaction. However, this signalling effect may not apply in difficult economic circumstances since employee satisfaction may be significantly affected by the pessimism about the company's future (Guest, 2017). In our case, the uncertainty caused by drastic measures had a notable

impact on the views of employees, limiting the likelihood that higher productivity ratios would have a positive impact on employee job satisfaction.

Contribution and conclusion

The SHRM literature lacks longitudinal studies that focus on the causal associations between HIWS and OP. In addition, most of the available empirical evidence derives from analyses of manufacturing samples. By assessing the cross-lagged associations between HIWS, employee job satisfaction levels and store productivity in a Spanish cooperative retail company, and by combining the quantitative results with qualitative interviews, this paper contributes to the SHRM literature in several ways. First, the findings suggest that the association between HRM and store productivity may be conditioned by the recessionary actions that employers adopt in response to financial difficulties. We found that in difficult economic conditions, the need to improve productivity forces managers to implement practices that reduce job satisfaction among employees and sour their perceptions of their work environment. This finding suggests that the economic situation should be considered with care. In addition, the results highlight the importance of good communication, and the provision of quality information, in times of difficulty, in order to reduce resistance from employees. Second, the high autoregressive coefficients of store productivity suggest that retail companies might not always benefit economically from the implementation of HIWS; store productivity is highly conditioned by customer participation, which imposes a ceiling effect. Third, analysing the same relationships at different time points enabled us to evaluate the linkage from different angles. On the one hand, we noted a possible reverse causal effect from employee attitudes towards HRM, based on the trust cycle. On the other, the longitudinal analytical approach sheds light on the changes that occur over time in a competitive environment. We support the contingent view and encourage researchers to analyse the relationship between HRM and OP,

considering the contextual factors mentioned above (i.e., the sector and the economic crisis) as potential boundary conditions.

The present study has several limitations. First, only two waves of data were available for analysis. The results obtained should be considered with caution since two measures cannot capture the absolute dynamism of the variables. Second, the four-year time lag between the waves might be considered excessive, but it was imposed by the retail chain and it was not the decision of the researchers. As this is a field that aspires to provide useful advice to management, our priority was not a perfect study design but a focus that (without losing scientific rigour) fulfilled the needs of managers and was continuous over time. In addition, although the sample size at the employee level was very large, the analysed sample size was proportional to the number of stores because data had to be aggregated for analysis. The researchers tried to minimise the complexity of the models in order to ensure the validity of the tests and considered that the goodness of fit indices were sufficient to demonstrate the validity of it. Regarding the qualitative part, we acknowledge that this could have been taken further. However, our goal here was simply for the qualitative analysis to complement the interpretation of the quantitative results. We consider that the people interviewed are very well informed and that their qualitative observations are of value for this study. In fact, we encourage researchers to contrast their results with the people involved in the investigation. Their perspective is very rich and can elucidate the rationale behind the unexpected numbers. Finally, it is advisable to analyse other dimensions of performance apart from productivity in which employees have a direct influence in the service industry, such as the level of absenteeism or the quality of the service delivered.

Managerial implications

Managers should think seriously about the contingent decisions they make in a period of recession since their decisions may have medium and long-term negative influences on employees that can be very difficult to redress. Even in the best-led organisations, severe recessions limit what management can do. However, while actions to deal with recessions are needed, management should commit to procedural justice in them and should have a long-term goal of enhancing employee satisfaction in the interest of its links to customer satisfaction and brand loyalty.

Customers tend to go to a specific brand of retail stores because it offers what they are looking for, and employees are the main drivers for maintaining brand identity and ensuring company survival and sustainability. Satisfied employees tend to be aligned with the company strategy and be more willing to satisfy customer needs. In this regard, investment in HRM becomes crucial given its clear positive relation with employee job satisfaction.

The results also show that employees' influence on increasing store productivity may be limited, and so retail store managers should not expect economic benefits. Productivity can be seriously undermined by economic recessions, thus limiting the impact of high-involvement work processes, and sales can be heavily conditioned by such factors as long-established buying practices and branding.

References

Appelbaum, E., Bailey, T., Berg, P., & Kalleberg, A. L. (2000). *Manufacturing advantage: Why high-performance work systems pay off*. Ithaca, NY: IRL Press.

Appelbaum, E., & Batt, R. (1994). *The new American workplace: Transforming work systems in the United States*. Cornell University Press.

Bartel, A. P. (2004). Human resource management and organizational performance: Evidence from retail banking. *Industrial and Labor Relations Review*, 57(2), 181-203. doi:10.1177/001979390405700202

Batt, R. (2002). Managing customer services: Human resource practices, quit rates, and sales growth. *Academy of Management Journal*, 45(3), 587-597. doi:10.5465/3069383

Bayraktar, C. A., Karacay, G., Araci, O., & Calisir, F. (2018). Exploring the relationship between high-involvement human resource practices and affective commitment within non-Western service context. *International Journal of Work Organisation and Emotion,* 9(3), 283-302. doi:10.1504/IJWOE.2018.094686

Blasi, J. R., Freeman, R. B., & Kruse, D. L. (2008). Creating a Bigger Pie? The Effects of Employee Ownership, Profit Sharing and Stock Options on Workplace Performance. National Bureau of Economic Research.

Blau, P. M. (1964). *Exchange and power in social life.* New York: Wiley.

Blau, P. M. (1987). Contrasting theoretical perspectives. *The micro-macro link*, 71-85.

Boselie, P., Dietz, G., & Boon, C. (2005). Commonalities and Condradictions in HRM and Performance Research. *Human Resource Management Journal,* 15(3), 67-94. doi:10.1111/j.1748-8583.2005.tb00154.x

Boselie, P., Paauwe, J., & Jansen, P. (2001). Human resource management and performance:

lessons from the Netherlands. *International Journal of Human Resource Management,* 12(7), 1107-1125. doi: 10.1080/09585190110068331

Boxall, P., Huo, M.-L., Macky, K., & Winterton, J. (2019). High-involvement Work Processes and Systems: A Review of Theory, Distribution, Outcomes, and Tensions. In *Research in Personnel and Human Resources Management* (pp. 1-52). Emerald Publishing Limited.

Boxall, P., & Macky, K. (2009). Research and theory on high-performance work systems: progressing the high- involvement stream. *Human Resource Management Journal,* 19(1), 3-23. doi: 10.1111/j.1748-8583.2008.00082.x

Boxall, P., & Macky, K. (2014). High-involvement work processes, work intensification and employee well-being: A study of New Zealand woker experiences. *Work, employment and society,* 28(6), 963-984. doi: 10.1177/1038411107086542.

Boxall, P., & Purcell, J. (2003). Strategy and human resource management: management, work and organisations. *Hampshire, Palgrave MacMillan*.

Cardona, P., & Elola, A. (2003). Trust in management: The effect of managerial trustworthy behavior and reciprocity. IESE Working Paper No. D/496.

CEC. (2016). Confederación Española del Comercio.El comercio en cifras. Balance Anual. Retrieved from: http://www.cec-comercio.com/wp-content/uploads/2014/04/El-comercio-en-cifras_Balance-2016.pdf

Chang, E. (2005). Employees' overall perception of HRM effectiveness. Human Relations, 58(4), 523-544. doi:10.1177/0018726705055037

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating Goodness-of- Fit Indexes for Testing Measurement Invariance. Structural Equation Modeling: A Multidisciplinary Journal,

9(2), 233-255. doi:10.1207/S15328007SEM0902_5

Combs, J., Liu, Y., Hall, A., & Ketchen, D. (2006). How much do high-performance work practices matter? A meta-analysis of their effects on organizational performance. *Personnel Psychology,* 59(3), 501-528. doi:10.1111/j.1744-6570.2006.00045.x

Cook, H., MacKenzie, R., & Forde, C. (2016). HRM and performance: the vulnerability of soft HRM practices during recession and retrenchment. *Human Resource Management Journal,* 26(4), 557-571. doi: 10.1111/1748-8583.12122

Elorza, U., Aritzeta, A., & Ayestarán, S. (2011). Exploring the black box in Spanish firms : the effect of the actual and perceived system on employees ' commitment and organizational performance. *The International Journal of Human Resource Management,* 22(7), 1401-1422. doi:10.1080/09585192.2011.561956

Fabling, R., & Grimes, A. (2010). HR practices and New Zealand firm performance: What matters and who does it? *International Journal of Human Resource Management*, *21*(4), 488-508. doi: 10.1080/09585191003611994

Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational behavior,* 26(4), 331-362. doi:10.1002/job.322

Gallie, D. (2013). Direct participation and the quality of work. *Human Relations,* 66(4), 453-473. doi: 10.1177/0018726712473035

Gerhart, B., Wright, P. M., McMahan, G. C., & Snell, S. A. (2000). Measurement error in research on human resources and firm performance: How much error is there and how does it influence effect size estimates? *Personnel Psychology,* 53, 803-834. doi:10.1111/j.1744-6570.2000.tb02418.x

Guest, D. E. (2011). Human resource management and performance: still searching for some

answers. *Human Resource Management Journal*, 21(1), 3-13. doi:10.1111/j.1748-8583.2010.00164.x

Guest, D. E. (2017). Human resource management and employee well-being: towards a new analytic framework. *Human Resource Management Journal*, 27(1), 22-38. doi: 10.1111/1748-8583.12139

Guest, D. E., Michie, J., Conway, N., & Sheehan, M. (2003). Human Resource Management and Corporate Performance in the UK. *British Journal of Industrial Relations*, 41(2), 291-314. doi:10.1111/1467-8543.00273

Hamaker, E. L., Kuiper, R. M., & Grasman, R. P. P. P. (2015). A Critique of the Cross-Lagged Panel Model. *Psychological Methods*, 20(1), 102-116. doi:10.1037/a0038889

Hauff, S., Guerci, M., Dul, J. & van Rhee, H. (2019). Exploring Necessary Conditions in HRM Research : Fundamental Issues and Methodological Implications. *Human Resource Management Journal*, Pre-publication version. doi: 10.1111/1748-8583.12231

Heskett, J. L., Jones, T. O., Loveman, G. W., Sasser, W. E., & Schlesinger, L. A. (1994). Putting the Service-Profit Chain to Work. *Harvard Business Review*, 72,164-172.

INE. (2018). España en Cifras. Madrid. Retrieved from: http://www.ine.es/prodyser/espa_cifras/

Jiang, K., Hu, J., Liu, S., & Lepak, D. P. (2017). Understanding employees' perceptions of human resource practices: Effects of demographic dissimilarity to managers and coworkers. *Human Resource Management*, 56(1), 69-91.doi: 10.1002/hrm.21771

Jiang, K., Lepak, D. P., Hu, J., & Baer, J. C. (2012). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of management Journal*, *55*(6), 1264-1294.

doi:10.5465/amj.2011.0088

Jiang, K., & Messersmith, J. (2018). On the shoulders of giants: a meta-review of strategic human resource management. *International Journal of Human Resource Management,* 29(1), 6-33. doi:10.1080/09585192.2017.1384930

Jones, D. C., Kalmi, P., & Kauhanen, A. (2010). How does employee involvement stack up? The effects of human resource management policies on performance in a retail firm. *Industrial Relations: A journal of economy and society,* 49(1), 1-21. doi: 10.1111/j.1468-232X.2009.00584.x

Kaarsemaker, E. C. A., & Poutsma, E. (2006). The fit of employee ownership with other human resource management practices: Theoretical and empirical suggestions regarding the existence of an ownership high-performance work system. *Economic and Industrial Democracy*, 27(4), 669-685. doi: 10.1177/0143831X06069009

Kantar WorldPanel. (2018). Balance de la Distribución y el Gran Consumo 2018.

Katou, A. (2012). Investigating reverse causality between human resource management policies and organizational performance in small firms. *Management Research Review,* 35(2), 135-156. doi: 10.1108/01409171211195161

Klein, K. J., & Kozlowski, S. W. J. (2000). *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions.* San Francisco, CA: Jossey-Bass.

Kumar, V., & Pansari, A. (2015). Measuring the benefits of employee engagement. *MIT Sloan management review*, *56*(4), 67-72.

Kuvaas, B. (2008). An exploration of how the employee–organization relationship affects the linkage between perception of developmental human resource practices and employee

outcomes. *Journal of Management Studies*, *45*(1), 1-25. doi: 10.1111/j.1467-6486.2007.00710.x

LePine, J. A., Podsakoff, N. P., & LePine, M. A. (2005). A meta-analytic test of the challenge stressor–hindrance stressor framework: An explanation for inconsistent relationships among stressors and performance. *Academy of management journal*, *48*(5), 764-775. doi: 10.5465/AMJ.2005.18803921

Little, T. D. (2013). *Longitudinal structural equation modeling*. Guilford Press.

Macduffie, J. P. (1995). Human Resource Bundles and Manufacturing Performance : Organizational Logic and Flexible Production Systems in the World Auto Industry. *Industrial and Labor Relations Review*, *48*(2), 197-221. doi: 10.1177/001979399504800201

Marin-Garcia, J. A., & Tomas, J. M. (2016). Deconstructing AMO framework: A systematic review. *Intangible Capital*, *12*(4), 1040-1087. doi: 10.3926/ic.838

Ng, T. W. H., Eby, L. T., Sorensen, K. L., & Feldman, D. C. (2005). Predictors of objective and subjective career success: A meta-analysis. *Personnel psychology*, *58*(2), 367-408. doi: 10.1111/j.1744-6570.2005.00515.x

Nishii, L. H., & Wright, P. M. (2008). Variability Within Organizations : Implications for Strategic Human Resource Management. *The people make the place. Dynamic linkages between individuals and organisations*, 225-248. doi:10.1111/j.1744-6570.2008.00121.x

Paauwe, J., & Boselie, P. (2005). HRM and performance: What next? *Human Resource Management Journal*, *15*(4), 68-83. doi:10.1111/j.1748-8583.2005.tb00296.x

Peccei, R., & Rosenthal, P. (1997). The antecedents of employee commitment to customer service: evidence from a UK service context. *The International Journal of Human*

Resource Management, *8*(1), 66-86. doi:10.1080/09585199700000041

Piening, E. P., Baluch, A. M., & Salge, T. O. (2013). The Relationship Between Employees ' Perceptions of Human Resource Systems and Organizational Performance : Examining Mediating Mechanisms and Temporal Dynamics. *Journal of Applied Psychology*, *98*(6), 926-947. doi: 10.1037/a0033925

Rafferty, A. E., & Griffin, M. A. (2006). Refining individualized consideration: Distinguishing developmental leadership and supportive leadership. *Journal of Occupational and Organizational Psychology*, (79), 37-61. doi:10.1348/096317905X36731

Roca-Puig, V., Bou-Llusar, J.-C., Beltrán-Martín, I., & García-Juan, B. (2018). The virtuous circle of human resource investments: A precrisis and postcrisis analysis. *Human Resource Management Journal*, 1-18. doi: 10.1111/1748-8583.12213

Saridakis, G., Lai, Y., & Cooper, C. L. (2017). Exploring the relationship between HRM and firm performance: A meta-analysis of longitudinal studies. *Human Resource Management Review*, *27*(1), 87-96. doi:10.1016/j.hrmr.2016.09.005

Schlesinger, L. A., & Heskett, J. L. (1994). *Breaking the cycle of failure in services*. Cambridge.

Schneider, B., Hanges, P. J., Smith, D. B., & Salvaggio, A. N. (2003). Which Comes First: Employee Attitudes or Organizational Financial and Market Performance? *Journal of Applied Psychology*, *88*(5), 836-851. doi:10.1037/0021-9010.88.5.836

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Boston,MA: Houghton Mifflin Company.

Shin, D., & Konrad, A. M. (2017). Causality between high-performance work systems and organizational performance. *Journal of Management*, *43*(4), 973-997. doi:10.1177/0149206314544746

Shrout, P. E., & Fleiss, J. L. (1979). Intraclass Correlations : Uses in Assessing Rater Reliability. *Psychological Bulletin*, *86*(2), 420-428. doi:10.1037/0033-2909.86.2.420

Spector, P. E. (1997). *Job satisfaction: Application, assessment, causes, and consequences* (Vol. 3). Sage publications.

Spreitzer, G. M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of management Journal*, *38*(5), 1442-1465. doi: 10.2307/256865

Subramony, M. (2009). A meta-analytic investigation of the relationship between HRM bundles and firm performance. *Human Resource Management*, *48*(5), 745-768. https://doi.org/10.1002/hrm.20315. doi: 10.1002/hrm.20315

Takeuchi, R., Lepak, D. P., Wang, H., & Takeuchi, K. (2007). An empirical examination of the mechanisms mediating between high-performance work systems and the performance of Japanese organizations. *Journal of Applied Psychology*, *92*(4), 1069-1083. doi: 10.1037/0021-9010.92.4.1069

Thompson, P. (2011). The trouble with HRM. *Human Resource Management Journal*, *21*(4), 355-367. doi: 10.1111/j.1748-8583.2011.00180.x

Van De Voorde, K. (2010). *HRM , Employee Well-being and Organizational Performance : A Balanced Perspective (PhD Dissertation).* Tilburg: Ridderprint Offsetdrukkerij B.V.

Walton, R. E. (1985). Toward a strategy of eliciting employee commitment based on policies of mutuality. *HRM trends and challenges*, *49*.

Wood, S., & De Menezes, L. M. (2011). High involvement management, high-performance work systems and well-being. *The International Journal of Human Resource Management*, *22*(07), 1586-1610. doi: 10.1080/09585192.2011.561967

Wood, S., & Ogbonnaya, C. (2018). High-involvement management, economic recession, well-being, and organizational performance. *Journal of Management*, *44*(8), 3070-3095. doi: 10.1177/0149206316659111

Wright, P., Gardner, T., Moynihan, L., & Allen, M. (2005). The Relationship Between Hr Practices and Firm Performance : Examining causal order. *Personnel Psychology*, *58*(2), 409-446. doi:10.1111/j.1744-6570.2005.00487.x

Wright, P. M., & Nishii, L. H. (2013). Strategic HRM and Organizational Behaviour: Integrating Multiple Levels of Analysis. In D. E. Guest, J. Paauwe, & P. Wright (Eds.), *HRM and performance: Achievements and challenges*. Cornwall, UK: John Wiley & Sons.

Zatzick, C. D., & Iverson, R. D. (2011). Putting employee involvement in context: a cross-level model examining job satisfaction and absenteeism in high-involvement work systems. *The International Journal of Human Resource Management*, *22*(17), 3462-3476. doi: 10.1080/09585192.2011.561016

Table 1. Correlation Matrix.

Variable	*M*	*SD*	1	2	3	4	5	6	7	8
1.HIWS11	4.12	.36	-							
2.HIWS15	3.89	.39	.26*	-						
3.Job satisfaction 11	4.87	.3	.57**	.31**	-					
4.Job satisfaction 15	4.72	.28	.21	.59**	.35**	-				
5.Prod11[a]	4.9	.27	-.34**	-.09	-.38**	-.08	-			
6.Prod15[a]	4.74	.29	-.41**	-.05	-.45**	-.1	.89**	-		
7.Size[a]	4.42	.54	-.05	-.26*	-.19	-.32**	.48**	.39**	-	
8.Prod09[a]	5.1	.24	-.26*	-.14	-.39**	-.15	.91**	.83**	.55**	-

[a] transformed with logarithm

Note: Means, standard deviations and correlations are calculated at the organisational level

Table 2. Tests of Measurement Invariance.

Variable	Test	RMSEA	CFI	ΔCFI	TLI	Pass?
HIWS	Configural Invariance	.04	.942	-	.93	Yes
	Weak Invariance	.04	.94	.002	.938	Yes
	Strong Invariance	.04	.94	.002	.93	Yes
Job satisfaction	Configural Invariance	0	1	-	1.00	Yes
	Weak Invariance	.02	.99	.004	.99	Yes
	Strong Invariance	.03	.99	.003	.98	Yes

Note: RMSEA= Root Mean Square Error of Approximation; CFI=Comparative Fit Index; TLI=Tucker-Lewis index.

Table 3. Fit statistics for nested causal models.

A) Model 1: HIWS-Productivity

		χ2	*df*	*p*	RMSEA	CFI	TLI	SRMR	Comparison	Δχ2	Δ*df*	*p*	*Preferred model*
P1	Stability Model	12.35	6	.05	.1	.98	.95	.06	-	-	-	-	-
P2	**Forward Causality (H1)**	**12.18**	**5**	**.03**	**.11**	**.98**	**.94**	**.06**	**P1-P2**	**.17**	**1**	**.67**	-
P3	**Reverse Causality (H2)**	**12.11**	**5**	**.03**	**.12**	**.98**	**.94**	**.06**	**P1-P3**	**.25**	**1**	**.61**	-
P4	Reciprocal causality	11.93	4	.02	.14	.97	.91	.06	P2-P4	.25	1	.62	-
									P1-P4	.42	2	.81	-
									P3-P4	.17	1	.67	-

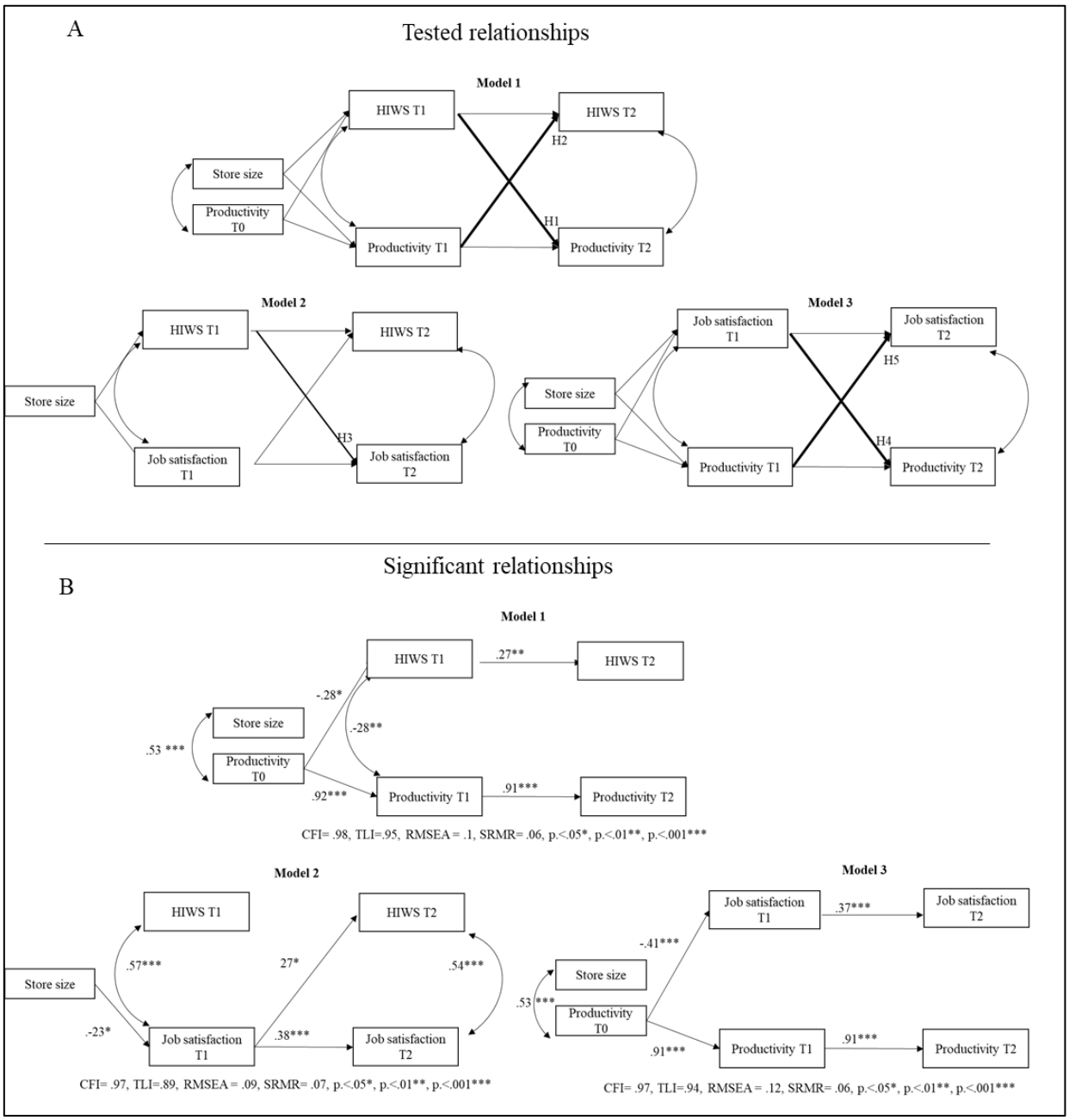
B) Model 2: HIWS-Satisfaction

		χ2	*df*	*p*	RMSEA	CFI	TLI	SRMR	Comparison	Δχ2	Δ*df*	*p*	*Preferred model*
P1	Stability Model	10.35	4	.03	.12	.93	.82	.14	-	-	-	-	-
P2	**Forward Causality (H3)**	**9.97**	**3**	**.018**	**.15**	**.92**	**.74**	**.12**	**P1-P2**	**.38**	**1**	**.54**	**-**
P3	Reverse Causality	6	3	.11	.09	.97	.88	.07	P1-P3	4.34	1	.03	P3
P4	Reciprocal causality	5.98	2	.05	.14	.96	.88	.07	P2-P4	3.99	1	.05	P4
									P1-P4	4.37	2	.11	-
									P3-P4	.02	1	.89	-

C) Model 3: Satisfaction-Productivity

		χ2	*df*	*p*	RMSEA	CFI	TLI	SRMR	Comparison	Δχ2	Δ*df*	*p*	*Preferred model*
P1	Stability Model	15.26	6	.02	.12	.97	.94	.06	-	-	-	-	-
P2	**Forward Causality (H4)**	**12.86**	**5**	**.02**	**.12**	**.98**	**.93**	**.07**	**P1-P2**	**2.39**	**1**	**.12**	**-**
P3	**Reverse Causality (H5)**	**14.39**	**5**	**.01**	**.13**	**.97**	**.92**	**.06**	**P1-P3**	**.86**	**1**	**.35**	**-**
P4	Reciprocal causality	12	4	.02	.14	.98	.92	.07	P2-P4	.86	1	.35	-
									P1-P4	3.25	2	.19	-
									P3-P4	2.39	1	.12	-

Figure 1. Three cross-lagged bivariate models for hypothesis testing.



Note: T0 refers to year 2009, T1 refers to year 2011 and T2 refers to year 2015. The models depicted in the upper part (A) include all the possible relationships that can be evaluated with the technique. The thicker arrows are the hypothesised relationships. The models depicted at the bottom (B) are the models with the best statistical fit and include only significant relationships.