The impact of trust on the effectiveness of participative management practices

Erasmus University Rotterdam

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Haiko Wensveen

360583

360583hw@student.eur.nl

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Abstract

This study investigates the relationship between participative management practices and workplace performance. Thereby we focus on the possible association with trust in managers. We deviate between organizational involvement and task related autonomy. Based on earlier literature we expect a positive relation between participative HRM practices (both employee involvement and worker autonomy) and performance. Next to that we expect that trust positively facilitates the relation between performance and employee involvement practices, but not between performance and worker autonomy. In this study we analyze the Workplace Employment Relations Study datasets from 2004 and 2011 using a cross-section and panel sample. Our main results suggest that participative practices are indeed positively related to productivity, but no convincing evidence is found for causality of the relationship. The main cross-section results also show that trust is associated to the HRM-performance relations as expected. The results suggest that the use of involvement practices is only significantly related to performance if trust is sufficiently high. Robustness tests, however, show mixed results. Nonetheless, managers have to be aware of the possible impact of trust on the effectiveness of participative HRM practices.

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1. Introduction

Organizations use human resource management to motivate employees, gain competitive advantages and thereby improve performance. Rather than using all possible practices positively associated with firm performance, firms should select the ones most cost efficient in combination with their organizational structure, managers and employees. Therefore, management practices should not only suit the management of the firm but also its employees. In previous studies many distinctive HRM practices are discussed in relation with individual employee and workplace level performance. Some example are, high performance work practices (Huselid, 1995) (Cappelli & Neumark, 2001), quality management (Flynn, Schroeder, & Sakakibara, 1995), enriched job design (Lawler, Hackman, & Kaufman, 1973) and high involvement management (Lawler, 1986). An important shift in HRM research is the growing interest in participation and commitment rather than control of employees.

An interesting finding by Locke, Schweiger and Latham (1987) suggests that even though participation may improve productivity, the effect is not consistent and sometimes even leads to lower productivity. They discuss the importance of a motivational mechanism (trust, control over the work, identification and goal setting) and a cognitive mechanism (communication and utilization of information). For organizations it is important that employees have the right motivation and ability to make participation productive. Hence, in organizations which focus on employee participation or involvement mutual trust between managers and employees seems to be of substantial importance (Lawler, Mohrman, & Ledford, 1998) (Levine, 1995).

In our study we look at the relation between participative HRM practices and organizational performance. We divide between worker autonomy and employee involvement practices. We investigate whether organizations (should) differentiate in the use of these employee participation strategies based on the employee's trust in their managers. We use the United Kingdom based Workplace Employment Relations Study (WERS) data and combine individual and firm level based measures, to find out how employee's trust in managers is associated with the relations between participative management practices and (organizational) performance. In other words, we check whether the effectiveness of participative management practices is related to the trust employees have in their managers. We state the following research question:

Does the employee's trust in the managers affect the relationship between participative management practices (employee involvement and worker autonomy) and workplace performance?

By investigating the possible heterogeneity in associations between management practices and workplace outcomes because of differences in employee trust in managers, we learn whether organizations (have to) adjust their strategies to the relations between managers and employees. In other words, to know whether a sufficient level of trust necessary to establish a positive relation between participative HRM practices and performance related outcomes. For example, if results show that participative management practices only have a positive relation with performance when trust in management is sufficiently high, then organizations should first focus on improving trust in managers before implementing involvement management practices. Otherwise the investment in participative HRM is not efficient.

Concepts

Before answering the research question we discuss some important concepts. First of all, we need to understand the difference between the discussed participative management practices. The first bundle of practices discussed is referred to as *employee involvement* practices. This captures practices which increase the employee's involvement in organizational decision making (e.g. providing information, flexibility and interaction with managers). The second bundle, *worker autonomy*, focusses on the employee's discretion in their primary tasks. An important difference between employee involvement and work autonomy is that changes in actual influence are more likely in the second. An increase in employee discretion gives more decision-making power, however, this power is only based on a workers primary task. An increase in the use of employee involvement practices, on the other hand, gives employees more possibilities to participate in organizational level decision making, but there is no "real" power. The second important concept is the employee's *trust* in their managers. This is referred to as the employees' sentiment within the workplace that they are taken seriously by the managers and that the managers are honest. The more positive an employee is about the manager the higher their trust will be. The last concept of interest, *workplace performance,* is referred to labor productivity compared to other workplaces in the same industry, at least in the main analysis.

Related studies

A Study closely related to ours' is done by Alfes, Shantz and Truss (2012). They study the interaction between perceived HRM practices and trust in the employer on individual employee outcomes, such

as task performance, turnover intention and well-being. They used data from 613 employees and their line managers all located in an UK service sector organization. The main difference is that we divide between employee involvement and worker autonomy practices, where they use one bundle of high-performance HRM practices. Next to that, they focus on trust in the employer, where we look at trust in direct managers. Another related study by Innocenti, Pilati and Peluso (2011), focuses on a sample of 9000 employees in 46 Italian organizations. They looked for the relationship between HRM practices (divided in 3 bundles, Ability Motivation Opportunity) and employee attitudes. Results showed a stronger relation between motivational HRM practices and employee attitudes when trust in supervisor was high, rather than low. Next, they found a positive effect of trust in senior management on the relation between high commitment work practices and employee attitude towards the organization. The HRM practices only focus on the performance measurement related practices, rather than a broad selection of involvement or commitment practices.

In addition to previous research, our study focusses on a deviation between the use of employee involvement and worker autonomy rather than other bundles of HRM practices. We believe that organizational involvement and tasks related autonomy have different relations with performance. Next to that we focus on workplace level data rather than, individual employee level outcomes. We use a large cross-sectional dataset based on a broad set of sectors and industries in the United Kingdom. The Workplace Employment Relation Study (WERS) datasets might give us more generalizable results than the focus on specific sectors. WERS data also enables us to use a panel dataset with information on two points in time. We use this panel to give additional information about the relations and make a stronger argumentation.

In short, we expect to find a positive relation between performance related outcomes and employee involvement or worker autonomy. We also expect that trust in managers strengthens the relation between employee involvement and performance. However, we do not expect trust to affect the relation between worker autonomy and performance.

As expected main results show that both bundles of participative HRM practices are positively related to the productivity of the labor force. Employee involvement in organizational decision making and productivity are significantly related to the level of trust employees have in their managers. If trust is high, the relation between the relative use of these practices and performance is stronger. For the relation between autonomy and performance, we do not observe a significant association with trust. Panel data did not give convincing evidence that there is no possibility for reversed causation.

In the following section we give a detailed overview of the theory and discuss our hypothesis. In section 3 we discuss the data used in the study. Next to that we elaborate on the measures (section 4) and the analysis (section 5) used to study the hypotheses. In section 6 we show our main results for both cross-section and panel datasets. In section 7 we do some robustness checks for the main results. We end with a conclusion and discussion in section 8 and 9.

2. Theoretical background

2.1 HRM and performance

There is a large literature on the relationship between management practices and performance at both individual and workplace level. Firms use HRM practices for motivational purposes, to eventually increase organizational performance. Firms could use systems which focus on having control over employees or they focus on the commitment of employees. Control systems use specified rules and procedures to improve efficiency. Commitment systems, on the other hand, focus on developing committed employees who can be trusted to do their tasks in line with organizational goals (Arthur, 1994). These systems are based on decentralization and participation. Arthur (1994) found that firms using commitment human resource systems had higher productivity than firms using control systems. A reason for this higher productivity could be, as argued by Thomas and Velthouse (1990), that using commitment systems increases the number of motivated employees with goals closely aligned with those of management. Brown, McHardy, McNabb and Taylor (2011) found, next to evidence that human resource practices influence commitment and loyalty of employees, that these factors in turn are positively associated with workplace performance. Hence, not only incentives and monitoring (control systems) align goals of management and employees, as discussed in more classic management studies. Commitment systems seem to have a stronger positive impact on productivity and performance.

Nagin, Rebitzer, Sanders and Taylor (2002) found that perceived monitoring rates affect the sensitivity to the acting according to “the rational cheater model”. This model states that one would cheat or shirk when the marginal benefits of it exceed the costs (opportunism). There are differences in this behavior for the employee’s assessment of their treatment by the employer (Nagin, Rebitzer, Sanders, & Taylor, 2002). Given that monitoring and commitment strategies are substitutes,

employee perceived treatment by managers (fairness, trustworthiness) could also be related to the effectiveness of using these commitment strategies.

Employee participation comes in many different forms (e.g. employee ownership, representatives, formal organizational involvement or task related autonomy). The relation between these forms of participation and performance related outcomes differs (Cotton, Vollrath, Froggatt, Lengnick-Hall, & Jennings, 1988). However generally, positive effects of more employee involvement are related to the employee's (additional) knowledge of working at the workplace, compared to the management's knowledge. With increased involvement the management gets additional opinions about strategies which could be efficiency and performance improving ideas. Because employees have specialized knowledge about how to perform their own work, they have the opportunity to make better decisions than supervisors or managers (Lawler, 1992). A downside to giving control out of hand to lower level employees is that it might create managerial vulnerability (Spreitzer & Mishra, 1999). Spreitzer and Mishra (1999) argue that this potential vulnerability comes from opportunistic behavior or incompetence of involved employees. However, as discussed before using commitment strategies (partially) decrease the likelihood of employees showing opportunistic behavior like monitoring does. Another reason to be careful with using these practices is that results could be negatively affected by incompetence of employees. Leana (1986) shows that, because of this, employee's job (in)competence significantly affects the delegation of tasks to employees.

Nonetheless, most studies find a positive relation between performance and the use of commitment strategies. Previous research shows statistically significant evidence for a positive relation between employee participation and performance related outcomes (Wagner, 1994). Therefore, we expect that more use of employee involvement HRM practices and higher levels of worker autonomy are associated with higher workplace performance.

Hypothesis 1a:

The use of employee involvement practices is positively associated with performance related outcomes.

Hypothesis 1b:

The level of worker autonomy is positively associated with performance related outcomes.

2.2 Organizational variations

Empirical and theoretical literature suggests that more involvement and task discretion are likely to increase performance and other workplace related outcomes. Nonetheless, there might be differences between the benefits and therefore adaptation of commitment practices. Pil and MacDuffie (1996) provided a theoretical framework why organizations differentiate in the use high involvement practices. Three factors of main importance for adaptation of high involvement work practices are 1) the level of complementary HR practices, 2) the costs of introducing new practices and 3) performance achieved with previous practices (Pil & MacDuffie, 1996).

In line with the complementary HR practices argument (factor 1), Pil and MacDuffie (1996) argue that, successful implementation of high involvement practices is only possible when, next to the employee's commitment to the organization, the organization also commits to its employees. Lack of reciprocity for the extra involvement of employees undermines the effectiveness of these kinds of management innovations (Thompson, 2011). Therefore, employees should also benefit from the use of commitment systems. Indeed earlier empirical studies show that investments in engagement of employees are linked to increased benefits for both, the organization and its employees. Forth and Millward (2004) studied the impact of human resource management practices on pay levels of employees in Britain. They found an eight percent increase in wage for employees in high involvement management workplaces, compared to similar employees in other workplaces, at least if supported by job security guarantees. Hence, the use of high involvement practices is associated with increased organizational performance and employee wages, relative to not using these practices.

The adaptation of management practices could also be different, because costs and benefits differ across firms (factor 2). Factors influencing the costs and benefits of implementation might affect the relation between the use of management practices and workplace outcomes. The more effective the practices are implemented in the organization, the more a firm benefits (and thereby improves workplace performance). The differences in costs and benefits of implementing participative HRM practices, and thereby the possible success of using commitment practices, could be related to employee motivation and ability to make participation productive. Therefore, it is important to have the right motivational mechanisms (trust and identification) and the cognitive mechanisms (information and communication) within an organization (Locke, Schweiger, & Latham, 1987).

2.3 HRM, performance and trust

One of the factors influencing effective implementation of participative HRM practices could be the employee's trust in their managers. Good internal relationships and high levels of mutual trust, could lead to a competitive advantage. Moreover, Adler (2001) argues that trust is a "crucial ingredient" in both horizontal and vertical relations. The level of trust in management decreases opportunistic behavior and the need for formal contracts and controls (Zaheer & Venkatraman, 1995). Therefore, it is more important to have mutual trust when using involvment practices compared to control practices (Lawler, 1992). When the relationship between employee and management is damaged, by for example recent layoffs or wage reductions, trust in managers and commitment to the firm will decrease. Reduced levels of trust in managers, because of recent layoffs, make it harder to successfully implement high involvement work practices (Kochan, Katz, & Mower, 1984).

The effectiveness of employee participation is expected to be related to trust in managers (Locke, Schweiger, & Latham, 1987). Dirks and Ferrin (2001) discuss the proposition that trust is a moderator between motivational constructs (e.g. HRM practices) and workplace outcomes. Hence, trust is not a factor determining workplace behavior or outcomes, it influences the strength of the associations between deteminants and workplace outcomes (see figure 1). Dirks (1999) supports this facilitating role of trust, he found that trust did not have a direct effect, but facilitates the relation between the motivation of individual group members and performance. When trust is high there is a signifcant and positive relation between motivation and performance, however when trust is low no significant relation is observed. Determinants of performance are for example, production mechanisms, incentives or other HRM practices. In line with this proposition, the link between involvement strategies and the level of commitment to an organization is significantly moderated by the level of employees' trust in the organization (Farndale, Hope-Hailey, & Kelliher, 2011). Therefore, it should be hard for an organization that lacks trust to get a sustainable competitive advantage out of an involvement strategy. Hence, performance depends on a combination of the intensity of using participative HRM practices and the personality or attitudes of employees.

As discussed before different forms of employee participation relate to performance related outcomes differently, they are also expected to have a different relation with trust. The association of trust with performance-HRM is expected to be different between employee involvement and worker autonomy. For example, there is no reason for an employee to put in extra effort (get involved) when managers cannot be trusted doing something with the extra effort you put in. This might even demotivate the employees leading to lower satisfaction and performance. If

management is mistrusted, employee involvement practices will not be credible and, because employees do not expect to have any influence, will not have a significant positive impact on performance related outcomes.

Hypothesis 2a:

The relationship between employee involvement practices and performance related outcomes is moderated by employee trust in managers.

However, for worker autonomy practices trust in managers is of smaller impact. The use of worker autonomy practices give employees more task related freedom (autonomy). Managers have less influence on the employees' task related decisions. The higher the level of autonomy, the less influence managers have on task related decisions. If there is high worker autonomy, employees still have influence on their own tasks and trust in managers does not affect this.

Hypothesis 2b:

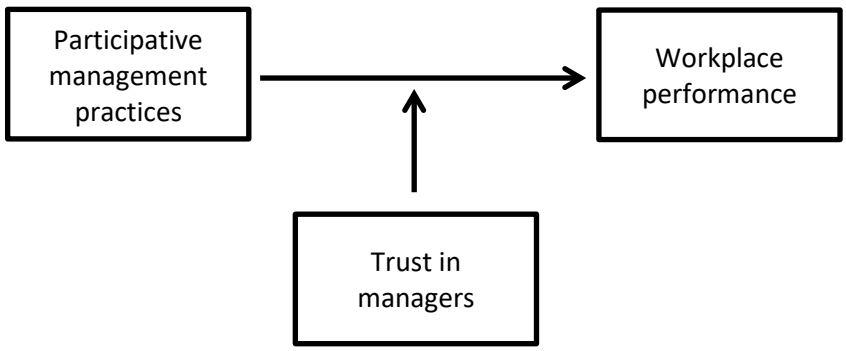
The relationship between worker autonomy and performance related outcomes is not moderated by employee trust in managers.

2.4 Reversed causality

There might also be a reversed relationship as past performance (both poor and good) might give a reason to invest in HRM. Wright, Gardner, Moynihan and Allen (2005) argue that only few studies tried to test whether firm performance predicts future management practices or vice versa. They mention a study by consulting firm Watson Wyatt (2002), which uses data on management practices and performance from 1999 and 2001. By using correlations between 1999 practices and 2001 performance (and vice versa), they concluded that management practices where leading indicators of future financial performance. More sophisticated studies by for example, Huselid and Becker (1996) estimate models using both panel and cross-sectional data. Their results suggested that earlier HRM practices predict later financial performance and that an increase in their high performance work system measure leads to an increased market value of an organization. Also Lawler, Mohrman and Ledford (1998) showed that lagged use of high performance work practices (including employee involvement) are stronger related to organizational performance related outcomes than the other way around.

However, as mentioned before, previous performance (factor 3 from Pil & MacDuffie, 1996) could give rise to reversed causal relationships between management practices and performance. Hence, previous performance might be leading to the use of (new or additional) involvement practices for employees. This argument could go two directions, either relatively poor or relatively good performing firms are more likely to adjust their use of HRM practices. High performing organizations might have unused resources, which they can more easily invest in improvement of their management practices. In line with this view, a study by Katou (2012) suggests that, although, HRM policies influence organizational performance through employee attitudes and behavior, the reverse relation is stronger and direct. This indicates that high performing firms invest more in HRM policies, than low performing firms. However, there are also arguments that poor performing firms are more likely to adjust practices. As discussed by Pil and MacDuffie (1996), poor performing firms might be more eager to look for innovations as their current practices are seen as suboptimal. Nonetheless, in their study they do not find significant evidence that previous performance was driving the changes in HRM practices.

Figure 1: moderation effect



3. Data

For the study we use data form the Workplace Employment Relationship Survey of 2004 and 2011. This is part of a series of surveys (containing multiple waves form 1980 up to 2011) collecting information about employment and relations in British workplaces[1].

[1] More detailed information about WERS can be found at http://www.wers2011.info/

All the waves in the study contain a cross-sectional part and a part which can be linked to a sequential wave, creating a panel data set. The WERS data consists of the following components; a survey of employees; a management survey (containing employee profile questionnaire and management questionnaire); a survey of worker representatives and; a financial performance questionnaire. The first component (survey of employees) contains individual employee level information, the last three components contain workplace level data. In this study we combine the data from two components of WERS, the management survey and the survey of employees, by unique workplace identifiers. The 2011 management questionnaire contains a sample of 2,680 workplace managers responsible for employment relations and personnel. The employee survey contains 21,981 individual employees. For 2004 there are 2,295 workplaces and 22,451 employees observed.

The cross-section part of the analysis is based on the 2011 WERS dataset[2]. The sample of workplaces for the 2011 WERS was drawn form a business register at the Office for National Statistics. The management survey was a face-to-face interview with a management representative. There were some criteria for the selection of employees within workplaces. In each workplace, the goal was to randomly select 25 employees to fill out the questionnaire. Firms with fewer than 25 employees are asked to distribute the questionnaire among all employees. Firms with fewer than 5 employees are not in the sample.

To give an idea about the workplace in the sample, we provide a description of the sample. The workplaces in the cross-section sample are divided over twelve sectors (based on the Standard Industrial Classification code in 2003). Most workplaces are located in health (17 percent) and education sector (15 percent). Sectors with the smallest representation are financial service (1 percent) and electricity, gas and water providers (2 percent). 32 percent of the workplaces operate in the public sector. Only 26 percent of the workplaces is a single independent establishment, the others are part of another organization. 59 percent has at least one employee which is part of a union. On average the workplaces are 41 years in operation. Some workplaces, about 2 percent, just started operating. About 10 percent of the workplaces already existed for over a hundred years. The average workplace in the sample has about 422 employees. The smallest firms in the sample have only five employees (the mandatory minimum), the largest five percent firms has over 2000 employees.

[2] We do not combine the 2004 and 2011 datasets because the use of different sampling weights

Only a fraction of the total number of observed workplaces are observed in both waves. The panel sample consists of 989 workplaces, 600 of these took part in the survey of employees in both years. Workplaces can be linked across the two waves. It is not possible to link individual respondents from the survey of employees across waves. This is because individual employees are not traceable in the studies.

Using both data sets (cross-section and panel) it is possible to link workplace related outcomes with the use of different participative management practices. We can also link the employees' trust in their managers to the relationship between management practices and performance related outcomes.

4. Measures

Before we discuss the analysis, we elaborate on the measure we use. We describe measures for performance related outcomes, participative HRM practices and trust (see Appendix, table 1). After the variables of interest, we discuss the used control variables.

4.1 Organizational performance

Organizational performance is the managers self-assessed relative workplace performance compared to other workplaces operating in the same industry. We observe two variables for performance; financial performance (fp); and labor productivity (lp). The main analysis is based on labor productivity only. The management respondents are asked to rate the following questions; "*Compared with other workplaces in the same industry how would you assess your workplace's... financial performance and labour productivity.*" on a 5 point scale from 0 "*A lot below average*" to 4 "*A lot better than average*". The performance related variables are therefore based on an ordinary scale. The values of financial performance and productivity are not specified. This could lead to different interpretations by the interviewed managers. Financial performance could be seen as a final result in the workplace (profit), however, it could also be interpreted as the (market) value of the workplace. Labor productivity is a more clean measure as there is less discussion about what it stands for. In the main analysis we only use labor productivity as measures of workplace performance. For robustness analysis we also use financial performance, even though this is no "perfect" representation of objective performance. We use both to give a broader idea of the possible relations.

4.2 Participative HRM practices

The participative HRM practices are divided in an employee involvement (EI) and worker autonomy (WA) part. As discussed before the difference between the two bundles is based on the level of organizational engagement and decision-making-power.

Employee involvement focusses on the possibilities an employee has to involve in (organizational level) decision making. Providing information and opportunities to participate are important. An important feature of these practices that no "real" decision making power is given to the employees. The used involvement practices are the use of *functional flexibility (at least 20% is formally trained to do other job than their own); employee view surveys; teamwork (at least 80% works in formally designated teams): induction program for new employees; off job training (at least 80% has been given time off normal duties to undertake training); team briefings; meetings with management; quality circles; information disclosure (about financial results, internal investments and staffing plans).* Other studies refer to these kinds of variables at workplace level as high involvement management practices (de Menezes & Wood, 2006) (Macky & Boxall, 2007) (Wood, Van Veldhoven, Croon, & de Menezes, 2012).

The variables will be combined into an index which captures the use of involvement practices in the workplace, called employee involvement (EI). These kind of additive scales are used more often in studies for optimal HRM use (Wright, Gardner, Moynihan, & Allen, 2005) (MacDuffie, 1995). Most of the measures were originally binary variables, but teamwork, off job training and functional flexibility were measured at an ordinal seven point-scale. We transform these variables into binary variables, using the median value as cut-off point. After these transformations all the employee involvement practices are measured at similar (binary) level, which is used to combine them into one index. The index shows the average use of employee involvement practices within the workplace. For each workplace, we assign the average of the used practices as long as at least nine out of twelve practices are not coded missing, otherwise EI will be coded missing. Hence, if a workplace uses more of the employee involvement practices, the EI index increases.

Labor productivity is, in the main analysis, a measure relative to other workplaces in the same industry. An increase in absolute use of EI practices is not necessarily linked to relative performance, since competitors might also have increased their use of EI practices. Therefore, we transform the combined EI index into a variable relative other workplace in the same industry. To measure relative

EI use (EI_wpl), we divide the individual workplace's EI index by the average of the industry. If $EI\_wpl > 1$, the workplace uses more than average EI practices.

Worker autonomy focusses on practices which ensure autonomy (and therefore power) for employees in their own tasks. We look at several questions from managers' perspective about the whole workplace. "*To what extent would you say that individual here have… Variety in their work; Discretion over how they do their work; Control over the pace at which they work; Involvement in decisions over how their work is organized*". These are all based on a 4 point scale, from 0 "*None*" and 3 "*A lot*". Wood, Van Veldhoven, Croon and de Menezes (2012) refer to these questions as a measure for enriched job design. These separate questions will be combined into one variable called worker autonomy (WA). The measure WA is an index which averages the combined answers on all four worker autonomy questions. When more than two out of four answers are missing, the index is also coded missing. A principal component factor analysis confirms a unidimensional scale, which explains 0.54 percent of the variance. The items also seem to be internally consistent (Cronbach's alpha=0.71).

Because labor productivity is measured relative to others in the same industry, we want this also for our autonomy measure. Absolute levels of worker autonomy do not necessarily associate to relative performance, because competitors might have similar worker autonomy. To transform the WA index into a relative other workplace in the same industry (WA_wpl), we divide the workplace's individual WA by the average of the industry. If $WA\_wpl > 1$, the workplace has above average worker autonomy.

4.3 Trust in managers

The measure for employees' trust in managers focusses on how reliable, sincere, honest and fair employees are treated by their managers. The composite measure of trust is based on four questions. Employees were asked to rate the following statements, "*Now thinking about the managers at this workplace, to what extent do you agree or disagree with the following? Managers here… Can be relied upon to keep to their promises; Are sincere in attempting to understand employees' views; Deal with employees honestly; Treat employees fairly",* based on a 5 point scale, form 0 "*Strongly disagree*" to 4 "*Strongly agree*". The measure for trust is the average over these questions for each individual separate. When two or more answers are missing, the average measure

will also be coded missing. A principal factor analysis confirms the unidimensional scale and explains 83 percent of the variance. The items also seem to be internally consistent (Cronbach's alpha=0.93).

For our main analysis we create a trust measure at workplace level ($TRUST$). This variable measures the average over the level of trust reported by all surveyed employees in one workplace, keeping both years separate. An important reason to include this average level of trust, is the fact that an individual's trust in their manager is not likely to have significant impact on performance and productivity of the whole organization. An average (taken over all surveyed employees) gives more information about the sentiment within a workplace. This makes the measure of trust more valuable as factor related to workplace level outcomes. In the panel part, in which we cannot link individual employee observations across waves, we have to use the average trust variable in 2004 and 2011 separated across workplaces.

In the analysis we do not use a relative measure for trust (as we do for employee involvement and worker autonomy). Whether the (relative) use of participative HRM practices is effective depends on the level of trust itself, not a relative value. Even if a workplace has a relatively high trust, there might be no relation between HRM practices and performance. This could be the case when the level of trust within an industry is too low to make HRM matter. When we use an "absolute" scale of trust we avoid this problem.

4.4 Control variables

In the main analyses, we will use a set of workplace characteristics as control variables. We include six workplace level control variables. We include dummies for the industry a workplace operates in ($i.industry$[3]). We differentiate industries based on Standard Industrial Classification Codes. The operating sector is included because this could have impact on the working process. Even though performance is measured relative to other workplaces in the same industry, it could be that the industry is related to the use of HRM practices or trust.

The size of the organization could have impact on performance, but also on the use of HRM practices. Small organizations are expected and found to be less likely to implement formal participative HRM practices (Nguyen & Bryant, 2004). In these organizations there are stronger social

[3] "i. …" indicates the use of dummies for all categories of the control variable, e.g. using i.industry all industries (based on industry codes) are included as dummy, relative to reference category.

connections and there is more personal contact between employees and management. Hence, the size of the firm could be related to the impact of HRM practices and trust on organizational performance. Therefore, we control for size by using the binary variable small ($small = 1$ if the number of employees is below 40 and 0 otherwise). We also control for the number of years a workplace operates ($howlong$), as this might also related to a stage in which the workplace operates (Rutherford, Buller, & McMullen, 2003) . We use the age of the workplace as a proxy for the newness of the technology at a workplace and of the operation stage.

A public sector workplace is not fully focused on archiving the best financial performance, productivity or efficiency possible. Therefore, being in the public sector is expected to have a negative relation with performance related outcomes. Being public or not, however, could also be associated with the use and implementation of HRM practices. We control for this by using the binary variable public ($public = 1$ if in public sector and 0 otherwise).

We also control whether a workplace is part of a larger organization. If a workplace is part of a larger organization, it has less control over internal decisions. There will be a more indirect link between performance and the use of HRM practices as workplaces are eventually managed by the head office of the organization. We use the variable single to control for this ($single = 1$ if the workplace in not part of a larger organization). At last we control for trade union representation in the workplace ($union = 1$). If a workplace is unionized, the union (in addition to employees, management and direction), wants influence practices within the workplace. Hence, the use of HRM practices might be affected by this.

5. Analysis

As mentioned before, we use cross-section and panel data to get a broader view of the relationship between workplace performance, the use of selected participative HRM practices (EI or WA), and average employee trust in managers. Trust is initially observed at individual employee level. Labor productivity, on the other hand, is observed at workplace level. We use an average level of trust to capture the sentiment within a workplace (see section 4 measures) and thereby overcome a problem with observations at multiple levels[4]. This makes it possible to use one-level regression models

[4] An important issue with the initial data is that the observed employees are nested within the workplaces. Such that, trust of one employee is not independent form trust of another employee in the same firm. This would indicate that there are multiple levels of data observations, level 1 (employee) and level 2 (workplace). A multilevel approach is recommended when using such a setting.

instead of hierarchical multilevel models. In the estimated models we take sampling weights into account to correct for the sampling procedures of workplace used by the WERS research team[5]. We start with the analysis of cross-sectional data, after that we discuss the panel analysis. Robustness analysis will be discussed in a separate section.

5.1 Cross-section 2011

We analyze the cross-sectional data in several steps. First, we give a short description about the data and discuss the use of participative HRM practices and the level of trust within the workplaces. Then, we estimate correlations between our main variables of interest. From this stage on we link the relative performance outcomes to relative use of participative HRM practices[6]. We still use the workplace average levels of trust.

At last we estimate the relations between relative workplace performance, the relative use of participative HRM practices and average employee trust in managers by ordered probabilistic analyses[7]. The regression coefficients and marginal effects are retained to interpret the results. For our first set of hypotheses we look at the relation between the outcome variables and both HRM practices (EI and WA) in separate models. We estimate: $y^* = \beta_0 + \beta_1 HRM + \beta_2 X + \epsilon$ (1). Where y^* is relative workplace performance, and HRM the "relative scale" measure of EI or WA. X is a vector of workplace characteristic control variables and β_2 is a vector with corresponding coefficients. A significantly positive β_1 ($\beta_1 > 0, p < 0.05$) indicates positive associations between performance and the selected participative HRM practices[8]. Hence, workplaces which use more employee involvement practices or have higher worker autonomy than competitors, have on average higher labor productivity compared to other workplaces in the same industry. The coefficients in ordered probit models are not directly interpretable, therefore, we first discuss the sign (which is interpretable), and then estimate marginal effects for all possible outcomes.

For the second set of hypothesis we add an interaction between the relative use of participative HRM practices and the average level of trust. We estimate: $y^* = \beta_0 + \beta_1 HRM + \beta_2 HRM * TRUST +$

[5] WERS 2011 data includes the different weights in their data. For the cross-section 2011 workplace level data this is *estwtnrc*. For the panel 2004-2011 workplace level data this is *pqwtnr*.

[6] The use of employee involvement practices and the level of worker autonomy relative to workplaces in the same industry. These relative values are compared to other workplaces in the selected sample.

[7] Because of the cross-sectional setting, relations should not be seen as causal. We estimate (non-causal) associations.

[8] In general, results are seen as significant if corresponding p-values are smaller than 0.05 (p<0.05), results are marginal if 0.05<p<0.1.

$\beta_3 X + \epsilon$ (2). Because we include the interaction term, the interpretation of β_1 changes. It now indicates the relationship between participative HRM practices and performance if trust is "a lot below average" (ranked 0 out of 4). The full estimated association between HRM use and performance also depends on the interaction. A significant interaction term ($\beta_2 \neq 0, p < 0.05$) indicates that the association between workplace performance and one of the HRM practices is related to the employees' trust in their managers (moderated by trust). A positive coefficient indicates that in workplaces which have higher trust in managers, the relation between performance and participative HRM practices is stronger. A negative sign indicates a weakening role of trust. Because the coefficients in ordered probit models are not directly interpretable, we estimate marginal relations at specific levels for trust.

5.2 Panel 2004-2011

We use the available panel data component to get some additional information on the causality of the hypothesized relationships. The cross-sectional analysis used simultaneous associations. Now we use a temporal gap of 7 years to give information about the temporal precedence. However, the temporal gap of 7 years could be too big to find significant relationships. Most studies use smaller differences between implementation and outcome (see section 2.3 reversed causality).

We start with an analysis of intertemporal correlations between the variables of interest. For example, we look at the relation between 2004 HRM practices and 2011 performance related outcomes, and vice versa. If the first relation is strongest HRM is expected to drive performance. If the second relation is strongest, previous performance is expected to create HRM practices (Watson Wyatt, 2002).

Based on a study by Sheehan (2014), we estimate two additional models using the panel sample. To reduce the possibility of reversed causality, we regress workplace performance in 2011 on lagged independent variables of interest (trust and HRM form 2004). We estimate $y_{11}^* = \beta_0 + \beta_1 HRM_{04} + \beta_2 HRM_{04} * TRUST_{04} + \beta_3 X + \epsilon$ (3). If there is a positive significant relation, the level of participative HRM practices in 2004 seems to have a positive effect/relation on workplace performance in 2011.

Next to that, the relation between performance, HRM practices and trust when controlling for previous performance is analyzed. We estimate $y_{11}^* = \beta_0 + \beta_1 HRM_{11} + \beta_2 HRM_{11} * TRUST_{11} +$

$\beta_3 y_{04}^* + \beta_4 X + \epsilon$ (4) with and without a control for past performance. Past performance (y_{04}^*) could be seen as a proxy for success or the ability of the management (Huselid & Becker, 1996). If the relation between 2011 independent variables and performance sustains after controlling for pervious performance, then the relation between HRM practices, trust and performance is not significantly affected by past performance. Using this approach we take into account that earlier performance (or management ability) might explain the use of HRM and the level of trust.

6. Results

6.1 Cross-section 2011

Descriptive statistics

Table 2 shows the mean and standard deviation of our main variables of interest. On average the workplaces use 7.9 out of 12 (65.6 percent) employee involvement practices. The practices used most often is induction for new employees and the least popular practice is the use of quality circles. The average worker autonomy is rated at 1.99 out of 3. Indicating that on average there is "some" autonomy for the worker. The variety within the employee's work is highest and the control of the pace of work is lowest. Labor productivity is on average seen as *"above industry average"* (2.6 of 4). Because of the subjective indication of performance it is possible that more than half of the representatives for the workplaces believe their performance is better than average. The average workplace level trust is 2.4 of 4. Indicating that employee's agree more on the trustworthiness of their manager than they disagree.

Table 2: mean and standard deviation

Variable	Obs	Mean	Std. Dev.
lp	1740	2.567	0.7349278
EI	1923	0.656	0.2085012
WA	1921	1.992	0.6004335
TRUST	1921	2.424	0.5658752

Correlations

Most correlations between the variables of interest are positive and highly significant (see table 3). However, the correlation between TRUST and the relative EI index is significantly negative (r=-0. 084, p=0.002). When we examine this relationship in more detail, we only observe a significant and positive relation between trust and having meetings between employees and senior managers (r=0.067 , p=0.032), most other correlations with involvement practices and trust are (significantly) negative (see Appendix table 4). It seems that the association between employee involvement practices and trust in managers is negative. This indicates that workplaces which give employees more possibility to involve (information, interaction and flexibility) show lower trust. For worker autonomy there is a positive correlation (r=0.122, p=0.000). Hence, in workplaces with more autonomy there is also more trust in managers. The relative use of employee involvement practices is significantly and positively correlated with the relative labor productivity measure (r=0.095, p=0.000). There is a similar positive relation between worker autonomy and productivity (r=0.075, p=0.002).

Table 3: correlations

	lp	EI_wpl	WA_wpl	TRUST
lp	1			
EI_wpl	0.0946	1		
	0.0001			
WA_wpl	0.0750	0.1189	1	
	0.0018	*0.0000*		
TRUST	0.1344	-0.0841	0.1224	1
	0.0000	*0.0002*	*0.0000*	

Regressions

Participative HRM and performance

First, we look at the direct association between the use of employee involvement practices and performance (see table 5). Both variables are measured relative to other organizations in the industry. There seems to be a significant and positive relation between the relative use of EI and productivity (b=0.332, p=0.023). This indicates that more use of EI practices is associated with higher labor productivity. The positive sign indicates that the probability that workplaces report productivity "a lot below average" decreases in EI_wpl. The probability that productivity falls in the highest

category “a lot above average” increases in EI_wpl. Marginal effects show that the likelihood that an higher relative EI index is significantly positive related to the probability that labor productivity valued at least “above average” (b=0.067, p=0.031) (see Appendix table 6). The coefficient indicates that a 10 percentage point higher EI (relative to industry) increases the probability that productivity is “above average” by .67 percentage points. Hence, workplaces which use more involvement practices relative to others in the same industry, report higher relative productivity.

Table 5: employee involvement and labor productivity

	lp
EI_wpl	0.3324744
	0.023
intercept	yes
firm level controls	yes
observations	1663

Table 7 shows that the relation between relative worker autonomy and labor productivity is significant and positive (b=0.295, p=0.037). Hence, in workplaces with relatively more autonomy for their employees, there is a higher productivity (relative to the industry) reported. The estimated marginal effects suggest that the relative autonomy is significant and positively related to the probability that productivity is rated at least “above average” and negatively related to lower ratings (see Appendix table 8). These results show that a 10 percentage points higher WA relative to competitors, is associated with a 0.59 percentage points higher probability that productivity is rate “above average” (outcome 3).

Table 7: worker autonomy and labor productivity

	lp
WA_wpl	0.2946555
	0.037
intercept	yes
firm level controls	yes
observations	1662

In **summary**, the observed associations are in line with the first set of hypotheses. The results show that labor productivity is significantly and positively associated with both participative HRM practices. This indicates that, in line with the expectations, a workplace which uses relatively more management practices to involve employees in organizational decision making compared to their competitors, report higher relative productivity. A similar positive relation between individual task related autonomy and labor productivity is observed in the data.

Participative HRM, performance and trust

To test our second set of hypotheses we include an interaction between the relative use of participative HRM practices and the average employees trust in managers within the workplace. If the interaction is significant, average workplace trust seems to be associated with the strength of the relation between the management practices and performance. To find out whether relative EI or WA are significantly related to performance we additionally estimate the marginal effects at specific levels for trust (on the range 0 to 4).

Employee involvement

First, we look at the association of trust with the productivity-employee involvement relation. In table 9 we include the interaction. Results shows an insignificant negative coefficient for relative EI (b=-0.260, p=0. 317) and a positive and significant coefficient for the interaction term (b=0.209, p=0.015). This indicates that the positive relation between relative EI use and productivity is stronger in workplaces with higher levels of trust. Moreover, as the coefficient for EI is not significantly different from zero, the relative use of EI is not related to productivity if there is no trust in managers, but when trust is higher the strength of the relation between EI and performance increases. More information about this relation is given by estimated marginal results.

Table 9: employee involvement, trust and labor productivity

	lp
EI_wpl	-0.2595533
	0.317
EI_wpl*TRUST	0.2094867
	0.015
intercept	yes
firm level controls	yes
observations	1662

The estimated marginal effects show a positive interaction if productivity is at least "above average" (Appendix table 10). The result for outcome 3 ("above average") show a significant positive interaction with trust (b=0.042, p=0.019). The coefficient indicates that, if the use of EI practices is at industry average (EI_wpl=1), then a 10 percentage points increase in trust is associated with an increase of the probability that labor productivity is rated "above average" by 0.42 percentage points, ceteris paribus. Hence, the association between EI and productivity becomes stronger in trust.

A more detailed look at the estimated marginal effects[9], suggests that relative EI is significantly and positively related to having "above average" labor productivity when trust is at least between 2.5 and 3 (on the 4 point-scale) (see Appendix table 11). When trust is lower, EI does not significantly increase previously mentioned probability. Results show a negative relation between EI and the probability of having "average" or lower productivity. Again the relation is only significant when trust is of a certain level. These finding can be interpreted as follows, if trust is high (TRUST=3) a 10 percentage points increase in relative EI use, increases the probability that productivity is "above average" by 0.68 percentage points, ceteris paribus. If trust is low (TRUST=0) then the relation is insignificantly negative. If trust is below a certain threshold, the relative use of employee involvement practices is not significantly related to productivity. Hence, trust in managers strengthens the relation between employee involvement practices and labor productivity at high but not at low levels of trust.

In **summary**, these findings are in line with hypothesis 2a. Trust seems to be positively associated to the relation between the relative use of employee involvement practices and labor productivity. These findings indicate that when a workplace uses more practices to involve their employees in organizational decision making by giving them a possibility to participate, the trust these employees have in their management seems to be of significant value to make the use of these practices a success.

Worker autonomy

As discussed before (see section 2.2), the relation between productivity and worker autonomy is expected to have a different association with trust, than employee involvement has. Table 12 shows that trust is not significantly associated with the productivity-WA relationship. The association of trust with the relation between labor productivity and worker autonomy is insignificant (b=0.105,

[9] After estimating the average marginal effects for EI_wpl and EI_wpl*TRUST, we estimate the marginal effect of EI_wpl at specific levels of TRUST, *margins, dydx(EI_wpl) at(TRUST=(0(.5)4)) predict(outcome(…)).*

p=0.183). The estimated marginal effects show similar insignificant relationships (see Appendix table 13).

Table 12: worker autonomy, trust and labor productivity

	lp
WA_wpl	-0.0146289
	0.958
WA_wpl*TRUST	0.1046966
	0.183
intercept	yes
firm level controls	yes
observations	1661

The estimated marginal relations between relative worker autonomy and productivity at specific levels of trust show significant relations for high levels of trust and insignificant for low levels (see Appendix table 14). The before estimated insignificant interaction, indicates that the significant marginal relations are not different from the relations when trust is low. For example, if TRUST=3, then there seems to be a positive relation between WA and the probability that labor productivity is at least "above average" (dy/dx=0.057, p=0.034). This result, however, is not significantly different from when TRUST=0 (dy/dx=-0.003, p=0.958).

In **summary**, the results are in line with hypothesis 2b. As hypothesized, the relation between the autonomy a workers have over their own tasks and productivity is not related to the trust employees have in their managers. Hence, without trust in managers there is no significant evidence that having relatively more worker autonomy is related to productivity.

6.2 Panel 2004-2011

Descriptive statistics

First, we look at the differences across the two years of observation (see table 15). A comparison of means shows that in on average the use of employee involvement practices is significantly higher in 2011 compared to 2004 (p=0.000). This could be a sign that over time (more) workplaces observe potential benefits, and therefore implement more of these practices. The level of worker autonomy

does not significantly differ between the years. Another interesting finding is that the average trust of employees in their managers decreased in 2011 relative to 2004. This marginally significant decrease (p=0.066) might be related to the economic crisis which took place between the observation years.

Table 15: descriptive statistics panel data

	2004			2011			Difference	
Variable	**Obs**	**Mean**	**Std. Dev.**	**Obs**	**Mean**	**Std. Dev.**	**P-value**	
							Two-sided	One-sided
EI	598	0.6217172	0.2153047	600	0.6656566	0.2069385	*0.0003*	*0.0002*
WA	596	1.976091	0.6284191	598	1.945652	0.605127	*0.3941*	*0.1970*
TRUST	600	2.392777	0.5519364	599	2.346353	0.5135575	*0.1319*	*0.0660*
lp	513	2.475634	0.7394379	544	2.477941	0.7454408	*0.9597*	*0.4799*

Correlations

Table 16 shows the estimated intertemporal (2004 versus 2011) correlations between the main variables of interest. All variables of interest are positive and significantly related to their lagged variables. There is no significant intertemporal relation between relative EI and relative labor productivity. There, however, is a marginal negative correlation between productivity in 2004 and the relative use of EI practices in 2011 (r=-0.079, p=0.074). This could be an indication that lower past productivity is negatively related with EI practices use. Relative worker autonomy and productivity are not significantly related between the observation years. Moreover, there is even no significant correlation within 2011 (r=0.050, p=0.241).

The correlation between earlier worker autonomy and trust is stronger than the other way around. Employee involvement is negative and significantly related to trust in both directions. Trust in 2004 has a marginal positive correlation with productivity in 2011 (r=0.073, p=0.090), the reversed relation seems to be stronger (r=0.105, p=0.018).

Table 16: intertemporal correlations

	lp	lp 04	EI_wpl	EI_wpl 04	WA_wpl	WA_wpl 04	TRUST	TRUST 04
lp	1							
lp 04	0.1349	1						
	0.0034							
EI_wpl	0.1180	-0.0791	1					
	0.0059	*0.0735*						
EI_wpl 04	0.0282	0.0590	0.4556	1				
	0.5121	*0.1827*	*0.0000*					
WA_wpl	0.0504	0.0268	0.1801	0.1053	1			
	0.2412	*0.5459*	*0.0000*	*0.0101*				
WA_wpl 04	-0.0297	0.1771	0.0403	0.2016	0.2512	1		
	0.4913	*0.0001*	*0.3255*	*0.0000*	*0.0000*			
TRUST	0.1370	0.1045	-0.1523	-0.1165	0.0973	0.1165	1	
	0.0014	*0.0179*	*0.0000*	*0.0044*	*0.0008*	*0.0044*		
TRUST 04	0.0728	0.1523	-0.1672	-0.1559	0.0194	0.1233	0.3888	1
	0.0896	*0.0005*	*0.0000*	*0.0001*	*0.6356*	*0.0026*	*0.0000*	

Regressions

Lagged independent variables

A lagged ordered probit regression model with 2011 outcome variables with previous (2004) explanatory variables could give additional value to possible causality of the relationships between HRM, performance and trust. The 7 year difference between organizational performance and the explanatory variables might, however, be a problem as implementation of HRM practices are more likely to have an impact within shorter time delay[10]. Therefore, the outcomes should be interpreted with caution.

Contrary to expectations, there are no significant relations between labor productivity and prior relative use of employee involvement practices (see table 17). The insignificant lagged coefficient for EI_wpl (b=-0.167, p=0.512), indicates that a workplace with more use of employee involvement practices relative to its direct competitors, do not have a significantly different labor productivity relative to those competitors. This result does not change when the lagged interaction with trust is included to the model. This indicates that the level of trust in 2004 is not significantly associated with

[10] See section 9. Discussion, there we give a more elaborated discussion about the 7 years difference between the observation periods.

the relation between relative employee involvement in 2004 and labor productivity in 2011. Moreover, prior use of employee involvement practices, with either high or low trust, does not have significant explanatory value for later labor productivity.

Table 17: lagged employee involvement and trust

	lp 11	lp 11
EI_wpl 04	-0.1665199	-0.0408126
	0.512	*0.924*
EI_wpl 04*TRUST 04		-0.0513813
		0.713
intercept	yes	yes
firm level controls	yes	yes
observations	514	514

Results from similar lagged ordered probit models do not observe significant intertemporal relationship between past worker autonomy and later performance related outcomes (see table 18). Next to that, trust is not significantly associated with previous relation. This indicates that the relative worker autonomy in 2004 is not significantly related to productivity in 2011.

Table 18: lagged worker autonomy and trust

	lp 11	lp 11
WA_wpl 04	0.0661144	0.2068919
	0.805	*0.641*
WA_wpl 04*TRUST 04		-0.0485855
		0.734
intercept	yes	yes
firm level controls	yes	yes
observations	512	512

Control for past performance

For an additional view on the relation between workplace performance, participation and trust we use the panel data to estimate one model without past performance controls and one with. We check whether the relation between HRM, trust and productivity still exists when we control for past productivity. We compare the estimated models. If the relation becomes smaller, this would indicate

that previous performance captures some of the explanatory value of the other independent variables. *"This approach takes into account the possibility that prior performance may explain the adoption of HRM practices"* (Sheehan, 2014). In our case it also controls for earlier performance explaining the relation between trust and HRM practice use (the interaction).

Table 19 column 1 shows that controlling for past performance strengthens the relationship between relative use of employee involvement practices and performance. Although prior productivity is no significant predictor (b=0.160, p=0.182), the relationship between relative EI and productivity becomes stronger after including prior productivity. These results indicate that workplaces with lower productivity in 2004 are more likely to invest in HRM practices and thereby increase performance more than competitors.

Contrary to the cross-section sample, the panel sample does not show a significant interaction between relative employee involvement and trust. The interaction is insignificant in both models with or without controls for past productivity (see table 19, column 2). The panel sample suggests that productivity is not significantly related to employee involvement when combined with the trust in managers.

Table 19: employee involvement, trust and past productivity

	1		2	
	lp 11	**lp 11**	**lp 11**	**lp 11**
EI_wpl	0.6324024	0.7710649	0.2117998	0.2884936
	0.022	*0.004*	*0.645*	*0.571*
EI_wpl*TRUST			0.1731494	0.2023525
			0.249	*0.235*
lp 04		0.1601183		0.147662
		0.182		*0.221*
intercept	yes	yes	yes	yes
firm level controls	yes	yes	yes	yes
observations	516	446	515	446

Worker autonomy is not significantly associated with productivity (b=0.128, p=0.644) (see table 20, column 1). Even though the coefficient doubles, when for previous performance is included in the model, the result is not statistically significant (b=0.244, p=0.433). These findings are not consistent

with the cross-section results. In line with the cross-section results, there is an insignificant interaction between trust and relative worker autonomy (table 20, column 2). Adding past productivity to the model does not seem to be related to the estimates.

Table 20: worker autonomy, trust and past productivity

	1		2	
	lp 11	**lp 11**	**lp 11**	**lp 11**
WA_wpl	0.126794	0.2439615	-0.1220965	-0.0082881
	0.644	*0.433*	*0.772*	*0.987*
WA_wpl*TRUST			0.090999	0.0993054
			0.447	*0.452*
lp 04		0.156812		0.1471744
		0.207		*0.244*
firm level controls	yes	yes	yes	yes
observations	515	445	514	445

7. Robustness analysis

In the robustness analysis we first estimate the relation between the participative HRM practices and labor productivity for two different sub-groups. The groups are divided by their level of trust. Next to that, we estimate similar models compared to the main analysis but we use different performance related outcome variables.

7.1 Sub-groups

The sub-groups based on a median split by the level of workplace trust. This creates two sub-groups of workplaces. The group with the above median trust contains 846 unique workplaces. The below median group contains 816 workplaces. In line with the theory discussed before we expect that a stronger relation between the use of employee involvement practices and labor productivity in the high trust subgroup compared to the low trust subgroup. For worker autonomy we do not expect differences between the subgroups.

We observe that relative use of EI practices is positively and significantly related to productivity in the high trust sub-group (b=0.388, p=0.037). In the low trust sub-group this relation is insignificant

(b=0.214, p=0.316). When trust is high the association between relative EI use and productivity is stronger than when trust is low. This is in line with the main results and expectations.

The results for the level of worker autonomy however, contradict with the expectations and main findings which suggest an insignificant association between trust and the autonomy-productivity relation. In the high trust sub-group productivity is not related to worker autonomy (b=0.087, p=0.611), but in the low trust sub-group this relation is significant and positive (b=0.694, p=0.003). Indicating that worker autonomy is stronger related to productivity when trust is low, compared to high.

Table 21: employee involvement and worker autonomy in sub-groups

High trust	**obs=846**		**Low trust**	**obs=816**	
	Coefficient	**P-value**		**Coefficient**	**P-value**
EI_wpl	0.388012	*0.037*	**EI_wpl**	0.2137093	*0.316*
WA_wpl	0.0871561	*0.611*	**WA_wpl**	0.6938916	*0.003*

7.2 Different performance measures

Dyer and Reeves (1995) discussed that measures of performance can be divided in different levels. Employee outcomes, such as attitudes and behavior towards the workplace, are a direct response to practices. Organizational outcomes, such as production and quality, are more indirectly related. Financial outcomes which focus on profitability or revenues are even more indirectly related to changes in practices. Market outcomes (e.g. firm value and stock price) are the most comprehensive measure of performance and have the most indirect relation with HRM practices.

In the main analysis labor productivity is discussed. Labor productivity is an aggregate of the productivity of all employees. The behavior and attitudes of all employees have significant impact on productivity. Unfortunately we do not have information about individual behavior. We do, however, observe employee satisfaction, this is a measure of the employees attitude towards the organization. Employee satisfaction is expected to be positively related to performance. If there is low trust in managers, participation (especially EI practices) will not be affective and might even lead to negative relations with satisfaction. On the other hand, labor productivity is also part of financial

performance. For example, if the costs to increase labor productivity are higher than the benefits, financial performance will be worse. The main analysis did not take the costs of production into account, therefore it is interesting to get an additional view on this broader perspective of (financial) performance. In this part of the robustness analysis we check whether employee satisfaction and financial performance are positively related to participation and whether trust moderates this relationship.

Workplace satisfaction is a composite measure of nine employee level questions, combined into one average value for the workplace. The measure is internally consistent (Cronbach's alpha=0.88). Principal factor analysis confirms a unidimensional scale and explains 52 percent of the variance. For analysis we use a linear regression model and "absolute" values of EI and WA. Financial performance is measured on a similar relative scale as labor productivity (from 0 "a lot below average" to 4 "a lot above average"). Therefore, the analysis is based on ordered probit models and relative HRM use. In the following part we briefly discuss the results for financial performance and workplace satisfaction separately.

Financial performance

The association between employee involvement practices and financial performance is marginally significant (b=0.247, p=0.073) (see table 22). For the reported worker autonomy we observe a small negative but highly insignificant relation with financial performance (b=-0.034, p=0.833) (see table 22). These results indicate that there is some evidence that more use of employee involvement practices is associated with higher financial performance. Worker autonomy is not related to financial performance. In comparison to the main results, the estimated associations between participative HRM practices and financial results are smaller. The results are not in line with hypotheses 1a and 1b.

The differences could be related to the fact that financial performance also includes the cost of productivity. Earlier studies (Thompson, 2011) (Forth & Millward, 2004) show that an increase in participation should be compensated by other costly practices (e.g. higher wage and job security guarantees). Therefore the eventual association between HRM and final results could be suppressed. More autonomy also indicates more responsibility, and in turn costs might increase thereby suppressing financial performance.

In line with hypothesis 2a and the main results, the interaction between relative employee involvement use and trust is positive and significant (b=0.160, p=0.049). Hence, trust has a positive impact on the strength of the relation between EI and financial performance. In contrast to hypothesis 2b and the main results, there is a significant interaction between relative autonomy and trust (b=0.141, p=0.044). This indicates that the relation between worker autonomy and financial performance is associated with the level of trust.

Table 22: employee involvement, worker autonomy, trust and financial performance

	fp	fp		fp	fp
EI_wpl	0.2469828	-0.2032043	**WA_wpl**	-0.0343937	-0.4468433
	0.073	*0.435*		*0.833*	*0.084*
EI_wpl*TRUST		0.1604338	**WA_wpl*TRUST**		0.1414629
		0.049			*0.044*
intercept	yes	yes	**intercept**	yes	yes
firm level controls	yes	yes	**firm level controls**	yes	yes
observations	1692	1691	**observations**	1692	1691

Employee satisfaction

Table 23 presents the estimated relations between participative HRM practices, satisfaction and the possible association with trust in the workplace. Without the interaction term, the use of employee involvement practices is not significantly related to satisfaction (b=0.101, p=0.358). Worker autonomy, on the other hand, is positively related to satisfaction when the interaction is not included (b=0.378, p=0.000).

The moderating effect of trust for employee involvement is in line with hypothesis 2a the main results. The initially negative marginal relation between employee involvement (b=-2.166, p=0.000) and satisfaction is significantly related to the level of trust (b=0.810, p=0.000). Hence, employee involvement is positively related to satisfaction if trust is high enough. Contrary to hypothesis 2b and main results, trust is significantly associated with the relation between autonomy and satisfaction (b=0.637, p=0.000). When trust is high enough an increase in autonomy has a positive relation with satisfaction, but when too low worker autonomy and satisfaction are negatively related.

Table 23: employee involvement, worker autonomy, trust and job satisfaction

	Satisfaction	Satisfaction		Satisfaction	Satisfaction
EI	0.1006542	-2.166041	**WA**	0.3776903	-1.442407
	0.358	*0.000*		*0.000*	*0.000*
EI*TRUST		0.8099624	**WA*TRUST**		0.6370247
		0.000			*0.000*
intercept	yes	yes	**intercept**	yes	yes
firm level controls	yes	yes	**firm level controls**	yes	yes
observations	1827	1827	**observations**	1826	1826

8. Conclusion

A lot of research is devoted to the relationship between human resource management and performance. In this study we tried to give additional insights on how employee attitudes, in particular trust, are linked to this relation. Using Workplace Employment Relationship Study (2004 and 2011) data form Britain, we first investigate the relation between participative HRM practices and workplace related performance outcomes. The data contained information on both workplace and employee level. We deviate between participative practices through the level of participation. Employee involvement focusses on organizational level participation and worker autonomy focusses on individual task related discretion. In addition to the previous relationship we include the employees' trust in their managers. We try to find out whether the employee's trust in the managers affect the relationship between participative management practices (employee involvement and worker autonomy) and workplace performance related outcomes? We expect that trust has a facilitating role and thereby influences the strength of the relation between employee involvement and performance. For task related worker autonomy we do not expect trust to be significantly associated.

Our results show that the relative use of employee involvement practices is significantly and positively related to labor productivity. The relative level of worker autonomy is also positively related to productivity. These significant positive associations are in line with our expectations. In the panel sample, however, worker autonomy is not significantly related to productivity. We should be careful with claiming a causal relation, because when we include temporal precedence earlier use of participative practices (in 2004) is not related to later productivity (in 2011).

Trust seems to be associated with the productivity-HRM relation as expected (at least in the main analysis). From the cross-sectional analysis we conclude that the relation between relative productivity and relative use of employee involvement practices is stronger for higher levels of trust. Moreover, the marginal relation is only significant for higher levels of trust and this relation is significantly different form lower levels of trust. Indicating that trust in managers strengthens the relation between employee involvement practices and labor productivity at high but not at low levels of trust. Therefore, the relationship between employee involvement practices and productivity is significantly moderated by employee trust in managers. The relation between worker autonomy and productivity is not significantly associated with trust. Robustness analyses, on the other hand, show mixed results.

Analysis of the panel data sample does not give us additional information about the order of the relationship. This could be because of the large difference in observation years for dependent and independent variables. Regressions on lagged explanatorty variables only show insignificant results.

In summary our main results suggest that there is a relation between trust and the effectiveness of participative management. It could be that managers who implement employee involvement HRM practices should take the level of trust employees have in them into account, otherwise the investments in HRM might be wasted. However, we are not sure trust causes the difference in effect of HRM practices on performance. A toned down view on the results suggests that in organizations with more trust, there seems to be a stronger relation between involvement and productivity.

9. Discussion

Relation to previous research

As discussed before there are some studies which investigate a similar role of trust. Alfes, Shantz and Truss (2012) and Innocenti, Pilati and Peluso (2011) both investigated whether trust moderates the relationship between (some sets of) HRM practices and perfomance related outcomes.

Innocenti, Pilati and Peluso (2011) found a significant stronger path between motivational HRM practices (nonmonetary recognition and economic rewards) and employee attitude towards the organization when trust was high, rather than low. No significant differences occur for ability (evaluations, information and training) and opportunity (employee survey and job design). In addition to our main analysis, which suggested that the relation is associated with trust, we also

created two sub-groups based on the level of trust. This analysis suggested that the path between employee involvement (which includes Innocenti et al.'s "ability" measures) and productivity is stronger in the high trust sub-group. However, the differences between the composition of the sets of HRM practices and the observation level might be related to the different results. Innocenti, Pilati and Peluso (2011) only focuss on individual employee attitudes towards the organization. Alfes, Shantz and Truss (2012) use a larger set of outcome variables. They study outcome for individual attitudes, behavior and performance, perceived HRM practices and trust in the employer all at individual level. This is quite different from our study. We focus on performance related outcomes, actual HRM practices and trust in the manager at workplace level. There is no standard method for analyzing possible moderation by trust. Previous studies differ in their approach. In previous studies they; use different sub-groups based on trust (Innocenti, Pilati, & Peluso, 2011), discuss interaction only models (Farndale, Hope-Hailey, & Kelliher, 2011), and discuss full interaction models including the main effect of trust (Alfes, Shantz, & Truss, 2012). We however choose trust to be a factor facilitating the effectiveness of HRM practices. Such that the selected HRM practices are the driver of performance related outcomes. Nonetheless, it seems that trust is associated with the relation between an aggregated workplace level measure of productivity employee involvement practices is comparable to these earlier studies with individual measures.

The above discussed studies did not use panel data to trying to give additional information about the direction of the relationship as we did. Therefore we discuss these findings separate from those studies. Our first panel data findings do not support the expected relation between earlier uses of participative practices and trust with later performance related outcomes. The insignificant results could have three different explanations. First, there is no intertemporal relation at all. Hence, HRM practices, trust and productivity are only linked in the same year. Second, the relation is no longer visible. This could be because of the too distant time gap. The relation might only exist within a shorter period of time. The reversed relation might also be more plausible on shorter term. When performance is better in one year, workplaces are not likely to wait seven years before they adjust their practices. When performance is bad, a workplace is not likely to wait seven years to improve the system. At last it could also be that the used HRM practices are not related to performance yet. Birdi et al. (2008) show that different periods pass before a relation is found. They showed that autonomy practices are related to performance up to four years after implementation. For some involvement practices, however, a much longer period passed (up to nine years) before a relation is found.

In our study we use a similar approach with panel data as Sheehan (2014). Although she focussed on a braoder set of HRM practices and no interaction with trust, the results could give us an indication about the direction. By using longitudal data on HRM and performance in small and medium-sized firms, she showed that performance in 2011 is positively related to the use of HRM practices in 2007. Thereby sugesting that; "an i*nvestment in the selected human resource in 2007 continues to have a positive effect on performance in 2011"* (Sheehan, 2014). Next to that, results suggest that relation between performance and HRM practices is still significant, when controlling for past performance. The strength of the relation decreased, therefore she argued that firms with better performance in 2007 were more likely to invest in HRM practices. In line with this argumentation, we could argue that, a stronger relation between dependent and independent variables when controlling for past productivity, indicates that weaker firms in 2004 are more likely to invest in participative HRM practices and thereby increase performance more.

Limitations

The results of our study come along with some limitations, which could be problematic for answering the research question. Most studies argue that HRM practices lead organizational performance (Lawler, Mohrman, & Ledford, 1998). However, some results suggest that the use of HRM practices is strongly related to both past and future performance (Wright, Gardner, Moynihan, & Allen, 2005). Therefore caution in statements for causality is necessary. The order of the causal arrow is hard to determine using our dataset. First of all, the cross-section sample is not able to predict a causal direction and only estimates non-causal associations.

To give additional information about the direction of the relation we use the panel sample of the data. The available panel sample, however, also has some flaws. The panel data set compares data from 2004 and 2011, such that there is an interval of seven years. The first limitation is that the year of implementation is not observed. It is not observed when the HRM practices are actually implemented. We only know it is somewhere within these seven years. Therefore, it is hard to come up with a general cause-effect-rule. We cannot observe how long it takes before HRM practices influence trust or performance. For example, a workplace might not show any difference in labor productivity (especially relative to other workplace in the industry) when a new set of HRM practices is implemented a few weeks ago. However, when another workplace has implemented a similar set of HRM practices a few years ago, it is more likely that there is an effect on (relative) performance. The differences in time of implementation probably have a significant effect on the results, when not controlling for it. If there is a shorter time difference between observations, results are more reliable and more useful for answering the research question. Birdi et al. (2008) show in their longitudinal

study on the impact of HRM practices on company productivity that the periods (or lags) in which practices have effect differentiate. They found that empowerment (autonomy) is related to changes in organizational performance 1 to 4 years after implementation. However, they also found that improvements in performance by teamwork where not evident until 6 to 9 years after implementation (Birdi, et al., 2008). This study shows that it is not that straightforward in which time period a change in the use of HRM practices has impact on organizational outcomes. Moreover, for employee involvement our study uses a set of practices, these could all have a different impact time and make it therefore hard to effectively analyze the impact of a change in the set of practices.

A second limitation is the composite measures for our participative HRM practices. This measure loses information about the variation between individual HRM practices. Not only variation in the relation over time (as discussed before), also the variation in strength of the individual practice disappears. For example, the employee involvement (EI) index is scaled 0 to 1 as an average of all used (1) and not used (0) EI practices. However, the effects or relations of some of the practices might be stronger than for others. Hence, using teamwork might have a stronger impact on performance than off job training. Using a sum or average of practices used, could give wrong estimations. If for example, there are ten practices to measure employee involvement, then a workplace which uses nine including teamwork and without off job training, should have a stronger relation with performance compared to a workplace which uses off job training instead of teamwork when all other things are constant. Nonetheless, these kind of composite additive scale or index measures are often used in HRM related studies.

Also the effectiveness of HRM practice implementation could be an issue. We only observe the use of certain practices or the level of autonomy workers have from only one perspective (the manager). We do not observe whether employees perceive a similar use of practices as stated by the managers. As discussed by Khilji and Wang (2006) a single measure from the perspective of one manager might not be sufficient to differentiate between intendent and implemented HRM practices. Therefore it is important to take into account perceived practices by, both, managers and employees. Otherwise, we do not know which practices are intended and which are effectively implemented (Sheehan, 2014).

Another limitation is the source of the gathered information. Measures for HRM practices and performance both come from the same manager. The subjective performance measure, for example, is on average ranked "*above average*" by the managers. This is an indication of a too positive view by managers and shows a measurement error, because it does not report the true state of performance.

If this measurement error in performance is related to the reported use of HRM practices than there could be a common-rater bias which makes the results more inaccurate (Brown, McHardy, McNabb, & Taylor, 2011). Rating scales are vague and therefore more likely to be affected by biases. A solution could be the use of objective performance related outcomes.

At last, there might be an unobserved variable driving the results. The significant correlation between most of our HRM practices could be an indication for this. Such an unobserved variable could be the ability of managers. More able managers might work better with new practices, but could also implement these new practices earlier (because they know of potential benefits). This could lead to a bias for firms which implemented new practices to be different from firms not implementing it (selection bias). Also more able managers could be better trusted because the might know possible consequences of little trust for performance. A study which cannot control for most potential causes of performance or trust, like our study, should be cautious with causal inferences (Wright, Gardner, Moynihan, & Allen, 2005). One factor which might capture the ability of management is past performance. We tried to control for past performance in the panel section but the difference between the observation periods might be too big, as discussed before.

Future research

Given the discussed results and limitations of our study it is very interesting to elaborate on the direction of the causal arrow. The cross-sectional studies clearly suggest that trust is associated with HRM and individual or workplace performance related outcomes. There is however no clear evidence whether trust is causing the strength of the relation or that some other variable is causing both. For future research it could therefore be interesting to study the relation between the use of participative HRM practices and some confounding factors. Interesting factors are the ability of managers (as discussed above), but also organizational culture. Trust might, just like employee commitment and job satisfaction (Wood, Van Veldhoven, Croon, & de Menezes, 2012), not only affect the management practice and performance relation, but could also be influenced by the use of participative HRM practices. This would indicate that an organization could use management practices to directly influence performance and indirectly via trust. Future research to a mediation model might give additional insights into the reason why trust is positively related to the performance-HRM relationship.

References

Adler, P. S. (2001). Market, hierarchy, and trust: The knowledge economy and the future of capitalism. *Organization science*, 12(2), 215-234.

Alfes, K., Shantz, A., & Truss, C. (2012). The link between perceived HRM practices, performance and well-being: The moderating effect of trust in the employer. *Human Resource Management Journal*, 22(4), 409-427.

Appelbaum, E., Bailey, T., Berg, P., & Kalleberg, A. (2000). *Manufacturing Advantage. Why HighPerformance Work Systems Pay off.* Ithaca, NY: Cornell University Press.

Arthur, J. B. (1994). Effects of human resource systems on manufacturing performance and turnover. *Academy of Management journal*, 37(3), 670-687.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology*, 51(6), 1173.

Birdi, K., Clegg, C., Patterson, M., Robinson, A., Stride, C. B., Wall, T. D., et al. (2008). The impact of human resource and operational management practices on company productivity: A longitudinal study. *Personnel Psychology*, 61(3), 467-501.

Bromiley, P., & Cummings, L. L. (1995). Transactions costs in organizations with trust. *Research on negotiation in organizations*, 5, 219-250.

Brown, S., Gray, D., McHardy, J., & Taylor, K. (2015). Employee trust and workplace performance. *Journal of Economic Behavior & Organization*, 116, 361-378.

Brown, S., McHardy, J., McNabb, R., & Taylor, K. (2011). Workplace performance, worker commitment, and loyalty. *Journal of Economics & Management Strategy*, 20(3), 925-955.

Cappelli, P., & Neumark, D. (2001). Do “high-performance” work practices improve establishment-level outcomes? *Industrial & Labor Relations Review*, 54(4), 737-775.

Cotton, J. L., Vollrath, D. A., Froggatt, K. L., Lengnick-Hall, M. L., & Jennings, K. R. (1988). Employee participation: Diverse forms and different outcomes. *Academy of Management review*, 13(1), 8-22.

Davis, J. H., Schoorman, F. D., Mayer, R. C., & Tan, H. H. (2000). The trusted general manager and business unit performance: Empirical evidence of a competitive advantage. *Strategic Management Journal*, 21(5), 563-576.

Davis, J. H., Schoorman, F. D., Mayer, R. C., & Tan, H. H. (2000). The trusted general manager and business unit performance: Empirical evidence of a competitive advantage. *Strategic Management Journal*, 21(5), 563-576.

de Menezes, L. M., & Wood, S. (2006). The reality of flexible work systems in Britain. *The International Journal of Human Resource Management*, 17(1), 106-138.

Dirks, K. T. (1999). The effects of interpersonal trust on work group performance. *Journal of applied psychology*, 84(3), 445.

Dirks, K. T., & Ferrin, D. L. (2001). The role of trust in organizational settings. *Organization science*, 12(4), 450-467.

Dyer, L., & Reeves, T. (1995). Human resource strategies and firm performance: what do we know and where do we need to go? *International Journal of human resource management*, 6(3), 656-670.

Farndale, E., Hope-Hailey, V., & Kelliher, C. (2011). High commitment performance management; The roles of justice and trust. *Personnel Review*, 40(1), 5-23.

Flynn, B. B., Schroeder, R. G., & Sakakibara, S. (1995). The impact of quality management practices on performance and competitive advantage. *Decision sciences*, 26(5), 659-691.

Forth, J., & Millward, N. (2004). High-Involvement Management and Pay in Britain. *Industrial Relations: A Journal of Economy and Society*, 43(1), 98-119.

Gould-Williams, J. (2003). The importance of HR practices and workplace trust in achieving superior performance: a study of public-sector organizations. *International journal of human resource management*, 14(1), 28-54.

Grund, C., & Harbring, C. (2009). Trust and control at the workplace: Evidence from representative samples of employees in Europe. *IZA working paper number 4297*.

Hosmer, L. T. (1995). Trust: The connecting link between organizational theory and philosophical ethics. *Academy of management Review*, 20(2), 379-403.

Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of management journal*, 38(3), 635-672.

Huselid, M. A., & Becker, B. E. (1996). Methodological issues in cross-sectional and panel estimates of the human resource-firm performance link. *Industrial Relations: A Journal of Economy and Society*, 35(3), 400-422.

Innocenti, L., Pilati, M., & Peluso, A. M. (2011). Trust as moderator in the relationship between HRM practices and employee attitudes. *Human Resource Management Journal*, 21(3), 303-317.

Katou, A. A. (2012). Investigating reverse causality between human resource management policies and organizational performance in small firms. *Management Research Review*, 35(2), 134-156.

Khilji, S. E., & Wang, X. (2006). 'Intended'and 'implemented' HRM: the missing linchpin in strategic human resource management research. *The International Journal of Human Resource Management*, 17(7), 1171-1189.

Kochan, T. A., Katz, H., & Mower, N. (1984). *Worker Participation and American Unions. Threat or Opportunity?* Kalamazoo, MI 49007: WE Upjohn Institute for Employment Research.

Lawler, E. E. (1986). *High-Involvement Management. Participative Strategies for Improving Organizational Performance.* 350 Sansome Street, San Francisco, CA 94104.: Jossey-Bass Inc., Publishers.

Lawler, E. E. (1992). *The ultimate advantage: Creating the high involvement organization.* San Francisco: Jossey-Bass.

Lawler, E. E., Hackman, J. R., & Kaufman, S. (1973). Effects of Job Redesign: A Field Experiment. *Journal of Applied Social Psychology*, 3(1), 49-62.

Lawler, E. E., Mohrman, S. A., & Ledford, G. E. (1998). *Strategies for high performance organizations: The CEO report: Employee involvement, TQM, and reengineering programs in Fortune 1000 corporations.* San Francisco: Josey-Bass.

Leana, C. R. (1986). Predictors and consequences of delegation. *Academy of Management Journal*, 29(4), 754-774.

Levine, D. (1995). *Reinventing the Workplace: How Business and Employees Can Both Win.* Washington, DC: Brookings Institution.

Locke, E. A., Schweiger, D. M., & Latham, G. P. (1987). Participation in decision making: When should it be used. *Organizational dynamics*, 14(3), 65-79.

MacDuffie, J. (1995). Human resource bundles and manufacturing performance: Organizational logic and flexible production systems in the world auto industry. *Industrial and Labor Relations Review*, 48: 197-221.

Macky, K., & Boxall, P. (2007). The relationship between 'high-performance work practices' and employee attitudes: an investigation of additive and interaction effect. *The International Journal of Human Resource Management*, 18(4), 537-567.

Mayer, R. C., & Gavin, M. B. (2005). Trust in management and performance: Who minds the shop while the employees watch the boss. *Academy of Management Journal*, 48(5), 874-88.

Nagin, D. S., Rebitzer, J. B., Sanders, S., & Taylor, L. J. (2002). Monitoring, motivation, and management: The determinants of opportunistic behavior in a field experiment. *The American Economic Review*, 92(4), 850-873.

Nguyen, T. V., & Bryant, S. E. (2004). A study of the formality of human resource management practices in small and medium-size enterprises in Vietnam. *International small business journal*, 22(6), 595-618.

Pil, F. K., & MacDuffie, J. P. (1996). The adoption of high-involvement work practices. *Industrial Relations: A journal of economy and society*, 35(3), 423-455.

Porta, R. L., Lopez-De-Silane, F., Shleifer, A., & Vishny, R. W. (1996). Trust in large organizations. *National Bureau of Economic Research*, No. w5864.

Rutherford, M., Buller, P., & McMullen, P. (2003). Human resource management problems over the life cycle ofsmall to medium-sized firms. *Human Resource Management*, 42(4): 321–235.

Sheehan, M. (2014). Human resource management and performance: Evidence from small and medium-sized firms. *International Small Business Journal*, 545-70.

Spreitzer, G. M., & Mishra, A. K. (1999). Giving up control without losing control trust and its substitutes' effects on managers' involving employees in decision making. *Group & Organization Management*, 24(2), 155-187.

Thomas, K. W., & Velthouse, B. A. (1990). Cognitive elements of empowerment: An "interpretive" model of intrinsic task motivation. *Academy of Management Review*, 15: 666-681.

Thompson, P. (2011). The trouble with HRM. *Human Resource Management Journal*, 21(4), 355-367.

Wagner, J. A. (1994). Participation's effects on performance and satisfaction: A reconsideration of research evidence. *Academy of management Review*, 19(2), 312-330.

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.

Wood, S., Van Veldhoven, M., Croon, M., & de Menezes, L. M. (2012). Enriched job design, high involvement management and organizational performance: The mediating roles of job satisfaction and well-being. *Human relations*, 65(4), 419-445.

Wright, P. M., Gardner, T. M., Moynihan, L. M., & Allen, M. R. (2005). The relationship between HR practices and firm performance: Examining causal order. *Personnel psychology*, 58(2), 409-446.

Wyatt, W. (2002). *Human Capital Index: Human Capital As a Lead Indicator of Shareholder Value.* Watson Wyatt.

Zaheer, A., & Venkatraman, N. (1995). Relational governance as an interorganizational strategy: An empirical test of the role of trust in economic exchange. *Strategic management journal*, 16(5), 373-392.

Appendix

Table 1: overview variables of interest

	variable name	mean	description	measurement
workplace performance				
	lp	2.567	Labor productivity relative to industry	scale 0 to 4
	fp	2.580	Financial performance relative to industry	scale 0 to 4
employee involvement				
	other job	0.481	Proportion of staff formally trained to do another job > 20%?	no=0/yes=1
	teamwork	0.684	Proportion of staff work in designated teams > 80%?	no=0/yes=1
	off job training	0.527	Proportion of experienced staff who had off job training in past yr. > 80%?	no=0/yes=1
	quality circles	0.313	Any groups of non-managerial staff set up to address performance/quality?	no=0/yes=1
	meetings	0.825	Do you have meetings between senior managers and the whole workforce?	no=0/yes=1
	briefings	0.858	Do you have meetings between line managers and all the workers they manage?	no=0/yes=1
	induction	0.921	Any standard induction programme for new staff in largest occupational group?	no=0/yes=1
	survey	0.625	Has there been a formal survey of your employees' views during the past 2 yrs.?	no=0/yes=1
	info finance	0.730	Does management give employees workplace level financial information?	no=0/yes=1
	info organization	0.690	Does management give employees organizational level financial information?	no=0/yes=1
	info investment	0.534	Does management give employees information about internal investment plans?	no=0/yes=1
	info staff	0.712	Does management give employees information about staffing plans?	no=0/yes=1
worker autonomy				
	task variety	2.326	To which extent has staff variety in their work?	scale 0 to 3
	task discretion	1.917	To which extent has staff discretion over how they work?	scale 0 to 3
	task control	1.778	To which extent has staff control over their pace of work?	scale 0 to 3
	task design	1.947	To which extent is staff involved in work organization?	scale 0 to 3
trust in managers				
	manager reliable	2.296	Managers here… can be relied upon to keep to their promises	scale 0 to 4
	manager sincere	2.416	Managers here… are sincere in attempting to understand employees' views	scale 0 to 4
	manager honest	2.465	Managers here… deal with employees honestly	scale 0 to 4
	manager fair	2.425	Managers here… treat employees fairly	scale 0 to 4

Table 4: correlation trust and employee involvement

	TRUST		TRUST
other job	-0.0386	**induction**	-0.0791
	0.0948		*0.0005*
quality circles	-0.0944	**off job training**	-0.0327
	0.0000		*0.1546*
meetings	**0.0672**	**info finance**	-0.0420
	0.0032		*0.0662*
briefings	-0.1214	**info organization**	-0.0189
	0.0000		*0.4821*
survey	-0.1775	**info staff**	-0.0163
	0.0000		*0.4765*
teamwork	-0.0541	**info investment**	-0.0244
	0.0180		*0.2857*

Table 6: marginal effects employee involvement and labor productivity

lp	**a lot below average**	**below average**	**average**	**above average**	**a lot above average**
	0	1	2	3	4
EI_wpl	-.0002836	-.0231997	-.1033437	.0666456	.0601814
	0.274	*0.031*	*0.022*	*0.031*	*0.018*

Table 8: marginal effects worker autonomy and labor productivity

lp	**a lot below average**	**below average**	**average**	**above average**	**a lot above average**
	0	1	2	3	4
WA_wpl	-.0002453	-.0206027	-.0916879	.0591611	.0533748
	0.280	*0.044*	*0.036*	*0.034*	*0.043*

Table 10: marginal effects employee involvement, labor productivity and trust

lp	**a lot below average**	**below average**	**average**	**above average**	**a lot above average**
	0	**1**	**2**	**3**	**4**
EI_wpl	.0002157	.0179879	.0801913	-.0516358	-.0467591
	0.429	*0.325*	*0.315*	*0.317*	*0.319*
EI_wpl*TRUST	-.0001741	-.0145181	-.0647227	.0416755	.0377395
	0.264	*0.024*	*0.013*	*0.019*	*0.013*

Table 11: specific marginal effects employee involvement, labor productivity and trust

EI_wpl	dy/dx								
TRUST	**0**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**
below	.0376367	.0197718	.005587	-.0052944	-.0133178	-.018953	-.0226587	-.0248577	-.0259211
average	*0.419*	*0.543*	*0.803*	*0.740*	*0.284*	*0.077*	*0.020*	*0.006*	*0.002*
average	.0589447	.0393287	.0138307	-.0160404	-.0486695	-.0824458	-.115864	-.1476082	-.1766108
	0.201	*0.450*	*0.793*	*0.748*	*0.295*	*0.068*	*0.014*	*0.004*	*0.001*
above	-.0747462	-.0437722	-.0136472	.0140714	.0378093	.0560914	.0676567	.0715616	.0672588
average	*0.326*	*0.502*	*0.798*	*0.744*	*0.293*	*0.081*	*0.021*	*0.005*	*0.003*
a lot above	-.0227493	-.0157339	-.0058683	.0073432	.024353	.0455273	.0711017	.1011394	.1354996
average	*0.197*	*0.436*	*0.791*	*0.750*	*0.296*	*0.060*	*0.012*	*0.007*	*0.010*

Table 13: marginal effects worker autonomy, productivity and trust

lp	**a lot below average**	**below average**	**average**	**above average**	**a lot above average**
	0	1	2	3	4
WA_wpl	.000012	.0010212	.0045406	-.002927	-.0026469
	0.958	*0.958*	*0.958*	*0.958*	*0.958*
WA_wpl*TRUST	-.0000862	-.0073085	-.0324964	.0209479	.0189433
	0.360	*0.193*	*0.181*	*0.193*	*0.175*

Table 14: specific marginal effects worker autonomy, productivity and trust

EI_wpl	dy/dx								
TRUST	**0**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**
below	.0016384	-.0038844	-.0085066	-.0123064	-.0153638	-.0177585	-.0195686	-.020869	-.0217303
average	*0.959*	*0.873*	*0.651*	*0.410*	*0.214*	*0.099*	*0.045*	*0.021*	*0.010*
average	.0040199	-.0107727	-.0265392	-.0430029	-.059889	-.0769307	-.0938735	-.1104804	-.126535
	0.958	*0.879*	*0.680*	*0.454*	*0.239*	*0.096*	*0.035*	*0.017*	*0.011*
above	-.003919	.0097797	.0224228	.0337473	.0435021	.0514538	.0573925	.0611381	.0625444
average	*0.958*	*0.875*	*0.660*	*0.418*	*0.210*	*0.087*	*0.034*	*0.013*	*0.005*
a lot above	-.0017689	.0049415	.0127516	.0217326	.0319466	.0434443	.0562626	.0704221	.0859254
average	*0.957*	*0.882*	*0.695*	*0.483*	*0.270*	*0.112*	*0.043*	*0.027*	*0.032*