

**HOW HRM AFFECTS CORPORATE FINANCIAL PERFORMANCE :
EVIDENCE FROM BELGIAN SMEs**

Luc SELS¹

Organization Studies, Department of Applied Economics
Katholieke Universiteit Leuven (Belgium)

Sophie DE WINNE

Higher Institute of Labour Studies
Katholieke Universiteit Leuven

Johan MAES

Organization Studies, Department of Applied Economics
Katholieke Universiteit Leuven

Dries FAEMS

Organization Studies, Department of Applied Economics
Katholieke Universiteit Leuven

Jeroen DELMOTTE

Higher Institute of Labour Studies
Katholieke Universiteit Leuven

Anneleen FORRIER

Organization Studies, Department of Applied Economics
Katholieke Universiteit Leuven

Paper in review for Small Business Economics



¹ Corresponding author: Professor Luc Sels, Organization Studies, Department of Applied Economics, Katholieke Universiteit Leuven, Naamsestraat 69, 3000 Leuven, Belgium. Tel. +32 16 32.68.72, e-mail luc.sels@econ.kuleuven.ac.be

ABSTRACT

In this paper we aim at furthering research on the link between human resource management and firm performance. The contribution of this study about the influence of HRM on operational and financial performance is threefold. (1) By studying small and medium sized companies (defined as organizations with at most 100 employees), we focus on the importance of HRM for small business management. (2) Relying on bankruptcy prediction models, we optimize the conceptualization of financial performance. These models assume that the progress of the following four parameters, at least, must be monitored in order to obtain a sufficiently sound state of financial health: value added, profitability, liquidity and solvency. (3) Using structural equation modeling, we are able to study the mediating effect of operational performance (productivity, employee turnover and absenteeism) on the relationship between HRM intensity and financial performance. The results show a strong effect of intensive HRM on the profitability of small and medium sized companies.

Keywords: HRM, operational performance, financial performance, SME research

JEL classification: C39, M50, M51, M52, M53

Interest in the link between HRM and organizational performance has risen sharply over the past decade. The status quaestionis formulated in various critical overviews shows that, despite a rich research tradition, many conceptual flaws, black boxes and empirical gaps remain. We quote some of these points.

In most research on the link between HRM and organizational performance, virtually no thought is given to the limits of the empirical field of validity. Very often research is limited to larger and older organizations while small and medium sized enterprises (SMEs) receive little attention (Welbourne and Cyr, 1999). Given their statistical predominance - firms with less than 50 employees count for 98.9% of all firms in the European Union (ENSR, 1997)- the exclusion of SMEs poses a serious threat on the generalizability of research findings. Moreover, SMEs represent an ideal field for studying the relationship between the implementation of specific management practices and organizational performance, precisely because of their more transparent nature and more personalized HR and other management practices (Aldrich and Auster, 1986).

A second remark concerns the measurement of organizational performance. The selection of performance measures is rarely adequately substantiated in HRM-performance studies. Considered separately, the selected measures mostly do not sufficiently reflect corporate financial health (Delery, 1998; Maes et al., 2001). The appropriateness of performance measures will vary with the level of analysis, but in each case the focus should be on measures that have inherent meaning for a particular research setting (Becker and Gerhart, 1996). Shareholder value for instance may very well be an appropriate measure for larger companies with a notation on the stock exchange. But one can doubt its appropriateness for small, family owned businesses.

A third set of questions sorely in need of further attention is related to the identification of so-called strategic human resource practices (Wright and Boswell, 2002). Consistency in the identification or selection of HRM practices is rather low. Taking universalistic or best practice perspectives as an example, one must conclude that researchers still have much to learn about the combination of practices that constitutes a so-called high performance or high commitment work system. The overview by Becker and Gerhart (1996) indicates that studies vary significantly as to the practices included and sometimes even as to whether a HRM practice is likely to be positively or negatively related to high performance.

A fourth flaw is a lack of attention to explaining the mechanisms linking HRM practices to key aspects of organizational performance (*'how'* specific HRM practices or a composed index influence performance). Several authors rightly pointed to the lack of theoretical models to demystify this black box (Ferris et al., 1998; Guest, 1997; Peccei and Rosenthal, 2001; Truss, 2001). Therefore it is important to pay attention not only to traditional financial outcomes, but also to intermediate and process-related criteria that indicate how financial results are achieved (Becker and Gerhart, 1996; Becker and Huselid, 1998).

In this paper we aim at furthering research on the link between HRM and firm performance by providing (partial) answers to these conceptual flaws. First, considering (Belgian) SMEs (defined as organizations with at most 100 employees), we are aiming at a population that has been neglected to a large extent. The central question is whether the development of an intensive HRM is profitable for smaller organizations. Secondly, it is our intention to develop performance measures suitable for studying the HRM-performance link in SMEs. The third purpose is to shed some light on the paths through which HRM intensity affects financial performance.

The further outline of this paper is as follows. First, we review HRM-performance and small business literature in order to develop a conceptual framework linking HRM to financial performance. After that, research hypotheses are formulated. We then clarify our method, sample and measures and elucidate the results. We close with a discussion and some suggestions for future research.

How HRM practices influence performance: theoretical issues

This section covers theoretical issues with regard to three building blocks of our conceptual model: (1) the mode of theorizing the HRM-performance link, (2) the conceptualization of SME performance and (3) the identification of HRM practices.

Mode of theorizing. Delery and Doty (1996) give an extensive overview of three alternative modes of theorizing the HRM-performance link. The *universalistic* perspective states that a fixed set of best practices can create surplus value in various business contexts. Irrespective of strategy, the introduction of these practices has an additional effect on performance (Huselid, 1995; Ichniowski and Shaw, 1999; Pfeffer, 1994). *Contingency approaches*, by contrast, start with the assumption that the selection of a combination of HRM practices is determined by the strategy used; that, in turn, strategic choice is influenced by environmental features and that organizations which achieve ‘vertical fit’ between HRM choices, strategic options and environmental features will perform better than other organizations (Baird and Meshoulam, 1988; Youndt et al., 1996). Finally, the *configurational perspective* is based on a holistic system approach. Here, not only vertical fit but also the importance of horizontal fit and equifinality are emphasized. Horizontal fit implies that efforts must be devoted to the implementation of internally consistent bundles of HRM practices (Arthur, 1994; MacDuffie, 1995). Equifinality implies that various

organizations may well introduce various HRM configurations but can, nonetheless, achieve equal performances.

With regard to these modes of theorizing we do not only face the question which is the most appropriate perspective “in se”. We also have to evaluate their applicability in the context of SME research. Several arguments drawn from the work of Delery and Doty (1996) justify our choice for the *universalistic* perspective. First, we base our choice on several studies that indicate that a universalistic approach can be particularly accurate (Guest et al., 2001). Moreover, it is possible that the distinction between universalism and contingency must be thought of more at various levels (Sanchez-Runde, 2001). Thus, the use of a formal appraisal system can always (universally) be better than not using such a system, while at the same time the impact of this system can be strongly dependent on the extent to which the evaluation criteria used fit in with the behavior desirable for the implementation of the strategy (contingency).

Second, choosing a contingency perspective would imply that we have to select a theory of SME strategy and then specify how HRM practices interact with strategy resulting in firm performance. Testing this vertical fit presupposes that a strategy has taken shape. However, it is known that SMEs pay relatively little attention to strategic planning, particularly less mature SMEs. Intuitive strategies very often dominate, based on the personal short-term experience of the manager or owner (Miller and Toulouse, 1986; Schindehutte and Morris, 2001). In SMEs we are more likely to observe continuous adaptation and repositioning than strategy development and strategic planning (Kotthoff, 1993). Moreover, in such a situation, a tight vertical fit or tight coupling can put pressure on the ability to adapt (Truss, 2001; Wright and Snell, 1998). To summarize, without sufficiently developed information on organizational strategy, a contingency perspective

can hardly be withheld in this type of SME research. The same argument holds for the choice against the configurational perspective since this mode of theorizing also incorporates vertical fit and adds the concept of horizontal fit (Wright and McMahan, 1992).

The operationalization of performance. Developing a conceptual framework from a universalistic perspective requires two steps (Delery and Doty, 1996). First we have to identify strategic HRM practices. Second, we must present arguments that relate the individual practices to organizational performance (cf. *infra*). In view of the specificity of our research context we have to add a third step, namely the operationalization of performance in a way suited for SMEs.

Focusing on the economic finality of a SME and the central role of its owner-manager we choose to study performance from the owner's view and on an organizational level. Therefore, in our measurement of performance we want to stress the operational efficiency, profitability and continuity of the company. The challenge then is to identify the measures of performance that truly predict long-term success of SMEs (Holloway et al., 1995).

Three regularly recurring themes of debate in SME performance research are: (1) the choice between either operational (e.g. productivity, employee turnover) or financial performance (e.g. sales amount per employee, shareholder value) measures (Harel and Tzafrir, 1999; Holloway et al., 1995; Miller and Lee, 2001), (2) the advantages and drawbacks of static versus dynamic measures and (3) the context-sensitivity of the most frequently used financial performance indicators. We elaborate on each of these themes.

Operational versus financial performance. Most SME performance studies limit themselves to measures of either operational or financial performance. We plead for an integration of both types of measures. After all, if we want to know *how* intensive HRM

influences financial performance, it is important to pay attention not only to financial outcomes, but also to intermediate operational criteria that indicate how financial results are achieved. We depart from the assumption that HRM practices do not lead directly to firm performance (Delery, 1998; Guest, 1997; Huselid, 1995). Rather they influence firm resources, such as the human capital of the firm, or employee behavior. So, it is through the creation of a skilled, motivated and empowered work force that HRM practices influence operational performance. This improvement in operational performance can then lead to higher financial performance. Possible measures for operational performance are lead time, fallout ratio, quality level, customer satisfaction, productivity and on-time delivery (Harel and Tzafrir, 1999; Holloway et al., 1995; Rogg et al., 2001; Stone, 1996), but one can also think of more HRM-related outcomes such as absenteeism and employee turnover (Huselid, 1995).

Static versus dynamic measures. Several authors plead for a dynamic view of performance, using growth related measures (Lee and Tsang, 2001; Wijewardena and Tibbits, 1999). We prefer a static measure of SME performance for two reasons. First, dynamic measures such as growth rates are difficult to develop. Choices have to be made regarding the indicator to be used (number of employees, revenue, ...), the relative or the absolute measurement and the time span taken into consideration (Delmar, 1997). Second, even if growth were easy to measure it could still be misleading. Not every small company has the ambition or the desire to grow. Additional financing and/or staff is needed for growing. Problems with or fear for not finding the necessary time or people are important reasons why a considerable number of SMEs choose not to pursue growth (Binks and Ennew, 1996).

Context-sensitivity. In identifying valid financial performance measures the focus should be on measures that have inherent meaning for the particular SME context. Given the high failure rates, survival is the primary concern for most SMEs, both for those that pursue growth as well as for the ones that do not. Therefore we decide to deduct our SME financial performance measures from bankruptcy prediction models (Maes et al., 2001). These models assume that the progress of the following four parameters, at least, must be monitored in order to obtain a sufficiently sound state of financial health: value added, profitability, liquidity and solvency. The *value added* is the share of the gross margin remaining after deduction of the personnel costs. The gross margin is the difference between total operating results and the cost of the goods and services provided by third parties (external costs), which are necessary to achieve results. This gross margin is used to pay for internal production factors: labor (wages), the use of sustainable means of production (depreciation) and capital (interest charges and profit). *Profitability* reflects financial performance in the narrow sense, in particular the ability of the company to yield a return on investment. *Liquidity* relates to the settlement of short-term debts. A company will face financial problems if the funds are not available to pay off these debts. In the case of SMEs struggling to survive liquidity is a very important indicator of the state of financial health. *Solvency* indicates the financial strength of the company in the longer term and says something about the extent to which the organization is equipped to face business risks. The higher the solvency, the more substantial the buffer for difficult times.

The identification of HRM practices. Most empirical research relying on the universalistic mode of theorizing merely checks the presence or absence of certain HRM practices. A thorough examination of previous empirical studies (Arthur, 1994; Delaney and Huselid, 1996; Delery and Doty, 1996; Huselid, 1995; MacDuffie, 1995; Osterman, 1994; Pfeffer,

1994) shows that researchers do not necessarily focus on the same HRM practices when studying HR systems or 'High Performance Work Practices' (Becker and Gerhart, 1996; Guest, 1997; Truss, 2001), that they rarely motivate how the selected practices individually might affect the firm's performance and that the selected list of practices rarely if ever allows to measure how intensively the relevant HRM domains are worked out in a firm.

In our study we decided to first select the most relevant HRM domains (e.g. compensation, recruitment and selection, etc.). The Harvard model developed by Beer et al. (1984) guided this initial process of domain identification. We confine ourselves to six domains, each representing one of the central 'Harvard policy areas' i.e.:

- HR Flows: (1) selection policy, (2) training policy, (3) career policy;
- Rewards: (4) compensation and (5) performance management;
- Employee influence: (6) direct, indirect and financial participation.

Whereas in most studies the HRM domains listed are only indicated by one practice, we have chosen to select three strategic HRM practices for each of the domains identified. Strategic HRM practices are those that are theoretically or empirically related to organizational performance (Delery and Doty, 1996). The reporting of three (mostly interrelated) practices per domain allows us to measure how thoroughly (intensively) the respective domains are elaborate in a firm. This *modus operandi* puts HRM intensity in a far more central position.

We illustrate our approach by elaborating on one of the HRM domains, i.e. training (we refer to the measures section for the operationalization of the five other domains). In order to measure how intensively SMEs engage in the training domain, we use three indicators: (1) whether or not company training is provided for operational staff (research repeatedly shows that non-training companies are found primarily among smaller organizations); (2)

whether or not the training policy is rooted in a strategic training plan and a training needs analysis; and (3) whether or not attention is devoted to evaluating training efforts (taking evaluation at various levels into account: the reactions of trainees to the training, the learning effect, the transfer of training to the job context and the results such as increases in productivity; see Kirkpatrick, 1998; Sels, In press). This approach allows to differentiate not only training from non-training companies, but also to distinguish between ‘ad hoc’ training suppliers (only scoring on the first indicator) and training companies developing a fully-fledged training cycle (integrating planning, action and evaluation and scoring on each of the three indicators).

Research hypotheses

To summarize the previous discussions, we will use indicators of both operational and financial performance that are adapted as much as possible to the specificity of SMEs. We integrate three operational performance indicators in our research model: productivity, voluntary turnover and absenteeism. The financial performance indicators - value added, profitability, liquidity and solvency – are deducted from bankruptcy prediction models.

Insert figure 1 about here

Our theoretical model is depicted in Figure 1. We elaborate on this model in three consecutive steps. First, we develop our research hypotheses concerning the effect of HRM intensity on operational performance. Second, we explain the link between productivity and financial performance. In a third step, we hypothesize the total effect of HRM intensity on financial performance.

HRM intensity and operational performance. As noted earlier, we depart from the assumption that HRM practices do not lead directly to financial performance. Rather they influence firm resources, such as the human capital of the firm, or employee behavior. It is through the creation of a skilled, motivated and empowered work force that HRM practices influence operational performance. In our theoretical model, we selected *productivity* (gross margin per employee) as the central measure for operational performance. We assume that HRM intensity can influence productivity by changing employee competencies and levels of motivation which may result in a quicker or better execution of the business process (Bartel, 1994; Koch and McGrath, 1996).

As becomes clear from the theoretical model, we assume that HRM intensity also can affect productivity through reduced *voluntary employee turnover* (Arthur, 1994; d’Arcimoles, 1997; Dess and Shaw, 2001). We included the turnover level because HRM is often seen in terms of its retention power, particularly in tight labor markets. The research into the determining factors for voluntary turnover indicates that specific HRM practices can push down voluntary turnover, e.g. the pay level, career and training opportunities, employee participation (Shaw et al., 1998; Steel et al., 2002). The presence of these practices should therefore go hand in hand with lower voluntary turnover, which in its turn has a positive effect on productivity (Sheehan, 1993; Staw, 1980).

The third factor of operational performance we include is *absenteeism*. The determining factors for work absenteeism that emerge in many studies closely correspond to the push factors generated by the research into employee turnover. Absenteeism from work is even seen as a predictor of turnover (Morrow, 1993). We therefore follow a line of reasoning similar to the one we constructed for voluntary turnover and assume that more intensive HRM leads to lower absenteeism and (indirectly) to higher productivity.

Thus, our first three hypotheses can be stated as follows:

Hypothesis 1: *HRM intensity has a direct positive effect on productivity.*

Hypothesis 2: *HRM intensity has an indirect positive effect on productivity by lowering the voluntary employee turnover rate.*

Hypothesis 3: *HRM intensity has an indirect positive effect on productivity by lowering absenteeism.*

Productivity and financial performance. Productivity serves as an important mediator between HRM intensity and financial performance. In modeling the link between productivity and financial performance value added plays a central role. The ratio we use to measure value added is the share of personnel costs in the gross margin. After all, the gross margin must be sufficient to pay staff and leave some resources over for investments, interest, taxes, other financial obligations and return for the owners. In this way the share of personnel costs in the gross margin can be seen as a go-between between productivity and the other indicators of financial performance (profitability, liquidity and solvency).

All other things being equal, the share of personnel costs in the gross margin decreases as productivity increases. Higher productivity means that more gross margin is created with the same number of employees. Since the personnel costs remain more or less constant if the number of employees is not changed an increase in productivity will lead to a decrease in the share of personnel costs in the gross margin. Thus, as far as the link between operational and financial performance is concerned, it can be noted that value added (indicated by personnel costs/gross margin) plays a central role since it is directly linked to productivity and serves as a mediator between productivity on one side and profitability, liquidity and solvency on the other side. The part of the gross margin remaining after subtracting the personnel costs - the value added - is to be used to

compensate the other factors in the company. The higher this remaining part (or the lower the share of personnel costs in gross margin), the higher the margin that can be used in order to have sufficient liquidity and solvency and the more that can be paid out to the owners (profitability; ROE).

HRM and financial performance. To summarize, the model that is visualized in Figure 1 departs from HRM intensity. HRM intensity is linked to operational performance (voluntary turnover, absenteeism and productivity). Operational performance is linked to financial performance by means of productivity and value added. The lower the latter the higher the margin to be used to safeguard profitability, liquidity and solvency. Thus, Hypothesis 4: *HRM intensity has positive total effects on profitability, liquidity and solvency. These effects are mediated by the operational performance scores and the share of personnel costs in the gross margin.*

SAMPLE AND PROCEDURE

The database we use for the analyses comes from a survey of organizations with 10 to 100 employees. Companies were selected from the Belfirst data file. This file contains information from financial statements. This enabled the survey results to be enhanced using financial and operational data.

A disproportionally stratified random sample was chosen, with age and size as stratification variables. As far as age is concerned, a distinction was drawn between companies in existence for between 1 and 5 years, 6-10 years and 11 years or longer. Three strata of company size were identified: 10-19, 20-49 and 50-99 employees. This was a multiple-sector survey including four sectors (construction, service companies, trade

companies and industrial companies). In view of the above, three types of control variables will be used (sector, age and size) (see section on ‘measures’).

Most HRM studies use the HR manager as the respondent. In this survey, the business manager was targeted as respondent. The simple management structure of a SME implies that this manager often has a clear view of the various management practices in the organization. This partly explains the low item non-response in this study. The questionnaires were distributed by post, with intensive telephone follow-up. This produced a total of 416 units (28% response), with a sufficiently high item response. In order to investigate any problems involving self-selection and sample bias, the response and non-response were compared at various ratios in conjunction with value added, profitability, solvency and liquidity. No significant differences were noted between the two groups for any of these ratios.

MEASURES

HRM intensity. We recall that we have chosen to select three HRM practices for each of six HRM domains. Table I presents the measures we used for each of the 18 individual HRM practices.

Insert table I about here

We already clarified the logic behind our selection of the training indicators. Here we focus on a description of the five remaining HRM domains.

1. *Selection.* Thorough screening of future employees is appropriate, particularly with a view to long-term relationships. For this reason, we look at the use of selection

techniques that are associated with high predictive validity (indicator 1) (Hunter and Hunter, 1984). In selection research, attention is often devoted solely to the selection techniques used. Recent research indicates that, in addition, much significance must be attached to the development of transparent procedures which provide a thorough preparatory phase (job analysis, personnel planning), a transparent distribution of responsibilities in the selection process and adequate information with respect to candidate and assessor concerning the choice of certain predictors (Iles and Robertson, 1997). For this reason, we also examine the presence of procedures to forecast supply-demand imbalances (indicator 2). In line with our selection of training-related HRM practices, we do not confine ourselves to the planning and action stages of the 'PDCA'-cycle, but also look at whether the company evaluates the effects of recruitment and selection processes (e.g. utility analysis) (indicator 3).

2. *Careers*. As a first indicator we look at the importance of internal labor markets (indicator 1). The development of an internal market implies that internal transfers are more important than external recruitment when it comes to filling vacancies. Internal labor markets can fulfill many functions. One function is *HR development*. Career lines can be mapped out in such a way that they produce a progressive improvement in 'KSAs' the more rungs of the ladder are climbed. This can result in a more permanent and phased accumulation of competencies. A second function is *motivation*. The prospect of a career can indeed have a motivating effect under certain conditions. The conditions relate to the consistent application of transparent selection criteria, for example using a system of potential review (indicator 2) (Luhmann and Mayntz, 1973). Particularly in smaller organizations, which often have an organic structure and broad

job descriptions, the development function can also be achieved by broadening the opportunities for horizontal mobility (indicator 3).

3. *Compensation.* A great deal of research shows that offering high wages can reduce voluntary turnover (Shaw et al., 1998). Since we had no indication in this survey of wage levels, we used the number of benefits allocated over and above wages as a proxy (indicator 1). In addition, we assessed the composition of the wages; more specifically, the presence of structural (indicator 2) and incidental (indicator 3) forms of incentive pay. Various HRM models advocate using bonuses for special performances (indicator 3) or a variable performance-related share (indicator 2) on top of a sufficiently high wage (Gerhart and Milkovich, 1992). Such rewards function as a simple recognition system which, when allocated correctly, can also increase the feeling of justice.
4. *Performance management.* We make a distinction between reward reviews (indicator 1) and performance reviews (indicator 2) (Randall et al., 1984; Sparrow and Hiltrop, 1994). The first form corresponds more with the aim of control and management, the second with the aim of supervision and development (McGregor, 1957). Reward reviews relate to the allocation and attribution of awards, rewards and benefits to a particular individual (compensation, status, etc.). Performance reviews are more concerned with the development and motivation of staff by looking at what areas are important to the performances of individuals and how well they are doing. A final indicator is the use of an evaluation *system* (indicator 3). The use of these systems can be important for perceptions of procedural and distributive justice.
5. *Participation.* We draw a distinction between structural and financial participation. Structural participation implies the direct or indirect involvement of employees in decision-making processes. *Indirect participation* refers to employee involvement via

delegation (i.e. works' council). Smaller organizations in Belgium are not obliged to use trade unions as a channel for indirect participation. Recognition of this trade union as an interlocutor (indicator 1) can, as a result, form an indication of active participation policy. *Direct participation* indicates the presence of shop-floor initiatives, which make it possible to consult employees or to delegate power (self-management, empowerment) (indicator 3). Direct participation is put forward in HRM and organizational commitment literature as a practice which encourages the active utilization of human potential and, in this sense, can also affect motivation and involvement (Gallie et al., 2001). Finally, *financial participation* (indicator 2) implies that employees share in the company's profits. Shareholding is particularly encouraged as an instrument for harmonizing the interests of employees, management and shareholders and thus exerting an effect at the level of involvement or organizational citizenship. The positive effects of financial participation can also be seen at the level of closer cooperation (willingness to exchange information) (Lawler III, 1999).

Each of the 18 practices is constructed in the form of a binary variable, where 0 indicates the absence and 1 the presence of the practice. Scores can be calculated per domain, on a scale of 0 to 3, with 0 as a value if the organization does not apply any of the domain practices and 3 if the organization applies all three practices.

In an initial path analysis, the six domains (each with the "0-3" scale) were individually included in the analysis. The covariances between these domains proved to be extremely high. Table II confirms that the six domains load together on one factor (Cronbach alpha 0.78), suggesting that organizations adopt these HRM domains simultaneously. Therefore we combined the 18 practices into one index (on HRM-scales versus indexes, see Delery,

1998). In theory, organizations may range from those making no use of the selected HRM practices to those using *all* of the practices.

Insert table II about here

Measures of financial performance. **Value added** is measured by the *share of personnel costs in the gross margin*. Since the gross margin remaining after deduction of personnel costs must be sufficient to pay for investments, interest, taxes and returns for the owners, the share of the personnel costs (remuneration, social security charges, non-statutory benefits) in the gross margin may not be excessively high. A maximum of 85% is often suggested (Maes et al., 2001). The ratio for **profitability** used is the *net profitability of the capital and reserves*. This ratio compares profit (after interest payment) with the capital and reserves and therefore illustrates the profitability for shareholders or owners. For SMEs (mostly family owned) this is a very important ratio. We selected the *acid test* or *quick ratio* as an indicator of **liquidity**. This ratio illustrates liquidity in the narrow sense, excluding the value of stocks (which is important in a multiple sector setting) (Elliott and Elliott, 2002). Only the assets which can be most quickly converted into cash are expressed with respect to debts of at most one year. In this sense, the ratio produces a picture of the extent to which a company can redeem short-term debts, using immediately available funds, without having to make use of external funds (loans) or reserves. A ratio that functions as a warning light with regard to **solvency** is the *degree of auto-financing*. This ratio illustrates the relationship between reserves and results carried over on the one hand (the numerator) and total assets on the other hand (the denominator). A sufficient degree of auto-financing can be considered as vital for SMEs (Maes et al., 2001).

Measures of operational performance. The **voluntary turnover** rate is measured by the number of departures at employees' initiative in 1999 in proportion to the average number of staff in 1999. The second factor of operational performance we include is **absenteeism**, calculated as the number of calendar days absent in 1999/number of workable calendar days in 1999. As an indicator for **productivity** we use gross margin per member of staff.

Control variables. Three control variables were included in the analyses. Because of potential industry differences in productivity, analyses in this study controlled for **sector**. Dummy codes representing four industries were created: construction sector, industrial sectors, service sectors, trade sectors. Dummy coding is necessary when bringing in nominal variables in path analysis (Hatcher, 1994). The construction sector was used as our point of reference. **Firm size** (number of employees) was included as a control because it may be associated with the use of HRM practices as well as with turnover and productivity. Larger organizations may be more likely to use sophisticated HRM practices and may experience less turnover owing to greater internal labor market opportunities (Guthrie, 2001). The **age** (number of years since start-up) was included to control for any advantages associated with increased time for the evolution or adoption of HRM practices or learning curve advantages in productivity (Guthrie, 2001; Harel and Tzafrir, 1999).

ANALYSES

In Table III, we begin with a summary of some descriptive statistics, specifically the average and standard deviation for the principal variables, as well as the correlations between these variables. We see that the average score for HRM intensity is 7.24 on a maximum of 18 (6 domains, each with 3 dummy-coded practices). This means that the average organization uses not even half of the HRM practices examined. Indeed, earlier

descriptive analysis revealed that the average SME can be described as a “HRM poor” organization (Faems et al., 2002). The correlations give a first confirmation of most of the hypotheses. Thus, we see that HRM intensity is positively related to productivity and profitability. The correlations with personnel costs/gross margin and liquidity, however, did not prove significant.

Insert table III about here

In order to test the hypotheses, we used structural equation modeling with manifest variables (path analysis). Compared to ordinary linear regression models, this technique has two major advantages. First and foremost, the method enables paths or *causal* relationships between the different variables to be defined and tested. The output of the technique indicates whether the model is supported by the data as a whole and gives a significance test for the various individual causal paths. Secondly, a variable in a causal model can be either a dependent or an independent variable. This has the advantage of allowing us to test the mediating influence, if any, of certain variables. The path model of Figure 1 (see ‘research hypotheses’) is tested using the CALIS procedure (SAS). In evaluating this theoretical model, we considered four goodness-of-fit measures (Table IV).

Insert table IV about here

The goodness-of-fit overview (Table IV) indicates that the theoretical model is not adequately supported by the data. Several paths had to be added while optimizing this model, two of which are very important for the further discussion of the HRM-performance relationship: direct links between HRM intensity on the one hand and personnel costs/gross margin and profitability on the other hand. As we will explain in the results section, all of these additional paths can be accounted for theoretically.

Each of the goodness-of-fit measures (Table IV) indicates that the optimized model is effectively supported by the data (Hatcher, 1994). In addition, the optimized model contains no residual values that significantly differ from zero. This suggests that the optimization of the theoretical model successfully reflects the actual relationships between the different variables. Below we interpret and explain the effects. First we look at the impact of HRM intensity on intermediate variables such as productivity, turnover and absenteeism. Subsequently, the link with financial performance indicators is covered.

RESULTS

The standardized path coefficients are listed in Table V. The results of the test of the optimized model are also represented in Figure 2. The control variables have been omitted in this graphical representation in order not to overload the figure.

Insert table V about here

Insert figure 2 about here

The impact of HRM intensity on operational performance

Table V points to HRM intensity having a strongly positive impact on productivity (cf. Huselid, 1995). Thus, hypothesis 1 is supported. One general explanation is that the introduction of certain HRM practices achieves an improved fit between the individual and the job and between the individual and the organization. This employee/job/organization match can result in higher job satisfaction, greater motivation and close involvement with the job and the organization. This can come to the benefit of productivity. The relationship is easier to understand if individual practices are examined. For instance, selection is

targeted at predicting future work behavior and performance. If predictive validity is high, good test scores also correlate with better job performances after recruitment. The use of more valid tests can, in this sense, be translated into the recruitment of employees who demonstrate on average higher productivity (Holzer, 1987). Training can also be a mechanism for better aligning the skills offered by employees to the required skills. This fit will probably be translated into higher productivity (Bartel, 1994).

The results show a negative impact of HRM intensity on voluntary turnover. We also notice a negative effect of voluntary turnover on productivity. However, both relations are not significant. Hypothesis 2 is therefore not supported. This can partially be explained by the labor market situation at the time of the survey. The extreme shortage of qualified staff gave rise to high labor mobility. It is possible that this shortage was so extreme that efforts at the level of retention management produced hardly any results, especially not in smaller companies which cannot compete with the labor conditions of the major players. The pull factors (tempting signals from larger and/or older companies) could be so strong that investment in retention-oriented HRM was not recouped by lower voluntary turnover.

We expected that higher voluntary turnover would be translated into lower productivity. Not finding suitable replacement in time can temporarily lead to lower productivity. If turnover costs are high (e.g. costs of intensive training, induction time, socialization, supervision of replacements) this effect is reinforced. To a certain extent, the notice period of the departing employee forms a buffer against this. Nonetheless, lower productivity can also occur while this employee is “waiting out” the notice period (lower motivation). We indeed find a negative link, although it is not significant. The large number of unfilled vacancies in the SMEs surveyed can possibly explain this. If replacements are difficult or impossible to find, companies can be encouraged to try to carry out the same work using

fewer staff, by reallocating employees and redesigning the organization of work. This can increase productivity. The organic structure of smaller organizations often makes this kind of flexible redesign possible.

The expectation that high HRM intensity is accompanied by low absenteeism also has to be adjusted. The relationship is very close to zero (positive) and not significant. The model also shows that the expected negative relationship between absenteeism and productivity is close to zero and insignificant. Hypothesis H3 is therefore not confirmed by the data. This can again be explained to some extent by the more organic structure of smaller organizations, which makes it easier to make up more easily for missing staff without major consequences for productivity.

The impact of operational on financial performance

Higher productivity implies that more gross margin is generated using the same number of employees. Since personnel costs remain (approximately) constant for the same number of employees, a rise in productivity will mean a fall in personnel costs/gross margin. This explains the negative link between the two variables (Table V). This link is strongly supported by the data.

A first financial indicator we have included in the model is the *profitability* of capital and reserves (return on equity; ROE), i.e. the profit (after interest payments) expressed as a percentage of the capital and reserves. This indicator illustrates the profitability for shareholders or owners. It is fairly evident that the lower the share of personnel costs in the gross margin, the higher the margin for interest payments and profit sharing. This relationship is also expressed and supported in the model tested.

In addition to profitability, liquidity and solvency are also important financial performance indicators. The *liquidity* of a company is largely determined by the funds coming in and going out in the short term: gross margin (operating income – external costs), minus wages and interest payments. The larger the remaining amount, the more flexibility there is to finance aspects such as stocks, orders in hand and short-term financial transactions. The size of the remaining amount partly depends on the extent of personnel costs. This is also clear from the significantly negative relationship between personnel costs/gross margin and liquidity.

Solvency is a measure of the financial strength of the organization in the longer term. It says something about the extent to which the organization is equipped to face its operating risk. The scope of the funds which can be deployed to build up this type of buffer against operating risks is partly determined by the share of the gross margin remaining after deduction of payments for internal production factors. This explains the negative link between personnel costs/gross margin and solvency that is supported by the data.

In combination, the three factors profitability, solvency and liquidity form an indicator of the health and chances of survival of a company. Investments in HRM do impact this financial health since (1) HRM intensity stimulates productivity (H1), (2) increased productivity lowers the share of personnel costs in gross margin and (3) this reduction in personnel costs/gross margin boosts profitability, solvency and liquidity. However, this line of reasoning only forms part of the total picture. This becomes obvious when we focus on the direct links between HRM intensity on the one hand, personnel costs/gross margin and profitability on the other hand.

The impact of HRM intensity on financial performance

HRM intensity and personnel costs/gross margin. In addition to the earlier described indirect link between HRM intensity and personnel costs/gross margin (via productivity), we also observe a direct link. This is one of the paths we had to add while optimizing the model. The more HRM practices are introduced, the greater the share of personnel costs in the gross margin. HRM intensity can indeed generate both direct and indirect costs. Thus, starting up a personnel department or recruiting a HRM officer can increase personnel costs. The introduction of performance-related pay or non-statutory benefits can directly increase costs. After all, these constitute part of personnel costs for accounting purposes. Indirect effects are also present. Sending an employee to training does not directly lead to an increase in accounting personnel costs, but can lead to a reduction in gross margin because the employee makes very few, if any, products for a certain time. The cost of external training can also be reflected as a decrease in gross margin.

These indications of a cost-increasing effect of intensive HRM are consistent with the results of Cappelli and Newmark (2001). These authors found that high performance work practices may raise productivity slightly, but that they also raise labor costs. In our sample this effect is so strong that it completely cancels out the previously described negative impact on personnel costs/gross margin through increased productivity. This is indicated in Table V, which contains the total effects of HRM intensity on the operational and financial performance. If we calculate the total effect of HRM intensity on the share of personnel costs in the gross margin – this is the combination of the positive direct and the negative indirect effects (via productivity and/or value added) – we then achieve an effect of approximately 0.03. HRM critics will lose no time in referring to a *zero sum game*. After all, the cost increasing effect of intensive HRM not only cancels out the productivity gains

mentioned earlier, but at the same time affects the (indirect) impact on important financial parameters such as liquidity and solvency. Table V shows that the total effects of HRM intensity on liquidity and solvency are very close to zero (-0.008 and -0.007 respectively). In other words, building out an intensive HRM does not affect the liquidity and solvency position of the company.

Insert table VI about here

HRM intensity and profitability. The previous argumentation suggests that there is no return on investment in HRM for smaller organizations. However, the final evaluation turns out to be positive once we take the direct effect of HRM intensity on profitability into account. In addition to the already mentioned indirect effect of HRM intensity on profitability (via productivity and value added) we also observe a direct effect (Table IV; Figure 2). This effect had to be added during the analysis while optimizing the model.

This direct effect means that intensive HRM works not only by increasing productivity. The deployment of HRM practices also affects profitability in other ways. We can assume that this direct relationship is a combined representation of all HRM effects that are not expressed via productivity and/or value added. After all, productivity is only one operational performance outcome that can be influenced by HRM. Other operational outcomes include, for example, the innovation rhythm, the quality of the product or service obtained, customer satisfaction, lead time, on-time delivery and so on (Peccei and Rosenthal, 2001). In this sense, the explanatory model remains incomplete. It is a complex process to develop criteria for a cross-sector survey which enable the standardized measurement of all operational performance measures mentioned. The social climate or the number of conflicts are also not included, even though previous research has demonstrated

the relevance of these types of effects (Katz et al., 1985). The direct effect on profitability therefore represents a combination of effects that are produced through non-measured operational performance outcomes.

We learn from Table VI that if we integrate both the direct and indirect effects (via productivity and personnel costs/gross margin) on profitability we end up with a strong and positive total effect of HRM intensity on profitability. This is in line with hypothesis 4. The total effect amounts to 0.13, which indicates that for every unit of increase on the HRM intensity scale, we obtain an average increase in profitability of about 13%.

DISCUSSION

We have demonstrated in this paper that intensive HRM can offer surplus value for smaller organizations. First, HRM intensity has a strong positive effect on productivity and, through this productivity, a squeezing effect on personnel costs/gross margin. However, this effect is not strong enough to compensate for the cost increases which HRM intensity involves. Second, the total effect of HRM intensity on profitability is positive and very strong. Thus, HRM intensity has a major effect on the profitability of the SME – an effect that is probably explained by the positive contribution made by HRM intensity on some non-measured operational performance outcomes such as a lower level of disputes, better quality and/or more innovation. A third important observation is that the positive impact of HRM intensity on profitability is not at the expense of a deteriorated solvency and liquidity score. In this closing discussion, we would like to make some suggestions and indicate paths for future research.

An initial observation is that, based on the analysis demonstrated, we can say something about the surplus value of HRM intensity in general terms. In this context, we do not yet

know whether some individual practices have stronger effects than others, how each of the individual practices affects performance, whether complementarities or synergistic interdependent relationships (“powerful connections”) among such practices can further enhance organizational performance (Delaney and Huselid, 1996; Delery, 1998). We have however learned much about the contribution of individual HRM domains and practices to operational and financial performance from a long series of more detailed path analyses (Faems et al., 2002). A first conclusion from these analyses is that there are strong effects for most individual HRM domains (with top positions for compensation, performance management and training). A second observation is that the paths of influence differ according to the specific HRM domain under consideration. A last remark is related to the effects of individual HRM practices. While strong main effects are measured for certain HRM practices, other practices only affect performance in interaction with one another. We thus see that providing training only has an effect if it is rooted in strategic training planning and managed by intensive efforts at the level of needs detection. Nor does the isolated use of valid selection techniques produce any great effect and only has a significant effect if this choice is part of pro-active personnel planning and a formal recruitment and selection procedure. One last example is the development of internal labor markets. Providing opportunities for internal promotion only produces positive effects if it is based on a system of potential reviews. The examples indicate that it would be worthwhile devoting more attention both to the contribution of individual practices (controlled for other HR practices) and to the strength of bundles of practices (Ichniowski et al., 1997).

A second observation relates to our theoretical choice, i.e. the universalistic perspective. We examined the effect, in all organizations, of an identical set of HRM practices and did

not look – as is the case in a contingency perspective – at the vertical fit between HRM and business strategy. Nonetheless, we hope to steer our theoretical starting position more in the contingency direction in future analyses. We are thinking, however, in the first place not of research into compatibility with strategic choices, but of analyses that enable a coupling between HRM and life cycle models. In models such as that of Churchill and Lewis (1983), it is assumed that organizations progress through different stages of life (conception, survival, growth, expansion, maturity) and that the intensity and nature of the contribution to the chances of survival made by various functional business domains fluctuates depending on the stage (Kazanjian, 1988; Milliman et al., 1991). Further research will be carried out into whether HRM creates surplus value at each stage of life and which practices or bundles fit in with certain stages of development.

One last point for discussion relates to the constantly recurring problem of reversed causality. It is indeed not inconceivable that the performance of the company will give rise to change – often even improvement – in HRM practices. In other respects, it is quite possible for the direction of the causality to differ depending on the HRM practice and the performance criterion under consideration. Despite the statistical technique we used the cross-sectional nature of the data still leaves some room for interpretation. It is therefore our intention to use panel data as a basis for follow-up research. For this purpose, a new six-years' research project covering organizations from diverse sectors and size categories has been set up.

REFERENCES

- Aldrich, H. and E. Auster, 1986, 'Even dwarfs started small: liabilities of age and size and their strategic implications', in Barry M. Staw and Larry L. Cummings (eds.), *Research in organizational behaviour*, Greenwich: JAI Press.
- Arthur, Jeffrey B. ,1994, 'Effects of human resource systems on manufacturing performance and turnover', *Academy of Management Journal* **37** (3), 670-687.
- Baird, Lloyd and Ilan Meshoulam, 1988, 'Managing two fits of strategic human resource management', *Academy of Management Review* **13** (1), 116-128.
- Bartel, A.P., 1994, 'Productivity gains from the implementation of employee training programs', *Industrial Relations* **33** (4), 411-425.
- Becker, Brian and Barry Gerhart, 1996, 'The impact of human resource management on organizational performance: progress and prospects', *Academy of Management Journal* **39** (4), 779-801.
- Becker, Brian and Mark A. Huselid, 1998, 'High performance work systems and firm performance: a synthesis of research and managerial implications', *Research in Personnel and Human Resource Management* **16**, 53-101.
- Beer, Michael, Bert Spector, Paul R. Lawrence, D. Mills and R.E. Walton, 1984, *Managing human assets*, New York: Free Press.
- Binks, Martin R. and Christine T. Ennew, 1996, 'Growing firms and the credit constraint', *Small Business Economics* **8** (1), 17-25.
- Cappelli, Peter and David Neumark, 2001, 'Do "high performance" work practices improve establishment level outcomes?', *Industrial and Labor Relations Review* **54** (4), 737-775.
- Churchill, Neil C. and Virginia L. Lewis, 1983, 'The five stages of small business growth', *Harvard Business Review* **61** (3), 30-50.
- D'Arcimoles, Charles-Henri, 1997, 'Human resource policies and company performance: a quantitative approach using longitudinal data', *Organization Studies* **18** (5), 857-874.
- Delaney, John T. and Mark A. Huselid, 1996, 'The impact of human resource management practices on perceptions of organizational performance', *Academy of Management Journal* **39** (4), 949-969.
- Delery, John E., 1998, 'Issues of fit in strategic human resource management: implications for research', *Human Resource Management Review* **8** (3), 289-309.
- Delery, John E. and D. Harold Doty, 1996, 'Modes of theorizing in strategic human resource management: Tests of universalistic, contingency and configurational performance predictions', *Academy of Management Journal* **39** (4), 802-835.
- Delmar, F., 1997, 'Measuring growth: methodological considerations and empirical results', in Rik Donckels. and Asko Miettinen (eds), *Entrepreneurship and SME research: on its way to the next millennium*, Ashgate: Aldershot, 199-215.
- Dess, Gregory G. and Jason D. Shaw, 2001, 'Voluntary turnover, social capital and organizational performance', *Academy of Management Review* **26** (3), 446-456.
- Elliott, Barry and Janie Elliott, 2002, *Financial accounting and reporting*, Harlow: Pearson Education.
- ENSR (European Network for SME Research) (1997). *The European Observatory for SMEs*. Zoetermeer: ENSR-EIM.

- Faems, Dries, Luc Sels, Sophie De Winne and Johan Maes, 2002, *The effect of individual HRM-domains on financial performance: evidence from Belgian SMEs*, Paper for RENT XVI Conference, Barcelona, November 21-22.
- Ferris, Gerald R., Michelle M. Arthur, Howard M. Berkson, David M. Kaplan, Gloria Harrell-Cook and Dwight D. Frink, 1998, 'Toward a social context theory of human resource management-organizational effectiveness relationship', *Human Resource Management Review* **8** (3), 235-264.
- Gallie, Duncan, Alan Felstead and Francis Green, 2001, 'Employer policies and organizational commitment in Britain 1992-1997', *Journal of Management Studies*, **38** (8), 1082-1101.
- Gerhart, B. and G.T. Milkovich, 1992, 'Employee compensation: research and practice', in Marvin D. Dunnette and Leaetta Hough (eds), *Handbook of industrial and organizational psychology, vol. 3*, Palo Alto, CA: Consulting Psychologists Press, 481-569.
- Guest, David E., 1997, 'Human resource management and performance: a review and research agenda', *International Journal of Human Resource Management* **8** (3), 263-276.
- Guest, David E., J. Michie, N. Conway, L. Trenberth, E. McDonald and M. Sheenan, 2001, *An international comparative study of the human resource management company performance relationship: evidence from the United Kingdom, New Zealand and Australia*, Paper presented at the HRM Network Congress, Nijmegen, The Netherlands, November 2001.
- Guthrie, James P., 2001, 'High-involvement work practices, turnover, and productivity: evidence from New Zealand', *Academy of Management Journal* **44** (1), 180-190.
- Harel, Gedaliahu H. and Shay S. Tzafirir, 1999, 'The effect of human resource practices on the perceptions of organizational and market performance of the firm', *Human Resource Management* **38** (3), 185-199.
- Hatcher, Larry, 1994, *A step-by-step approach to using the SAS system for factor analysis and structural equation modelling*, Cary, NC: SAS Institute.
- Holloway, Jacky, Jenny Lewis and Geoff Mallory, 1995, *Performance measurement and evaluation*, London: Sage.
- Holzer, H.J., 1987, 'Hiring procedures in the firm: their economic determinants and outcomes', in M.M. Kleiner, R.N. Block, M. Roomkin and S.W. Salsbury (eds), *Human resources and the performance of the firm*, Washington DC: BNA Press.
- Hunter, J.E. and R.F. Hunter, 1984, 'Validity and utility of alternative predictors of job performance', *Psychological Bulletin*, **96**, 72-98.
- Huselid, Mark A., 1995, 'The impact of human resource management practices on turnover, productivity, and corporate financial performance', *Academy of Management Journal* **38** (3), 635-672.
- Ichniowski, Casey and Kathryn Shaw, 1999, 'The effects of human resource management systems on economic performance: an international comparison of U.S. and Japanese plants', *Management Science* **45** (5), 704-721.
- Ichniowski, Casey, Kathryn Shaw and Giovanna Prennushi, 1997, 'The effect of human resource management practices on productivity: a study of steel finishing lines', *American Economic Review* **87** (3), 291-313.

- Iles, P. and I. Robertson, 1997, 'The impact of personnel selection procedures on candidates', in Neil Anderson and Peter Herriot, (eds), *International Handbook of Selection and Assessment*, Chichester: Wiley.
- Katz, Harry C., Thomas A. Kochan and Mark A. Weber, 1985, 'Assessing the effects of industrial relations systems and efforts to improve the quality of working life on organizational effectiveness', *Academy of Management Journal* **28** (3), 509-526.
- Kazanjian, Robert K., 1988, 'Relation of dominant problems to stages of growth in technology-based new ventures', *Academy of Management Journal* **31** (2), 257-279.
- Kirkpatrick, Donald L., 1998, *Evaluating training programs. The four levels*, San Francisco: Berrett-Koehler.
- Koch, Marianne J. and Rita Gunther McGrath, 1996, 'Improving labor productivity: human resource management policies do matter', *Strategic Management Journal* **17** (5), 335-354.
- Kotthoff, H. (1993). 'Unternehmer sein, das lernt man nicht auf der Schule ... Ökonomie, Organization und Führung in Mittelständischen Unternehmen'. In Ganter, H. and Shienstock G. (Eds), *Management aus soziologischer Sicht. Unternehmungsführung, Industrie- und Organisationssoziologie*. Wiesbaden: Gabler.
- Lawler III, Edward E., 1999, *Rewarding excellence. Pay strategies for the new economy*, San Francisco: Jossey-Bass.
- Lee, Don Y. and Eric W.K. Tsang, 2001, 'The effects of entrepreneurial personality, background and network activities on venture growth', *Journal of Management Studies* **38** (4), 583-602.
- Luhmann, Niklas, Renate Mayntz and Rainer Koch, 1973, *Personal im öffentlichen Dienst : Eintritt und Karrieren*, Baden-Baden: Nomos Verlagsgesellschaft.
- MacDuffie, John Paul, 1995, 'Human resource bundles and manufacturing performance: organizational logic and flexible production systems in the world auto industry', *Industrial and Labor Relations Review* **48** (2), 197-221.
- Maes, Johan, Luc Sels and Filip Roodhooft, 2001, *Small business performance: exploring the link between management practices and the financial performance of small and medium sized Belgian construction companies*, Conference proceedings: RENT XV Research in Entrepreneurship and Small Business. Turku (Finland), November 22nd-23rd 2001.
- McGregor, Douglas, 1957, 'An uneasy look at performance appraisal'. *Harvard Business Review* **35** (3), 89-94.
- Miller, Danny and Jang Woo Lee, 2001, 'The people make the process: commitment to employees, decision making, and performance', *Journal of Management* **27** (2), 163-89.
- Miller, Danny and Jean-Marie Toulouse, 1986, 'Chief executive personality and corporate strategy and structure in small firms', *Management Science* **32** (11), 1389-1409.
- Milliman, John, Mary Ann Von Glinow and Maria Nathan, 1991, 'Organizational life cycles and strategic international human resource management in multinational companies: implications for congruence theory', *Academy of Management Review* **16** (2), 316-339.
- Morrow, Paula C., 1993, *The theory and measurement of work commitment*, Greenwich: JAI Press.

- Osterman, Paul, 1994, 'How common is workplace transformation and who adopts it?', *Industrial and Labor Relations Review* **47** (2), 173-188.
- Peccei, Riccardo. and Patrice Rosenthal, 2001, 'Delivering customer-oriented behaviour through empowerment: an empirical test of HRM assumptions', *Journal of Management Studies* **38** (6), 831-57.
- Pfeffer, Jeffrey, 1994, *Competitive advantage through people: unleashing the power of the workforce*, Boston: Harvard Business School Press.
- Randall, G, P. Packard, R. Shaw and A. Slater, 1984, *Staff Appraisal*. London: IPM.
- Rogg, Kirk L., David B. Schmidt, Carla Shull and Neal Schmitt, 2001, 'Human resource practices, organizational climate, and customer satisfaction', *Journal of Management* **27** (4), 431-449.
- Sanchez-Runde, C., 2001, 'Strategic Human Resource Management and the New Employment Relationship: A Research Review and Agenda', in Jordi Gual and Joan E. Ricart (eds), *Strategy, Organization and the Changing Nature of Work*, Cheltenham: Edward Elgar.
- Schindehutte, Minet and Michael M. Morris, 2001, 'Understanding strategic adaptation in small firms', *International Journal of Entrepreneurial Behaviour and Research* **7** (3), 84-107.
- Sels, Luc, 2002, 'More is not necessarily better. The relationship between the quantity and quality of training efforts', *International Journal of Human Resource Management* **13** (8), 1279-1298.
- Shaw, Jason D., John E. Delery, G. Douglas Jr. Jenkins and Nina Gupta, 1998, 'An organization-level analysis of voluntary and involuntary turnover', *Academy of Management Journal* **41** (5), 511-525.
- Sheehan, Eugene P., 1993, 'The effects of turnover on the productivity of those who stay', *Journal of Social Psychology* **133** (5), 699-706.
- Sparrow, Paul and Jean Marie Hiltrop, 1994, *European human resource management in transition*, New York: Prentice Hall.
- Staw, Barry M., 1980, 'The consequences of turnover', *Journal of Occupational Behavior* **1**, 253-273.
- Steel, Robert P., Rodger W. Griffeth and Peter W. Hom, 2002, 'Practical Retention Policy for the Practical Manager' *Academy of Management Executive*, **16** (2), 149-164.
- Stone, Claire Louise, 1996, 'Analysing business performance: counting the "soft" issues', *Leadership and Organization Development Journal* **17** (4), 21-28.
- Truss, Catherine, 2001, 'Complexities and controversies in linking HRM with organizational outcomes', *Journal of Management Studies* **38** (8), 1122-1149.
- Welbourne, Theresa M. and Linda A. Cyr, 1999, 'The human resource executive in initial public offering firms', *Academy of Management Journal* **42** (6), 616-629.
- Wijewardena, Hema and Gary E. Tibbits, 1999, 'Factors contributing to the growth of small manufacturing firms: data from Australia', *Journal of Small Business Management* **37** (2), 88-95.
- Wright, Patrick M. and Wendy R. Boswell, 2002, 'Desegregating HRM: A review and synthesis of micro and macro human resource management research', *Journal of Management* **28** (3), 247-76.

- Wright, Patrick M. and Gary C. McMahan, 1992, 'Alternative theoretical perspectives for strategic human resource management', *Journal of Management*, **18** (2), 295-320.
- Wright, Patrick M. and Scott A. Snell, 1998, 'Toward a unifying framework for exploring fit and flexibility in strategic human resource management', *Academy of Management Review* **23** (4), 756-772.
- Youndt, Mark A., Scott A. Snell, James W. Jr. Dean and David P.Lepak, 1996, 'Human resource management: manufacturing strategy and firm performance', *Academy of Management Journal* **39** (4), 836-866.

TABLE I
Summary of HRM Practices (measures)

Domains	Indicator 1	Indicator 2	Indicator 3
Training	<i>Provision of training</i> In 1999 the company provided training for its operational staff No = 0; Yes = 1	<i>Dedication to training plan</i> The company has a strategic training plan No = 0; Yes = 1	<i>Evaluation of training effects</i> Extent to which reactions, learning, behavioral and performance effects after company training are measured. 10-point scale (≤ 4) = 0; (> 4) = 1 (median)
Selection	<i>Types of selection technique</i> Predictors with high predictive validity are used (work sample tests, assessment centre, biographical questionnaire). No = 0; Yes = 1	<i>Forecasting of supply-demand imbalances</i> Examination of how many and what types of recruitment are needed in the medium term (approx. 1 year). No = 0; Yes = 1	<i>Evaluation of recruitment and selection process</i> The recruitment and selection activities of the company are systematically evaluated No = 0; Yes = 1
Careers	<i>Internal labor market</i> The company offers operational staff the possibility of attaining a higher hierarchical level No = 0; Yes = 1	<i>Potential reviews</i> Appraisal system related to succession planning, concerned with what an individual will be capable of doing in the future No = 0; Yes = 1	<i>Horizontal mobility</i> The company offers operational staff the possibility of becoming active in other functional domains at the same level No = 0; Yes = 1
Compensation	<i>Benefits</i> Number of extra benefits which the company offers its employees 0 to 4 = 0; 5 or more = 1 (median)	<i>Performance-related pay</i> Part of the wage of blue and/or white-collar workers depends on individual performances or merit No = 0; Yes = 1	<i>Occasional bonus</i> Employees receive an occasional bonus, e.g. following an improvement in results No = 0; Yes = 1
Performance management	<i>Reward reviews</i> Appraisal procedure that relates to the allocation and attribution of awards, rewards and benefits No = 0; Yes = 1	<i>Performance reviews</i> Appraisal procedure aimed at the development and motivation of staff by looking at how well he or she is doing No = 0; Yes = 1	<i>Evaluation system</i> Use of a system which specifies procedure and criteria for the appraisal process No = 0; Yes = 1
Participation	<i>Indirect participation</i> Trade union representation present (whether or not in the form of a trade union delegation) No = 0; Yes = 1	<i>Financial participation</i> Blue and/or white-collar workers share in the profits or can participate financially in the company No = 0; Yes = 1	<i>Direct participation</i> Extent to which, e.g. via consultation, consideration is given to employees' opinions 10-point scale (see appendix, scale 3) (< 7) = 0; (≥ 7) = 1 (median)

TABLE II
Factor Analysis in the Seven HRM Domains (n = 385).

All items scored on 4-point scale (no practices applied from the domain to all practices applied from the domain). Extraction method: principal component analysis; varimax rotation.

	HRM intensity
Training policy indicators	.687
Selection policy indicators	.598
Career policy indicators	.729
Compensation policy indicators	.643
Performance management indicators	.719
Participation policy indicators	.611
Reliability analysis (Cronbach alpha)	.7817

TABLE III
Descriptive Statistics

	Mean	s.d.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) HRM intensity	8.36	2.04	1.00							
(2) Voluntary turnover	11.6%	15.6	-.03	1.00						
(3) Absenteeism	5.3%	7.9	.02	.02	1.00					
(4) Gross margin per member of staff	2230.6	1315.6	.18 ***	-.08	-.04	1.000				
(5) Personnel costs over gross margin	72.6%	19.9	.00	.03	.08	-.63***	1.000			
(6) Acid ratio test (liquidity indicator)	1.1	0.8	-.02	-.05	.02	.17 ***	-.17 ***	1.00		
(7) Degree of auto-financing (solvency indicator)	14.7	21.4	-.11 *	-.07	-.04	.13 **	-.20 ***	.51 ***	1.00	
(8) Net profitability over capital and reserves	8.9	53.3	.13 **	.02	-.05	.15 **	-.23 ***	.11 *	.16 **	1.00

- $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

TABLE IV

Goodness of fit measures

	Theoretical model	Optimized model
Bentler's Comparative fit index	0.87	1.00
Bentler and Bonett's Non-normed index	0.48	0.99
Bentler and Bonett's Normed Fit index	0.86	0.97
Chi-square test (p-value)	.01	.40

TABLE V

Standardized path coefficients (* p < 0.05; ** p < 0.01; *** p < 0.001)

Path from/to	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
HR intensity								
(1) HRM intensity		-0.01	0.00	0.13 *	0.12 *			0.14 **
Operational performance								
(2) Voluntary turnover				-0.09				
(3) Absenteeism				-0.03				
(4) Productivity					-0.63 ***			
Financial performance								
(5) Personnel costs/Gross margin						-0.26 ***	-0.14 **	-0.19 **
(6) Liquidity							0.44 ***	
(7) Solvency								
(8) Profitability								
Control variables								
(9) age	-0.11	-0.10	0.05	0.01	-0.04	0.04	0.29 ***	0.00
(10) size	0.23 ***	-0.08	-0.07	-0.01	0.12 *	-0.02	-0.07	-0.06
(11) service sector	0.19 *	0.16 *	-0.07	0.14	-0.10	-0.14	-0.06	-0.07
(12) trade sector	0.26 ***	-0.01	-0.00	0.29 ***	-0.14 *	-0.32 ***	-0.12	-0.01
(13) industrial sector	0.23 **	-0.01	0.06	0.12	-0.16 *	-0.24 **	-0.16 *	-0.01

TABLE VI

Total effects of HRM intensity on operational and financial performance outcomes

Performance outcome	Total effect of HRM intensity on outcome
Operational performance	
(1) Voluntary employee turnover	-0.02
(2) Absenteeism	0.01
(3) Productivity	0.14
Financial performance	
(4) Personnel costs / gross margin	0.03
(5) Liquidity	-0.008
(6) Solvency	-0.007
(7) Profitability	0.13

FIGURE 1

HRM, performance outcomes and financial outcomes: hypothesized model

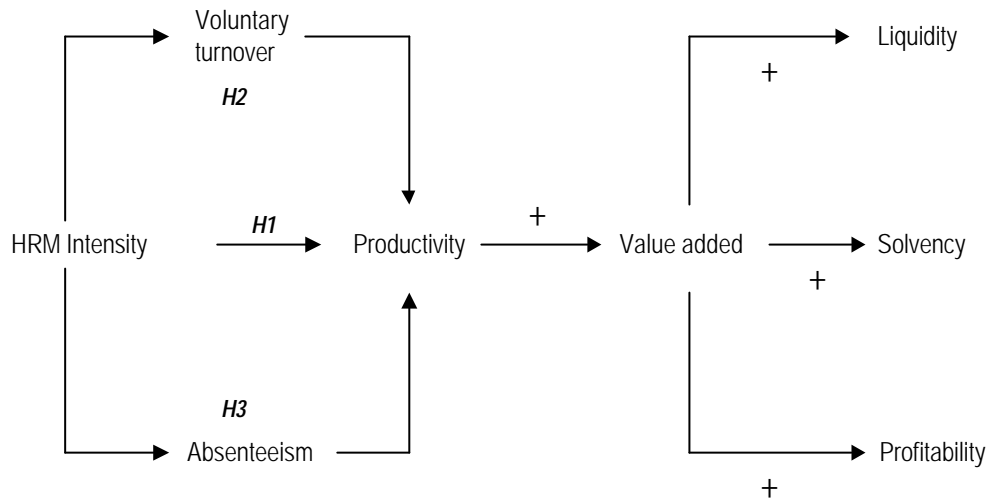
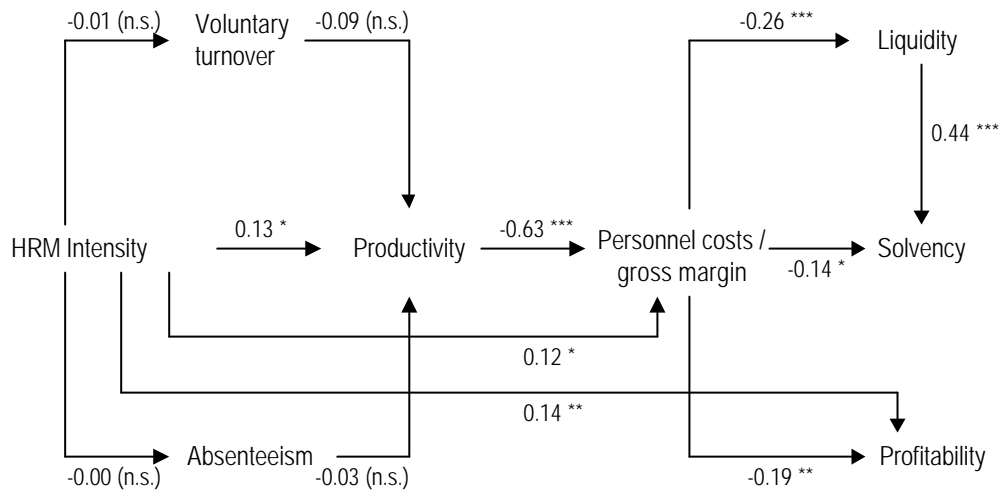


FIGURE 2

HRM, performance outcomes and financial outcomes: model with standardized path coefficients (represented without control variables)



* $p < .05$

** $p < 0.01$

*** $p < 0.001$

n.s. not significant