

**HIGH PERFORMANCE WORK SYSTEMS: “RESEARCH ON
RESEARCH” AND THE STABILITY OF FACTORS OVER TIME**

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BIBLIOGRAPHIC DATA AND CLASSIFICATIONS		
Abstract	<p>Research, summarized and classified in the work of Delery and Doty (1996), Guest (1997), Paauwe and Richardson (1997) and Boselie et al. (2001), suggests significant impact of Human Resources Management (HRM) on the competitive advantage of organizations. The mainstream research on this topic reveals encouraging results on organizational level. Also in relation to Total Quality Management (TQM) there is research evidence that 'best practices' and/or 'high performance work systems' (HPWS) can be identified having positive impact on the performance of an organization (Waldman, 1994; Hendricks and Singhal, 1997 and 2001; Blackburn and Rosen, 1993). Delery and Shaw (forthcoming in 2002) allege a need for "research on research" in the area of HPWS and performance, more precisely research on organizational-level research methods. We argue that further "research on research" on the perception of the individual employee may also reveal new (methodological) insights in the effects of HRM and/or TQM practices on performances in organizations. The purpose of this paper is to (1) review methodological problems in empirical literature on HRM/TQM and performance and to (2) test the stability of HRM/TQM factors (or constructs) over time. We have the opportunity to analyze longitudinal data (1998 and 2000) of individual employee perceptions from the Ernst & Young company in the Netherlands. The HRM/TQM constructs appear to be relatively stable over time, just like the relationship between these constructs and performance.</p>	
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**High Performance Work Systems:
"Research on Research" and the Stability of Factors over Time**

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Abstract

Research, summarized and classified in the work of Delery and Doty (1996), Guest (1997), Paauwe and Richardson (1997) and Boselie et al. (2001), suggests significant impact of Human Resources Management (HRM) on the competitive advantage of organizations. The mainstream research on this topic reveals encouraging results on organizational level. Also in relation to Total Quality Management (TQM) there is research evidence that 'best practices' and/or 'high performance work systems' (HPWS) can be identified having positive impact on the performance of an organization (Waldman, 1994; Hendricks and Singhal, 1997 and 2001; Blackburn and Rosen, 1993). Delery and Shaw (forthcoming in 2002) allege a need for "research on research" in the area of HPWS and performance, more precisely research on organizational-level research methods. We argue that further "research on research" on the perception of the individual employee may also reveal new (methodological) insights in the effects of HRM and/or TQM practices on performances in organizations. The purpose of this paper is to (1) review methodological problems in empirical literature on HRM/TQM and performance and to (2) test the stability of HRM/TQM factors (or constructs) over time. We have the opportunity to analyze longitudinal data (1998 and 2000) of individual employee perceptions from the Ernst & Young company in the Netherlands. The HRM/TQM constructs appear to be relatively stable over time, just like the relationship between these constructs and performance.

Key Words: human resource management (HRM), total quality management (TQM), high performance work systems (HPWS), employee morale, employee satisfaction.

1. Introduction

There is a growing interest in theory¹ and in practice² with regard to the relationship between human resource management (HRM) and total quality management (TQM) as well as the relationship between these two approaches and performance.

HRM and TQM do matter (see Delery and Doty, 1996; Reed et al., 1996; Guest, 1997; Paauwe and Richardson, 1997; Boselie et al., 2001; Powell, 1995; Hackman and Wageman, 1995; Hendricks and Singhal, 1997 and 2001; Zeithaml, 2000), but the nature of the relationship between HRM/TQM and performance is rather complicated. To fully understand this relationship we need to overcome several methodological obstacles. "And they will be extremely difficult to overcome" (Delery and Shaw, forthcoming in 2002). First, we set out to give an overview of these methodological obstacles in empirical research. Second, we will focus on the stability of HRM/TQM constructs over time and their relationship with performance by looking at longitudinal data (1998 and 2000) of individual employee perceptions from the Ernst & Young company in the Netherlands. The majority of prior research is focused on the effects of HRM/TQM on the organizational level (e.g. Arthur, 1994; Huselid, 1995; MacDuffie, 1995; Choi et al, 1998; Wiele van der, 1998; Hendricks and Singhal, 2001). Research on the perceptions of individual employees reveals another new stimulus to the discussion on the effectiveness of HRM/TQM in an organization (Guest, 1999).

2. Methodological Obstacles

2.1 Practices or Systems?

There is a growing acceptance of a (HRM/TQM) systems or bundles approach instead of a (HRM/TQM) practices approach:

The idea behind the systems approach is that logical combinations of HRM practices are more difficult to imitate and are more valuable than a single practice in isolation (Delery and Shaw, forthcoming in 2002).

The assumption of 'horizontal fit' (internal consistency of HRM/TQM practices) as a necessary condition for organizational success is rooted in the resource based view (e.g. Wernerfelt, 1984; Barney, 1991; Barney and Wright, 1998) and strategic human resource management (e.g. Dyer, 1984; Schuler and Jackson, 1987). Also with regard

to TQM, the Business Excellence approaches build on the assumption that there is an equal maturity concerning the implementation of practices of all elements of the Excellence models (e.g. Blackburn and Rosen, 1993; EFQM, 2001). A number of articles and books have been published in recent years on *high performance work systems* (e.g. Arthur, 1994; Pfeffer, 1994; Huselid, 1995; MacDuffie, 1995; Appelbaum et al., 2000; Guthrie, 2001). According to Guthrie (2001) HPWS have two broad implications. First, HPWS will enhance employee retention. Second, the use of HPWS and concomitant investments in employees will likely magnify this effect. The central hypothesis in the HPWS literature is that these work systems create sustained competitive advantage of the organization through people and the processes in which and on which people have to work. Different statistical techniques, like factor analysis (e.g. Huselid, 1995) and cluster analysis (e.g. Arthur, 1994), can be applied to derive the HPWS. There are two major problems related to the systems approach. First, the systems or bundles are often difficult to interpret. See for example Huselid's (1995) *employee skills and organizational structures-* and *employee motivation* constructs. The systems approach of Delery and Shaw (forthcoming in 2002) can be of help. They define HRM in terms of the following 'best practices': staffing, training, appraisal, compensation and job design. Tuning in these 'best practices' creates the necessary systems- or HPWS approach. Second, there is little longitudinal research, with the exception of for example Pil and MacDuffie (1996) and d'Arcimoles (1997), to test the stability of systems over time.

2.2 Which Performance Indicators?

There is little attention in prior empirical research for the concept of performance. Guest (1997) presents a model with six boxes (see figure 1), representing the link between HRM strategy and Financial Outcomes.

-- FIGURE 1 --

Becker et al. (1997) present a model with seven boxes (see figure 2), representing the link between (overall) organization strategy and market value. Strategy determines or affects the type of HRM system, which influences 'employee skills', 'employee motivation' and 'job design and work structures'. In their turn these aspects affect

productivity, creativity and discretionary effort. The latter influence the operating performance and so on.

-- FIGURE 2 --

Delery and Shaw (forthcoming in 2002) present a model with four boxes (see figure 3), representing the relationship between HRM (staffing, training, appraisal, compensation and job design) and firm performance.

-- FIGURE 3 --

Wright and Gardner (2001) pose two important questions related to these type of models presented in figure 1, 2 and 3: (1) How many boxes do we need to fully understand the relationship between HRM and performance? (2) How many items (indicators) should we put in each box? Putting too many boxes in the model will not "open the black box". Putting too much items (indicators) in the boxes will not make the model more insightful. We can make a (pragmatic) distinction between the following outcome variables:

1. *perception HRM outcomes*; e.g. employee satisfaction, employee motivation, employee trust, employee commitment, and employee loyalty (often collected by means of surveys amongst employees)
2. *objective HRM outcomes*; e.g. employee turnover rate and absence due to illness rate
3. *manufacturing performance*; e.g. product/service quality and productivity
4. *firm performance*; e.g. sales, market share, profits and market value

The framework of Paauwe and Richardson (1997) suggests that HRM outcomes (perception and objective outcomes) are more closely related to HRM activities or practices than manufacturing- and firm performance. Kanfer (1994) acknowledges this phenomenon and suggests that the distance between practices and firm performance is too large to perform good reliable research. From this perspective the existence of a significant relationship between HRM practices and financial (firm) performance is more likely to be a case of 'reversed causality' than a direct effect of

these practices on financial performance. This notion might put some of Huselid's (1995) findings in another perspective. Guest (1997) suggests that HRM effectiveness should be studied by focusing on the effects of HRM activities on HRM Outcomes and Behavior Outcomes, and not so much the effects of activities on financial performance.

2.3 Level of Analysis?

Roughly speaking, there are 6 levels of analysis: (1) individual level; (2) team/group level; (3) business unit level; (4) company level; (5) sector level; and (6) country level. Most empirical research on HRM/TQM and performance is executed on business unit and company level (e.g. Arthur, 1994; Huselid, 1995; MacDuffie, 1995; Hendricks and Singhal, 2001). According to Delery and Shaw (forthcoming in 2002) this is caused by the research focus on HRM effects on firm performance (e.g. sales, market share, profits and market value). Guest (1999) suggests further research in the area of HRM and performance on individual level, focussing on the HRM outcomes (perception and objective) as suggested before.

2.4 What Type of Research?

The majority of research on the effectiveness of HRM and TQM is quantitative by nature. Some academics (e.g. Purcell, 1999; Tyson, 1999) plead for qualitative research (for example case study research) in order to fully understand the relationship between HRM and performance, in particular the underlying processes that create value ("the black box"). Triangulation of research techniques (Berg, 1998), both quantitative and qualitative, is the challenge for the future. The application of multiple research techniques has two important advantages. First, the data are often complementary and therefore rich on information. Second, triangulation in research increases validity (Berg, 1998).

2.5 Measurement in Survey Research?

Delery and Shaw (forthcoming in 2002) discuss the problems related to single respondent survey research versus multiple respondents (raters) survey research. Both methods reveal severe problems with respect to reliability, although these problems are extremely difficult to overcome. The single respondent technique still dominates the area on HRM/TQM and performance. Most studies apply the 'key informant

method', focused on a single respondent who is presumed to have *the knowledge* (of the topic), *the motivation* and *the authority* (data access) to fill in the questionnaire (Delery and Shaw, forthcoming in 2002). Organizational size is relevant for the research design. Delery and Shaw (forthcoming in 2002) state that:

It is unlikely that a single informant will be able to provide accurate information about HRM practices in a very large firm.

Multiple respondents allow different perceptions to enter the database, improving the validity of the information. Multiple respondents, however, also has a disadvantage when more data might become available from respondents who are less knowledgeable on the subject.

2.6 How to get Optimal Research Control?

In the overview of Boselie et al. (2001) we find that prior research on HRM and performance is highly diversified in terms of: (1) theories applied (contingency theory, control theory, resource-based view, behavior theory, sociotechnics, cybernetics and stakeholder theory); (2) concepts being used (both dependent and independent variables); (3) number of observations (for example Arthur, 1994 used 30 observations versus Huselid, 1995 who used 968 observations); (4) single- versus multiple sector research; (5) quantitative- versus qualitative research; (6) single- (HRM managers) versus multiple respondent techniques (raters); and (7) research in different countries. Further analysis of empirical literature can expand this list of diversification quite easily. In essence a good research design controls for things we are not really interested in. The framework of Paauwe and Richardson (1997) suggests that *contingency and/or control variables on organizational-* (e.g. size, sector, technology, degree of unionization and capital intensity) and *individual level* (e.g. employee age, gender, job experience and level of education) affect HRM activities, HRM outcomes and firm performance, and should therefore be seriously taken into account in any research design. We know for example that large organizations have economies of scale in contrast to small organizations (e.g. Huselid, 1995). *Organizational size* appears to be a key contingent or control variable for the research design and should therefore be taken into account.

Another control variable is related to employee categories. Lepak and Snell (1999) argue that firms have different HR structures for different *employee groups*. They introduce the idea that:

Organizations manage divergent HRM systems depending on the employment mode for a particular group (Delery and Shaw, forthcoming in 2002).

The distinction between employee groups in organizations in relationship to the archetype of organizational structures and systems is also acknowledged by Mintzberg (1979 and 1998). In addition, it has been argued that for an organization to realize the value of a TQM implementation, it must have an internal organizational structure that is capable of fully supporting the implementation (Waldman and Gopalakrishnan, 1996; Douglas and Judge, 2001).

2.7 Stability of Factors/Constructs over Time?

Duplication of research over time might result in problems with respect to the stability of constructs. This is related to the reliability of factors over time. We have the opportunity to analyze large databases with recent data of individual employee perceptions from the Ernst & Young company in the Netherlands. Two consequent surveys have been undertaken by International Survey Research (ISR London) to measure employee morale in 1998 and in 2000. The analysis give new insights in relation to the stability of concepts over time which reflect HRM/TQM high performance work systems (like 'co-operation', 'information', 'leadership', 'salary', 'work conditions', and 'goal setting') and concepts reflecting HRM/TQM outcomes: '*employee satisfaction*' and '*intention to leave the organization*'. Further, we set out to find whether there are significant and relevant differences in the effects of the HPWS on HRM/TQM outcomes over time (analysis of 1998 data versus analysis of 2000 data).

On the basis of the preceding summary of methodological obstacles we will focus our research on:

- *a systems approach* towards HRM/TQM high performance work systems (HPWS)
- *perception HRM outcomes*, that are presumed to be more closely (or directly) related to HPWS than for example manufacturing- and firm performance

- *analysis on the level of the individual employee* (in contrast to the majority of prior research that focuses on organizational level)
- *quantitative research* (survey input); unfortunately we were not able to perform an alternative research technique (for example case study analysis)
- individual employees of Ernst & Young in the Netherlands; we assume that the individual respondents had the *knowledge, motivation* and *authority* to properly fill in the questionnaire
- the following contingency/control variables: age, tenure, sex, having a partner or not, having children or not, type of contract (full time, part time, appointment for a predefined period).

3. High Performance Work Systems, HRM and TQM

In the TQM literature there seems to be general understanding regarding the type of TQM activities that contribute to the development of 'business excellence'. Dale (1999) enumerates the following practices relevant to organizational excellence from a TQM perspective: leadership, training, involvement and participation of employees, co-operation and customer focus. Most of these themes can be found also in current HRM literature. Various authors indicate explicitly so-called 'best practices' or 'high performance work systems' that will deliver sustainable competitive advantage for the organization. Pfeffer (1994) discerns 16 of 'high performance' practices, amongst those 'information', 'high wages', and 'job security'. Arthur (1994) focuses on amongst others 'decentralization', 'participative leadership' and 'excellent wages'. Delery and Shaw (forthcoming in 2002) state that the correct tuning in of the following 'best practices' lead to high performance work systems (HPWS): staffing, training, appraisal, compensation and job design (see also figure 3). The business excellence models defined in relation to the international and national quality awards, stimulated the development of best practices from a TQM point of view (Blackburn and Rosen, 1993; Puay et al, 1998). Thus, TQM and HRM both underline the existence of forms of HPWS that drive organizations to excellent performance.

The key question in this research is: *how stable are factors of employee perceptions regarding high performance work systems (HPWS), job satisfaction and intention to leave the organization over time?*

4. Employee morale survey in Ernst & Young

Ernst & Young is an international organization with accounting activities and consultancy on tax issues. Related to these two scopes Ernst & Young delivers a number of specialisms, e.g. edp-auditng, interim management, corporate finance, actuarial consulting, law services, security management, and crisis management, forensic services, foundation trust services, advisory consultancy, human resources services, recruitment & assessment services, advice on company location choices, and services on information and documentation systems. Worldwide the organization has approximately 83,500 employees, spread over 700 locations, in more than 130 countries, with an annual sales volume of US\$ 10.9 billion. Once every two years a large scale employee morale survey is organized amongst all employees (managers and non-managers, staff and partners) in The Netherlands, with the support of ISR – International Survey Research (London, UK). ISR is an internationally operating organization with the advantage of making comparisons of the survey results with those of other companies or ‘best in class’. The survey in 1998 led to 2966 respondents (response rate 60%); in 2000 a number of 2313 questionnaires were received (response rate 50%).

5. Analysis of the data

The questionnaire, applied in 1998 and 2000 in The Netherlands, covers approximately 200 items, which are grouped around: personal information (age, gender, type of contract), perception of employees on HRM/TQM policies, and dependent variables (outcomes), e.g. (overall) job satisfaction and intention to leave the organization.

5.1 Independent variables

The first step in the analysis is focused on the selection of items from the questionnaire which relate to current theoretical HRM/TQM concepts³. In essence, this means a selection and categorization of items based on our own knowledge and expertise on ‘best practices’ in the area of human resource management and total quality management. By doing this, we are able to identify the following constructs: ‘information’, ‘salary & secondary work conditions’, ‘co-operation & teamwork’, ‘leadership’, ‘customer focus’, ‘appraisal’, ‘training & development’, and ‘goal setting’. The second step is to identify items from the questionnaires that can be

linked to those theoretical constructs. The procedure that has been followed is summarized in table 1.

-- TABLE 1 --

In each questionnaire (1998 and 2000) we selected around 100 items that in our opinion fit the theoretical constructs. A first factor analysis on this set of 100 items gave a factor solution with a high number of factors with eigenvalues above 1; the scree plot indicated that there was a rather gradual slope in the curve of eigenvalues. It was then decided to eliminate the number of factors with only one or two items loading on those factors. This resulted in a factor solution on the same 100 items with a pre-defined number of factors around 10. Elimination of the items with factor loadings below a value of .40 resulted in a list of around 60 items on which a third factor analysis was done. In this final stage the eigenvalues and the scree plot were not directly indicating the exact number of factors, e.g. although there were 15 factors with eigenvalues above 1, several factors had eigenvalues very close to 1. Trial and error with eight, nine, ten and eleven factor solutions showed that the outcome as summarized in table 2 is well supported by the statistical evidence.

-- TABLE 2 --

The use of factor analysis (principal component analysis) gives some methodological and practical advantages⁴. The final step resulted in nine underlying factors in 2000 and eight in 1998 covering around 40 items (using five point scales⁵) from the questionnaire; those items have factor loadings of more than .40 and thus give meaning to the final constructs. From table 2 it can be concluded that there are certain similarities between the two datasets from 1998 and 2000, however, there are also differences. These will be discussed further in this paper.

The contingency (or control) variables in this study are summarized in table 2. The descriptive statistics of these variables reveal the following changes over time (period 1998-2000):

- employee tenure decreases slightly from 4.24 in 1998 to 4.13 in 2000;
- significantly less employees with a full-time contract from 82.6% in 1998 to 73% in 2000;

- slightly more female employees (35% in 1998 and 38% in 2000);
- employee age decreases slightly from 3.22 in 1998 to 3.12 in 2000;
- unfortunately we only have data on the variable 'couple' for 2000;
- tendency towards dual-careers from 71% in 1998 to 79% in 2000;
- round 31% of the employees have kids at home in 1998 and 2000;
- the average age of kids of employees decreases slightly from 1.77 in 1998 to 1.65 in 2000.

Overall, we conclude an increase in part-time contracts, the percentage of female employees, and dual-careers. On the other hand we observe a decrease in employee tenure, average employee age, and the average age of kids at home, the latter is probably related to the average employee age.

5.2 Dependent variables

The dependent constructs (HRM/TQM outcomes) are created by selecting items from the questionnaires that relate to 'employee satisfaction' and 'intention to leave the organization'. In both questionnaires (1998 and 2000) 15 items have been selected for factor analysis which are related to satisfaction. One item is a separate measure for the intention to leave the organization and one for the 'general satisfaction with the company'. The items covering employee satisfaction have been used for factor analysis, resulting in three factors. Table 3 reveals the statistics of the factor analysis and table 4 summarizes the results of the analysis on the dependent variables.

-- TABLE 3 & 4 --

The intention to leave is measured by one question: "do you have the serious intention at this moment to change employer?" (yes = 2; no = 1). The descriptives show that 14% of the respondents in 2000 has a serious intention to leave the organization and look for another employer (18% in 1998).

6. Discussion

6.1 Stability of the factor solution over time

Factor analysis has been applied to define HRM/TQM constructs within two separate datasets (1998 and 2000). We find 8 factors or HRM/TQM constructs in 1998 and 9 in 2000. The 8 HRM/TQM constructs of 1998 reveal great similarity with the HRM/TQM constructs of 2000 (see table 2). One factor did come out of the factor

analysis in 2000 and not in 1998, i.c. the ‘direct work conditions’. It is also this factor that has the lowest intercorrelation between the items loading on this factor (Cronbach $\alpha = 0.63$). In particular, the following constructs appear to be stable over time in terms of number of items and content of the questions/items: 'cooperation', 'spread of information', 'internal and external customer focus', 'insight in goals and objectives', 'responsiveness of the organization', 'payment' and 'secondary work conditions' (see table 2). With regard to the dependent variables the same factors were found through the standardized factor analysis in 1998 as in 2000 (see table 4). In table 5 the Cronbach α scores are compared for the equivalent factors in 1998 and 2000. The Cronbach α 's of all constructs, representing both independent and dependent, are relatively high (> 0.70 , except for 'satisfaction with work-life balance') and stable over time (look at the values of the Cronbach α 's of the constructs of 1998 and 2000 in table 5).

-- TABLE 5 --

6.2 Stability of the means of the constructs over time

As can be concluded from table 6 some factors show an increase in the appreciation by the employees:

- co-operation,	$\Delta +0.22$
- responsiveness of the organization,	$\Delta +0.21$
- payment,	$\Delta +0.53$
- secondary work conditions,	$\Delta +0.77$

Some other factors show a decrease in the appreciation by the employees:

- appraisal and the role of the direct supervisor,	$\Delta -0.33$
- internal and external customer focus,	$\Delta -0.17$

The bigger changes in the scores reflect directly the actions and initiatives that have been stimulated on the basis of the results of the employee satisfaction survey in 1998 and thus reveal an effect in the scores given in the employee satisfaction survey in 2000.

-- TABLE 6 --

For the dependent factors we see no major changes, except for the intention to leave the organization. In the next paragraph we will analyze regression analyses.

6.3 Stability of the relationship between the independent and dependent construct variables over time

In table 7 the regression models are summarized to analyze the effects of factor constructs on the following dependent variables: satisfaction with the organizational culture, satisfaction with the work, overall satisfaction and the intention to leave the organization. From table 7 it can be concluded that:

- Although there is a shift in the importance of various factor constructs over time, 'co-operation', 'internal and external customer focus', 'insight in goals and objectives', and 'payment' in general affect the HRM/TQM outcomes positively;
- The direct work conditions (a factor only found in 2000 data) has a significant positive effect on satisfaction (on all three dependent variables);
- The effects of 'cooperation', 'internal and external customer focus', and 'payment' on the dependent variables in this study are relatively stable over time.

For example: cooperation has a beta of 0.20** in regression on 'satisfaction with culture' in 1998 and a beta of 0.36** in regression on 'satisfaction with culture' in 2000; and the beta's of cooperation in regression on 'overall satisfaction' are stable over time (0.25** in 1998 and 0.26** in 2000).

The HRM/TQM constructs '**cooperation**', '**internal and external customer focus**' and '**payment**' are (a) stable over time as constructs and (b) stable in their effects on HRM/TQM outcomes (employee satisfaction and intention to leave) over time (1998 and 2000). In other words: we argue that these constructs or high performance work systems (HPWS) are reliable and affect HRM/TQM outcomes positively.

7. Conclusion

It has been shown that statistically found factor solutions reveal stability over time. However, it is also become clear that specific factor constructs change over time, because some underlying items might become less important and some others might become more important for employees. The scores of factor constructs change over time probably because of at least three reasons:

1. The underlying items of a factor construct change;
2. The value of items changes over time because of non-controlled shifts in perceptions (economic situation, fads and fashions, general trends not influenced by the organization, stimulating factors become hygiene factors over time);
3. The value of items changes over time because of specific actions undertaken in the organization in order to respond to an earlier employee morale survey.

Thus it becomes difficult to decide what causes the changes in measurements. We know that Ernst and Young put a lot of effort (and money) in 'secondary work conditions' (in particular child care, parental leave, part-time working opportunities and tele-working) and 'payment'. The means of both constructs increased from 3.01 in 1998 to 3.54 in 2000 for payment and from 2.73 in 1998 to 3.50 in 2000 for secondary working conditions. Only payment appears to be extremely stable, and thus reliable, over time. Employees of the company are more satisfied with their income in 2000 than in 1998. The effect of payment on dependent variables is so extremely stable that we dare to state that as a result of Ernst & Young interventions with respect to payment: an average increase in satisfaction with the payment system of round 0.50 (on a 5-point scale) led to an increased satisfaction with the organizational culture of 0.12 (on a 5-point scale), an increased overall satisfaction of between 0.15 and 0.21 (on a 5-point scale), and a decrease of 15 to 17% employees who intend to leave the company. The HPWS 'payment or high wages' appears to be an excellent example of a HRM/TQM activity that drives organizational performance and might thus be a source of (sustained) competitive advantage. Although the average score on the factor 'secondary work conditions' has increased significantly (from 2.73 in 1998 to 3.50 in 2000), there are hardly any significant effects of this construct on the dependent variables satisfaction with culture, satisfaction with work, overall satisfaction and intention to leave in the regression analyses (see table 7). Attention for secondary working conditions (in particular parental leave, child care, opportunities for part-time work and tele-working) might be a fad or fashion . Overall, we conclude that the high performance work systems in this analysis are stable over time, some of these HPWS reveal a stable effect on outcomes over time (e.g. cooperation, internal and external customer focus, and payment), but some of the HPWS (e.g. appraisal and role of direct supervisor) turn out to affect outcomes differently in 1998 and 2000 (thus no stability of the effects over time). Further research on (1) the stability of HRM/TQM factors over time and (2) the stability of the impact of HRM/TQM factors on

performance over time in for example (a) different countries (e.g. USA versus European countries), (b) different type of companies (e.g. manufacturing- versus services organizations; profit- versus non-profit organizations), and (c) for different employee groups (e.g. employees on shopfloor level versus management) is necessary for understanding the full impact of HRM and TQM on performance.

Paul Boselie and Ton van der Wiele
Rotterdam, December 2001

Notes

1. A growing interest in the relationship between HRM/TQM and business performance can be traced back through: (1) special issues of academic journals as *Decision Science* (5:26, 1995), *The Academy of Management Journal* (4:39, 1996), *The International Journal of Human Resource Management* (3:8, 1997 and 7:12, 2001), *Human Resource Management* (Fall, 1997), and *The Human Resource Management Journal* (Fall, 1999); (2) seminars and conferences as the HRM Conference in Rotterdam (September, 1995), The ESRC Seminars in England (1996), and parallel sessions of the Academy of Management Meeting (1998, 1999, 2000, and 2001); and (3) publications in top ranked journals (e.g. Arthur, 1994; Huselid, 1995; MacDuffie, 1995).
2. There is a growing attention for management data and especially employee management data. Information technology makes it possible to gather more data regarding employees (e.g. age, education levels, and absenteeism). There is also more attention for employee satisfaction surveys and the results being translated into policies and actions regarding reducing turnover rates, balance between work and private, employability and evaluation of programs that focus on business excellence.
3. The constructs from step 1 are built on: Arthur's (1994) control versus commitment HRM systems; Pfeffer's (1994) 16 best practices; Huselid's (1995) 13 HRM practices; and Dale's (1999) key principles of TQM.
4. Methodological and practical advantages: data reduction leading to better overview (from 38 items to 9 constructs/factors); connection towards policy implications is made easier; the 9 constructs are maximally independent from each other.

5. Cronbach α is a measure for the internal consistency of the items, which together cover the specific (new and underlying) factor. In general, a value of 0.65 is acceptable.
6. Scale: 1 = disagree, 2 = more disagree than agree, 3 = neither disagree nor agree, 4 = more agree than disagree, 5 = agree.

References

- Appelbaum, E., T. Bailey, P. Berg and A. Kalleberg (2000) *Manufacturing advantage: why high-performance work systems pay off*. Ithaca: Cornell University Press.
- d'Arcimoles, C.H. (1997) 'Human resource policies and company performance: a quantitative approach using longitudinal data', *Organization Studies*, 5(18): 857-74.
- Arthur J.B. (1994) 'Effects of Human Resource Systems on Manufacturing Performance and Turnover', *Academy of Management Journal*, 3(37): 670-87.
- Barney, J.B. (1991) 'Firm resources and sustainable competitive advantage', *Journal of Management*, 1(17): 99-120.
- Barney, J.B. and P.M. Wright (1998) 'On becoming a strategic partner: the roles of human resources in gaining competitive advantage', *Human Resource Management*, 37, p.31-46.
- Becker, B.E., M.A. Huselid, P.S. Pickus and M.F. Spratt (1997) 'HR as a source of shareholder value: research and recommendations', *Human Resource Management*, 1(36): 39-47.
- Berg, B.L. (1998) *Qualitative research methods for the social sciences*. Boston: Allyn and Bacon, third edition.
- Blackburn R. and Rosen B. (1993) 'Total Quality and Human Resources Management: Lessons learned from Baldrige Award winning companies', *Academy of Management Executive*, 3(7): 43-65.
- Boselie P., Paauwe J. and Jansen P.G.W. (2001) 'Human Resource Management & Performance: lessons from the Netherlands', *The International Journal of Human Resource Management*, 7(12): 1107-25.
- Choi T.Y. and Eboch K. (1998) 'The TQM paradox: Relations among TQM practices, plant performance, and customer satisfaction', *Journal of Operations Management*, 1(17): 59-75.

- Dale B.G., Cooper C.L., Wilkinson A. (1997) *Managing Quality & Human Resources; A Guide to continuous improvement*, Blackwell, Oxford.
- Dale B.G. (1999) *Managing Quality*, 3rd edition, Blackwell Publishers, Oxford.
- Delery J.E. and Doty D.H. (1996) 'Modes of Theorizing in Strategic Human Resource Management: Tests of universalistic, contingency, and configurational performance predictions', *Academy of Management Journal*, 4(39): 802-35.
- Delery, J.E. and Shaw, J.D. (forthcoming in 2002) 'The Strategic Management of People in Work Organizations: review, synthesis, and extension', Vol. 20, *Research in Personnel and Human Resource Management*, edited by Ferris.
- Douglas T.J. and W. Q. Judge Jr. (2001) 'Total quality management implementation and competitive advantage: The role of structural control and exploration', *Academy of Management Journal*, 44(1): 158-69.
- Dyer, L. (1984) 'Studying human resource strategy: an approach and an agenda', *Industrial Relations*, 23 (): 156-69.
- European Foundation for Quality Management (1999) *Assessing for Excellence; A practical guide for self-assessment*, EFQM, Brussels.
- Guest, D.E. (1997) 'Human Resource Management and Performance: A Review and Research Agenda', *The International Journal of Human Resource Management*, 8 (3-6): 263-76.
- Guest, D.E. (1999) 'Human Resource Management: the workers' verdict', *Human Resource Management Journal*, 3(9): 5-25.
- Guthrie, J.P. (2001) 'High-involvement work practices, turnover, and productivity: Evidence from New Zealand', *Academy of Management Journal*, 1(44): 180-90.
- Hackman J.R., Wageman R. (1995) 'TQM: Empirical, conceptual and practical issues', *Administrative Science Quarterly*, 40(2): 304-42.
- Hendricks K.B., Singhal V.R. (1997) 'Does implementing an effective TQM program actually improve operating performance? Empirical evidence from firms that have won quality awards', *Management Science*, 43(9):1258-74.
- Hendricks K.B. and Singhal V.R. (2001) 'The long-run stock price performance of firms with effective TQM programs', *Management Science*, 3(47): 359-68.
- Huselid, M.A. (1995) 'The Impact of Human Resource Management Practices on Turnover, Productivity, and Corporate Financial Performance', *Academy of Management Journal*, 3(38): 635-72.

- Kanfer, R. (1994) *Work motivation: new directions in theory and research*, p.158-88, in: C.L. Cooper and I.T. Robertson (eds.) (1994) *Key reviews in managerial psychology*. New York: Wiley.
- Lepak, D.P. and Snell, S.A. (1999) 'The Human Resource Architecture: toward theory of human capital allocation and development, *Academy of Management Review*, 24(): 31-48.
- MacDuffie J.P. (1995) 'Human Resource Bundles and Manufacturing Performance: Organizational Logic and Flexible Production Systems in the World Auto Industry', *Industrial and Labor Relations Review*, 2(48): 197-221.
- Mintzberg, H. (1979) *The structuring of organizations*. London: Prentice-Hall, Inc., Englewood Cliffs.
- Mintzberg, H. (1998) 'Covert leadership: notes on managing professionals. Knowledge' workers respond to inspiration, not supervision', *Harvard Business Review*, November-December: 140-47.
- Paauwe J. and Richardson R. (1997) 'Introduction Special Issue on HRM and Performance', *The International Journal of Human Resource Management*, 3(8): 260.
- Pfeffer J. (1994) *Competitive Advantage Through People*. Boston: Harvard Business School Press.
- Pil, F.K. and J.P. MacDuffie (1996) 'The adoption of high-involvement work practices', *Industrial Relations*, 3(35): 423-55.
- Powell T., (1995) 'Total quality management as competitive advantage: A review and empirical study', *Strategic Management Journal*, 16(1), 15-37.
- Puay S.H., Tan K.C., Xie M. and Goh T.N. (1998) 'A comparative study of nine national quality awards', *The TQM Magazine*, 1(10): 30-9.
- Purcell, J. (1999) 'Best practice and best fit: chimera or cul-de-sac?' *Human Resource Management Journal*, 3(9): 26-41.
- Reed R., Lemak D.J. and Montgomery J.C. (1996) 'Beyond process: TQM content and firm performance', *Academy of Management Review*, 1(21): 173-202.
- Schuler, R.S. and S.E. Jackson (1987) 'Linking competitive strategies with human resource management practices', *Academy of Management Executive*, 1(3): 209-13.
- Tyson, S. (1999) 'How HR knowledge contributes to organizational performance', *Human Resource Management Journal*, 3(9): 42-52.

- Waldman D.A.(1994) 'The contributions of total quality management to a theory of work performance', *Academy of Management Review*, 19(3): 510-36
- Waldman D. and M. Gopalakrishnan, (1996) 'Operational, organizational, and human resource factors predictive of customer perceptions of service quality', *Journal of Quality Management*, 1(1): 91-107.
- Wernerfelt, B. (1984) 'A resource based view of the firm', *Strategic Management Journal*, 5 (): 171-80.
- Wiele van der A. (1998) *Beyond Fads; Management fads and organizational change with reference to quality management*, Eburon, Delft.
- Wright, P.M. and T.M. Gardner (2001) *Theoretical and empirical challenges in studying the HR practices – firm performance relationship*, paper presented at the ERIM seminars 2001 in Rotterdam, Erasmus University.
- Zeithaml V.A., (2000) Service quality, profitability, and the economic worth of customers: What we know and what we need to learn, *Journal of the Academy of Marketing Science*, 28(1): 67-85.

Figure 1 Model Guest (1997)

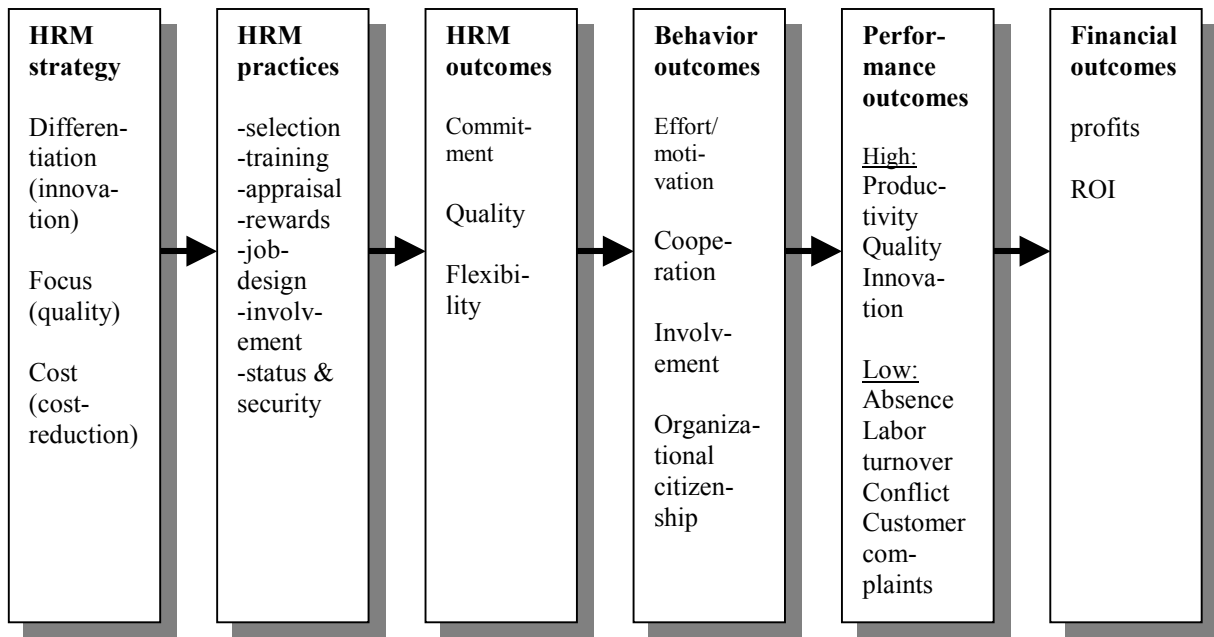


Figure 2 Model Becker, Huselid, Pickus and Spratt (1997)

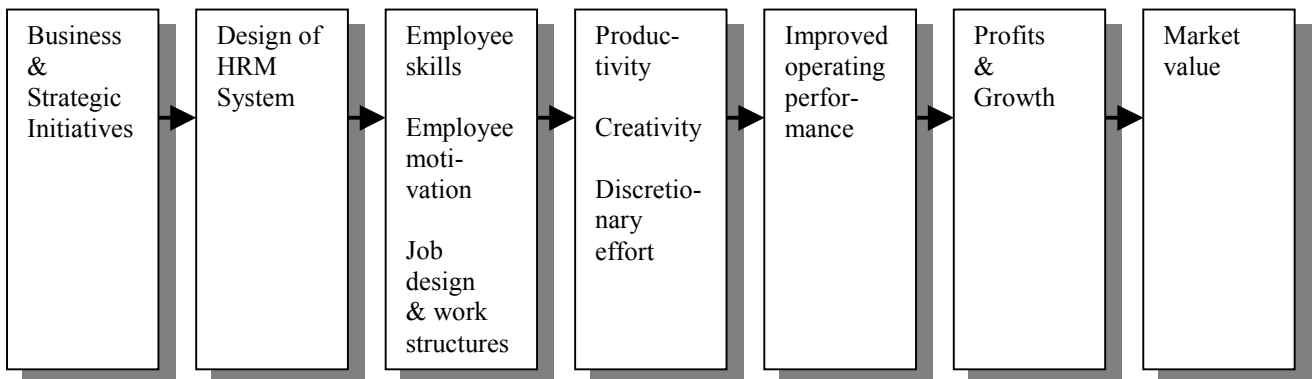


Figure 3 Model Delery and Shaw (forthcoming in 2002)

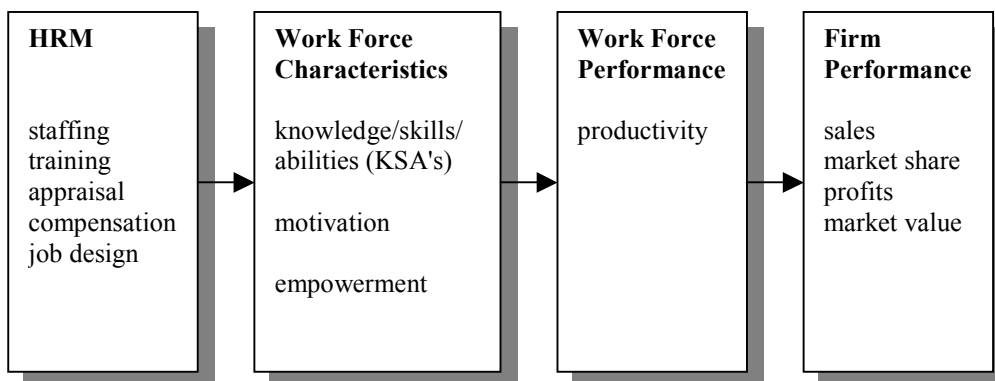


Table 1 Procedure to analyze the two datasets on the independent variables

	<u>1998</u>	<u>2000</u>
<u>Step 1:</u> theory		
<u>Step 2:</u>		
Selected items according to the predefined HRM/TQM constructs	101	102
First and second factor analysis		
- number of items	58	59
- KMO	.91	.91
- Bartlett test of sphericity	53,026	32,684
- Significance level	0.000	0.000
- Number of factors with eigenvalue ≥ 1	15	15
Third 'best factor' solution:		
- number of items loading $>.40$	53	50
- number of factors chosen	8	9

Table 2 Summary of the final factor solution for the two datasets on the independent variables and description of contingencies

HRM/TQM constructs 1998	HRM/TQM constructs 2000
<p>F1: <u>Co-operation</u> (n=12; Cronbach α =.86; mean 3.74, SD .62)</p> <ol style="list-style-type: none"> 1. E&Y stimulates co-operation; 2. E&Y appreciates co-operation; 3. Exchange of information within E&Y is appreciated 4. There is a good cooperation between units/groups 5. Exchange of information within E&Y is stimulated 6. There is a good cooperation between offices 7. Within E&Y there is enough cooperation in teams 8. E&Y as a whole is well managed 9. Within E&Y employees are treated with respect, independently from the work they do 10. E&Y has a good image with her people 11. My office is well managed 12. My business unit is well managed 	<p>F1: <u>Co-operation</u> (n=9; Cronbach α =.83; mean 3.96, SD .58)</p> <ol style="list-style-type: none"> 1. E&Y stimulates co-operation; 2. E&Y appreciates co-operation; 3. E&Y has a good image with her people 4. Within E&Y employees are treated with respect, independently from the work they do 5. E&Y shows interest in the development of employees 6. Within E&Y there is enough cooperation in teams 7. Exchange of information within E&Y is appreciated 8. E&Y has a good image with her customers 9. Partners of E&Y have high values and norms
<p>F2: <u>Spread of information</u> (n=8; Cronbach α = .81; mean 3.68, SD .61)</p> <ol style="list-style-type: none"> 1. Within E&Y employees are properly informed through 'OR-messages' about matters that are relevant to them; 2. Within E&Y employees are properly informed by the 'OR-database' about matters that are relevant to them; 3. Within E&Y employees are properly informed by an internal newsletter called 'Verspreid Verbonden' about matters that are relevant to them; 4. Within E&Y employees are properly informed by other sources of information about matters that are relevant to them. 5. The OR gives enough information to employees about matters that are relevant; 6. The OR plays an important role in the communication between employer and employees 7. I can go to the OR with opinions/questions about my work 8. Within E&Y employees are properly informed by 	<p>F2: <u>Spread of information</u> (N=9; Cronbach α = .83; mean 3.71, SD .58)</p> <ol style="list-style-type: none"> 1. Within E&Y employees are properly informed by the 'OR-database' about matters that are relevant to them; 2. Within E&Y employees are properly informed by 'NL-info' about matters that are relevant to them; 3. The OR plays an important role in the communication between employer and employees 4. Within E&Y employees are properly informed by an internal newsletter called 'Verspreid Verbonden' about matters that are relevant to them; 5. Within E&Y employees are properly informed by e-mail about matters that are relevant to them through E-mail; 6. Within E&Y employees are properly informed by other sources of information about matters that are relevant to them. 7. I can go to the OR with opinions/questions about my work 8. The OR gives enough information to employees

<p>e-mail about matters that are relevant to them through E-mail</p>	<p>about matters that are relevant; 9. The OR keeps employees well informed about matters that are relevant</p>
<p>F3: <u>Appraisal and role direct supervisor</u> (n=7; Cronbach α = .82; mean 3.55, SD .80)</p> <ol style="list-style-type: none"> 1. My direct supervisor stimulates personal skill development 2. My direct supervisor communicates effectively 3. My work appraisal is helpful in improving the way I work. 4. My work appraisal is helpful in defining my strong and weak points; 5. My supervisor keeps me informed how I do my job 6. My direct supervisor is available if I need him 7. My unit is well managed 	<p>F3: <u>Appraisal</u> (n=2; Cronbach α = .87; mean 3.22, SD .91)</p> <ol style="list-style-type: none"> 1. My work appraisal is helpful in defining my strong and weak points; 2. My work appraisal is helpful in improving the way I work
<p>F4: <u>Internal and external customer focus</u> (n=8; Cronbach α = .77; mean 4.22, SD .54)</p> <ol style="list-style-type: none"> 1. My group/unit properly reacts to customer demands; 2. My group/unit continuously tries to understand the demands and expectations of its customers; 3. In my work I can pay attention to customer service 4. I have enough responsibility to do a good job 5. I can get information to do my work effectively 6. I know what is expected from me 7. The importance given by my office/group/unit to customer service is visible in our daily work; 8. If my unit needs specialist support (skills or information) we are able to find out if this is available within E&Y 	<p>F4: <u>Internal and external customer focus</u> (n=5; Cronbach α = .76; mean 4.05, SD .61)</p> <ol style="list-style-type: none"> 1. My group/unit continuously tries to understand the demands and expectations of its customers; 2. My group/unit properly reacts to customer demands; 3. If my unit needs specialist support (skills or information) we are able to find out if this is available within E&Y; 4. Specialist support is available within E&Y when needed; 5. The importance given by my office/group/unit to customer service is visible in our daily work
<p>F5: <u>Insight in goals and objectives</u> (n= 5; Cronbach α = .81; mean 3.37, SD .83)</p> <ol style="list-style-type: none"> 1. I have sufficient insight in the objectives of my business unit. 2. I have sufficient insight in the objectives of E&Y; 3. I have sufficient insight in the objectives of my office; 4. I am well informed about the plans of various (business) units within E&Y. 5. I am well informed about the results of various 	<p>F5: <u>Insight in goals and objectives</u> (n= 6; Cronbach α = .83; mean 3.42, SD .79)</p> <ol style="list-style-type: none"> 1. I have sufficient insight in the objectives of my office; 2. I have sufficient insight in the objectives of my business unit. 3. I have sufficient insight in the objectives of E&Y; 4. I am well informed about the results of various (business) units within E&Y; 5. I have sufficient insight in the objectives of my

(business) units within E&Y	direct work environment; 6. I am well informed about the plans of various (business) units within E&Y
<p>F6: <u>Responsiveness of the organization</u> (n= 4; Cronbach α = .80; mean 3.08, SD .78)</p> <ol style="list-style-type: none"> 1. E&Y is better than the competition in reacting on changes in the sales market; 2. E&Y is better than the competition in the quality of the service; 3. E&Y is better than the competition in reacting on changes in the labor market; 4. E&Y is better than the competition in marketing and public relations 	<p>F6: <u>Responsiveness of the organization</u> (n= 6; Cronbach α = .78; mean 3.29, SD .66)</p> <ol style="list-style-type: none"> 1. E&Y is better than the competition in reacting on changes in the sales market; 2. E&Y is better than the competition in reacting on changes in the labor market; 3. E&Y is better than the competition in marketing and public relations; 4. E&Y is better than the competition in the quality of the service; 5. I think E&Y is managed in a good way; 6. I think my office is managed in a good way
<p>F7: <u>Payment</u> (n= 5; Cronbach α = .75; mean 3.01, SD .88)</p> <ol style="list-style-type: none"> 1. Regarding the work I do, I am not getting underpaid; 2. As far as I know, salary within E&Y is equal as or even better than in comparable organizations; 3. I think I'm not getting underpaid in comparison to colleagues within E&Y; 4. There is a good balance between payment and performance 5. Our secondary work conditions are equal to or better than in other organizations 	<p>F7: <u>Payment</u> (n= 4; Cronbach α = .77; mean 3.54, SD .90)</p> <ol style="list-style-type: none"> 1. Regarding the work I do, I am not getting underpaid; 2. As far as I know, salary within E&Y is equal as or even better than in comparable organizations; 3. I think I'm not getting underpaid in comparison to colleagues within E&Y; 4. Our secondary work conditions are equal to or better than in other organizations
<p>F8: <u>Secondary work conditions</u> (n= 4; Cronbach α = .79; mean 2.73, SD .90)</p> <ul style="list-style-type: none"> - E&Y pays a lot of attention to important developments in the society and its secondary work conditions reflect those developments, regarding <ol style="list-style-type: none"> 1. parental leave; 2. child care; 3. working part-time; 4. tele-working 	<p>F8: <u>Secondary work conditions</u> (n= 4; Cronbach α = .81; mean 3.50, SD .83)</p> <ul style="list-style-type: none"> - E&Y pays a lot of attention to important developments in the society and its secondary work conditions reflect those developments, regarding <ol style="list-style-type: none"> 1. Parental leave; 2. child care; 3. working part-time; 4. tele-working.
--	<p>F9: <u>Direct work conditions</u> (n= 5; Cronbach α = .63; mean 3.26, SD .66)</p> <ol style="list-style-type: none"> 1. I am positive about my work place 2. I am positive about the extent of physical pressure in my work;

	<p>3. I am positive about the climate control within my work environment;</p> <p>4. I am positive about the extent of psychological pressure in my work;</p> <p>5. I am positive about the catering within E&Y.</p>
<u>Contingent/control variables 1998</u>	<u>Contingent/control variables 2000</u>
Tenure in years (7 groups): mean = 4.24, SD = 1.85	Tenure in years (7 groups): mean = 4.13, SD = 1.79
Contract: Full-time = 82.6% 80%-contract = 8.1% Part-time = 9.3%	Contract: Full-time = 73.0% 80%-contract = 12.3% Part-time = 14.8%
Sex (male = 1; female = 2) Mean = 1.27; male = 65%; SD = 0.48	Sex (male = 1; female = 2) Mean = 1.38; male = 62%; SD = 0.49
Age in years (8 groups): mean = 3.22; SD = 1.90	Age in years (8 groups): mean = 3.12; SD = 1.88
Couple: married or living together <i>No data available</i>	Couple: married or living together (yes = 1; no = 2) Mean = 69.3% married or liv.together; SD = 0.46
Work: partner also has a job (yes = 1; no = 2) Mean = 1.29 (yes= 71%); SD = 0.42	Work: partner also has a job (yes = 1; no = 2) Mean = 1.21 (yes =79%); working partner; SD = 0.40
Kids at home (yes = 1; no = 2) Mean = 1.69 (yes = 31%); SD = 0.46	Kids at home (yes = 1; no = 2) Mean = 1.68 (yes= 32%); SD = 0.46
Age kids in years (3 groups): mean = 1.77; SD = 0.84	Age kids in years (3 groups): mean = 1.65; SD = 0.81

n = number of items per factor/construct, SD = standard deviation

Table 3 Procedure to analyze the two datasets on the dependent variables

	<u>1998</u>	<u>2000</u>
Selected items according to the predefined HRM/TQM constructs	15	15
Final factor solution:		
- number of items	14	14
- KMO	.83	.85
- Bartlett test of sphericity	5,275	8,708
- Significance level	0.000	0.000
- Number of factors with eigenvalue ≥ 1	4	4

Table 4 Summary of the final factor solution for the two datasets on the dependent variables

HRM/TQM Outcomes 1998	HRM/TQM Outcomes 2000
<p>F1: <u>Satisfaction with organizational culture</u> (n= 6; Cronbach α = .76; mean 3.93, SD .60)</p> <ol style="list-style-type: none"> 1. Within my unit there is a culture in which it is possible to discuss everything; 2. Within my unit new ideas can fail without consequences for the initiator; 3. Level of satisfaction with honest and respectful treatment; 4. Level of satisfaction with appreciation for the way you do your work; 5. There is a good culture in my unit; 6. Level of satisfaction with the job security 	<p>F1: <u>Satisfaction with organizational culture</u> (n= 7; Cronbach α = .80; mean 4.01, SD .57)</p> <ol style="list-style-type: none"> 1. Within my unit there is a culture in which it is possible to discuss everything; 2. Level of satisfaction with honest and respectful treatment; 3. Level of satisfaction with appreciation for the way you do your work; 4. Within my unit new ideas can fail without consequences for the initiator; 5. There is a good culture in my unit; 6. I would recommend E&Y as a good organization to work for; 7. Level of satisfaction with the job security
<p>F2: <u>Satisfaction with the work</u> (n=4; Cronbach α = .72; mean 4.21, SD .64)</p> <ol style="list-style-type: none"> 1. Level of satisfaction with your work 2. Level of fun in your work 3. Level of excitement in your daily work 4. Level of proud in the work you deliver 	<p>F2: <u>Satisfaction with the work</u> (n= 4; Cronbach α = .72; mean 4.21, SD .61)</p> <ol style="list-style-type: none"> 1. Level of satisfaction with your work 2. Level of fun in your work 3. Level of excitement in your daily work 4. Level of proud in the work you deliver
<p>F3: <u>Satisfaction with work-life balance</u> (n=2; Cronbach α = .64; mean 2.76, SD 1.15)</p> <ol style="list-style-type: none"> 1. There is a good work-life balance 2. Often, my work does not give too much stress 	<p>F3: <u>Satisfaction with work-life balance</u> (n=2; Cronbach α = .65; mean 2.69, SD 1.07)</p> <ol style="list-style-type: none"> 1. Often, my work does not give too much stress 2. There is a good work-life balance
<p>Item 4: <u>General satisfaction with E&Y</u> (n=1; mean 3.87, SD .70)</p>	<p>Item 4: <u>General satisfaction with E&Y</u> (n=1; mean 3.99, SD .67)</p>
<p>Item 5: <u>Intention to leave the organization:</u> do you have the serious intention at this moment to change employer? No (score= 1): N=2019 (82.3%) Yes (score= 2): N=433 (17.7%)</p>	<p>Item 5: <u>Intention to leave the organization:</u> do you have the serious intention at this moment to change employer? No (score= 1): N=1694 (86.1%) Yes (score=2): N= 273 (13.9%)</p>

n = number of items per factor/construct, SD = standard deviation

Table 5 Cronbach α scores for the independent and dependent factors

Independent HRM/TQM constructs:	1998 number of items	1998 Cronbach α	2000 number of items	2000 Cronbach α
<u>Independent Variables:</u>				
Co-operation	12	.86	9	.83
Spread of information	8	.81	9	.83
Appraisal and role direct supervisor	7	.82	2	.87
Internal and external customer focus	8	.77	5	.76
Insight in goals and objectives	5	.81	6	.83
Responsiveness of the organization	4	.80	6	.78
Payment	5	.75	4	.77
Secondary work conditions	4	.79	4	.81
Direct work conditions	-	-	5	.63
<u>Dependent Variables:</u>				
Satisfaction with organizational culture	6	.76	7	.80
Satisfaction with the work	4	.72	4	.72
Satisfaction with work-life balance	2	.64	2	.65
Overall satisfaction with E&Y	1	n.r.	1	n.r.
Intention to leave	1	n.r.	1	n.r.

n.r. = not relevant

Table 6 Means and standard deviations for the independent factors

Independent HRM/TQM constructs:	1998	1998	2000	2000
	mean	SD	mean	SD
<u>Independent Variables:</u>				
Co-operation	3.74	.62	3.96	.58
Spread of information	3.68	.61	3.71	.58
Appraisal and role direct supervisor	3.55	.80	3.22	.91
Internal and external customer focus	4.22	.54	4.05	.61
Insight in goals and objectives	3.37	.83	3.42	.79
Responsiveness of the organization	3.08	.78	3.29	.66
Payment	3.01	.88	3.54	.90
Secondary work conditions	2.73	.90	3.50	.83
Direct work conditions	-	-	3.26	.66
<u>Dependent Variables:</u>				
Satisfaction with organizational culture	3.93	.60	4.01	.57
Satisfaction with the work	4.21	.64	4.21	.61
Satisfaction with work-life balance	2.76	1.15	2.69	1.07
Overall satisfaction with E&Y	3.87	.70	3.99	.67
Intention to leave	17.7%	-	13.9%	-
<u>Contingency/control variables:</u>				
Tenure	4.24	1.85	4.13	1.79
Contract	1.27	0.62	1.42	0.74
Sex	1.35	0.48	1.38	0.49
Age	3.22	1.90	3.12	1.88
Couple	--	--	1.31	0.46
Work	1.22	0.42	1.21	0.40
Kids	1.69	0.46	1.68	0.46
Age kids	1.77	0.84	1.65	0.81

E&Y investment in 'payment' and 'working conditions' in the period 1998-2000

SD = standard deviation

Table 7 Regression between the independent factors and satisfaction outcomes/intention to leave

1998	satisfaction with culture		satisfaction with work		overall satisfaction		intention to leave	
	Stand. Coef.	Sign.	Stand. Coef.	Sign.	Stand. Coef.	Sign.	Stand. Coef.	Sign.
	Beta		Beta		Beta		Beta	
(Constant)		0.71		0.21		0.94		0.00
Co-operation	0.20	0.00	0.13	0.01	0.25	0.00	-0.13	0.02
Spread of information	-0.02	0.58	-0.08	0.03	-0.05	0.16	0.04	0.33
Appraisal and role direct supervisor	0.24	0.00	0.20	0.00	0.16	0.00	-0.16	0.00
Internal and external customer focus	0.31	0.00	0.32	0.00	0.19	0.00	-0.21	0.00
Insight in goals and objectives	0.06	0.13	0.03	0.56	0.08	0.03	0.00	0.97
Responsiveness of the organization	0.06	0.08	0.07	0.06	0.04	0.28	0.07	0.11
Payment	0.12	0.00	0.04	0.31	0.21	0.00	-0.17	0.00
Secondary work conditions	-0.05	0.10	-0.03	0.39	0.04	0.29	-0.08	0.05
tenure	0.09	0.01	0.03	0.49	0.03	0.38	-0.02	0.73
contract	-0.01	0.77	-0.07	0.21	-0.06	0.22	0.09	0.12
sex	0.09	0.06	0.05	0.40	0.06	0.28	-0.11	0.07
age	-0.08	0.13	-0.12	0.04	-0.06	0.29	0.12	0.07
couple								
work	0.00	0.89	-0.06	0.11	-0.03	0.31	0.04	0.29
kids	-0.01	0.63	0.04	0.31	0.01	0.70	-0.01	0.73
age kids	0.04	0.36	0.05	0.36	0.01	0.90	-0.02	0.81
N	2966		2966		2966		2966	
Adj.R ²	0.49		0.30		0.42		0.26	
2000	satisfaction with culture		satisfaction with work		overall satisfaction		intention to leave	
	Stand. Coef.	Sign.	Stand. Coef.	Sign.	Stand. Coef.	Sign.	Stand. Coef.	Sign.
	Beta		Beta		Beta		Beta	
(Constant)		0.03		0.30		0.52		0.00
Co-operation	0.36	0.00	0.11	0.10	0.26	0.00	-0.07	0.30
Spread of information	-0.09	0.05	-0.06	0.25	-0.06	0.25	-0.09	0.14
Appraisal and role direct supervisor	0.07	0.08	0.08	0.11	0.07	0.14	-0.10	0.08
Internal and external customer focus	0.13	0.01	0.23	0.00	-0.02	0.76	-0.12	0.06
Insight in goals and objectives	0.15	0.00	0.01	0.82	0.17	0.00	-0.01	0.84
Responsiveness of the organization	-0.01	0.88	-0.02	0.80	0.08	0.14	-0.05	0.43
Payment	0.12	0.01	-0.02	0.78	0.15	0.00	-0.15	0.01
Secondary work conditions	0.07	0.12	0.07	0.19	0.07	0.14	-0.03	0.64
Direct work conditions	0.16	0.00	0.12	0.02	0.14	0.00	-0.02	0.71
tenure	0.05	0.22	-0.01	0.84	0.01	0.89	0.01	0.80
contract	-0.07	0.21	-0.09	0.17	-0.05	0.34	0.12	0.11
sex	0.11	0.04	0.03	0.67	-0.03	0.59	0.01	0.84
age	-0.05	0.47	-0.08	0.36	0.02	0.78	-0.12	0.19
couple	0.07	0.05	0.04	0.41	-0.01	0.75	-0.11	0.04
work	0.07	0.07	0.02	0.69	-0.01	0.86	0.06	0.29
kids	0.05	0.20	-0.06	0.21	-0.03	0.48	0.05	0.34
age kids	0.06	0.34	0.06	0.45	0.06	0.38	0.15	0.08
N	2313		2313		2313		2313	
Adj.R ²	0.46		0.13		0.34		0.16	

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