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Contents

Editor's Letter

This issue of the *Nordic Journal of Business* features two peer-reviewed articles. In the first article, Sinikka Lepistö and Anna Rossi from the University of Oulu examine whether the horizontal pay dispersion of white-collar employees influences firm performance. The second article written by Mirja Väänänen, Riitta Forsten-Astikainen, Leena Eskola, Peetu Virkkala, and Eeva-Liisa Oikarinen from the University of Oulu focuses on sales management and the sales capabilities of small and medium-sized Finnish enterprises.

I hope you enjoy reading the interesting contributions featured in this issue of the *Nordic Journal of Business*.

Sami Vähämaa
Editor
Nordic Journal of Business

Does Horizontal Pay Dispersion Impair Firm Performance? The Role of Task Complexity

Sinikka Lepistö and Anna Rossi

Abstract

Using Finnish white-collar employee (WCE) compensation panel data, we study a moderating role of task complexity in the relation between WCE horizontal pay dispersion and firm performance. The key assumption underlying our research hypothesis is that due to the lack of appropriate performance measures, task complexity leads to greater subjectivity in the evaluations of employees' performance and expertise. As a result of these forces, we expect the disincentive effect of horizontal pay dispersion to be more pronounced for WCEs involved in more complex tasks, thereby leading to deterioration in organizational performance. In the empirical analysis, we classify WCEs according to the complexity of tasks they perform into clerical, expert, senior expert, and managerial categories. We find that the negative relationship between WCE pay dispersion and firm performance is attributable primarily to the expert and senior expert WCEs, who are involved in complex knowledge-based tasks, supporting our hypothesis.

Keywords:

WCE, pay dispersion, performance, task complexity

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1. Introduction

Employee compensation is argued to affect employees' effort, which, in turn, determines organizational performance outcomes. It is further assumed that individuals perceive their compensation not only in absolute amount but also by comparing their compensation to that of their co-workers or otherwise similar social groups (e.g., Baron & Pfeffer, 1994). Thus, the dispersion of employee pay within organizations represents an important feature of the compensation schemes and a mechanism through which employees' effort may be affected. Two theoretical perspectives make opposing predictions regarding the relationship between pay dispersion and organizational performance. On the one hand, tournament theory suggests that a larger dispersion of pay should motivate employees to exert greater effort in order to win a prize of the highest salary (Lazear & Rosen, 1981). On the other hand, building on the theories of distributive justice and social fairness, fair-wage hypothesis predicts the detrimental effect of pay dispersion on both individual and group performance because of undermined morale (Akerlof & Yellen, 1990; Levine, 1991).

Given the opposing predictions of the theories, the research challenge is, thus, to identify the organizational settings where either of the effects is likely to dominate. An underlying assumption of the tournament theory lies in the possibility of employees' promotion to the next level in the organizational hierarchy. The focus of the tournament theory is, thus, on the vertical pay dispersion, that is, differences in employee pay levels across organizational levels. The fair wage hypothesis, in turn, focuses on the employee pay dispersion within the same organizational level.

Existing empirical literature primarily addresses the performance effects of vertical pay dispersion in managerial groups (e.g., Leonard, 1990; Main, O'Reilly, & Wade, 1993; Eriksson, 1999; Lee, Lev, & Yeo, 2008; Kale, Reis, & Venkateswaran, 2009), while only a few studies investigate implications of vertical pay dispersion of the firm workforce as a whole (Winter-Ebmer & Zweimuller, 1999; Lallemand, Plasman, & Rycx, 2004; Heyman, 2005). However, the implications of horizontal pay dispersion of the non-managerial WCEs, who constitute the majority of the organizational workforce, remain relatively unexplored in the literature. Furthermore, existing literature lacks empirical evidence on the performance consequences of employee incentives at different horizontal levels of organizational hierarchies.

In this paper, we contribute to the debate on the effects of pay differentials by studying the performance implications of WCE horizontal pay dispersion in a sample of Finnish manufacturing companies and, more specifically, by considering the moderating role of WCE task complexity in this relation. The dataset we employ contains standardized occupational descriptions, allowing us to group WCEs into organizational levels based on their task complexity and to model the relation between firm performance and WCE horizontal pay dispersion at each of the task complexity levels considered jointly. Our primary argument is that task complexity leads to subjectivity in evaluations of employees' performance and expertise and, as a result, to greater bargaining power of employees in the pay-setting process and greater pay dispersion. We, therefore, posit that due to greater subjectivity in pay setting, the disincentive effect of horizontal pay dispersion predicted by the fair-wage hypothesis should become more pronounced for WCEs involved in more complex tasks and thus be reflected in the deterioration of firm performance.

The Finnish WCE setting we focus on possesses several characteristics that facilitate our empirical analysis. Specifically, fixed salary constitutes the majority of compensation of Finn-

ish WCEs[1] and, as such, represents the primary compensation component on which employees base their equality perceptions. As opposed to variable compensation, which is typically paid according to pre-determined performance targets, fixed salary is performance-insensitive and determined by a subjective evaluation of expertise and other personal characteristics of employees. Hence, an environment where fixed compensation prevails in the employees' compensation package arguably represents a powerful setting to test our hypotheses. Another feature of Finnish institutional environment is that similar to other Nordic countries, Finland is known for its financial transparency as reflected in the public nature of individual tax information, making organizations in this geographical region particularly well-suited for studying consequences of the organizational pay dispersion (e.g., Kacperczyk & Balachandran, 2018).

We test our predictions using a sample containing 1,305 firm-year observations over the period 2002-2007. In support of the assumption that the task's complexity affects pay dispersion, we find that pay dispersion measures (measured as a standard deviation of pay, variance ratio, and range) increase with the level of task complexity. In the primary regression analysis, we regress various measures of accounting performance on the measures of WCE fixed pay dispersion at each of the task complexity levels (non-executive managers, senior experts, experts, and clerks). Consistent with our hypothesis, the results of this analysis show that pay dispersion measures in groups of experts and senior experts, that is, the WCEs facing high task complexity, are significantly negatively related to measures of accounting profitability. Further, the pay dispersion of employees engaged in low-complexity tasks is not related to firm performance outcomes, also in line with our predictions. Taken together, our results provide support for the prediction of the moderating effect of task complexity on the relation between WCE pay dispersion and firm performance.

We note that the main results hold when we use alternative definitions of pay dispersion, including range, the standard deviation of pay, coefficient of variation, and the standard deviation of pay that is unexplained by demographic factors such as employee's age and education, among others. This relation is also robust to the use of several alternative measures of accounting performance, including return on assets, profit margin, return on capital employed, and sales per employee. Finally, our results are generally robust to the use of firm fixed effects.

Our study contributes to the literature on the consequences of employee pay dispersion by investigating the joint effect of WCE horizontal pay dispersion in different task complexity categories on firm performance outcomes. Several other studies also address the relation between WCE pay dispersion and corporate performance (Hibbs & Locking, 1999; Lallemand et al., 2004; Heyman, 2005; Hunnes, 2009). However, these studies neither model the effects of *horizontal* pay dispersion at different organizational levels jointly, nor investigate the role of employee group job complexity in this relation. Importantly, unlike most of the studies in this literature, we focus not only on white-collar *managers* but on all WCEs involved in diverse non-managerial tasks and model how the job-related attribute such as task complexity affects the relation between their pay dispersion and performance.

2. Literature review and hypothesis development

The debate on group-based compensation schemes has evolved around two influential theoretical perspectives, which make competing predictions regarding the relationship between employee pay dispersion and organizational performance.

1 For example, Ikäheimo, Kallunki, Moilanen, & Schiehll (2018) report that the average performance-based incentive for WCEs is only 1.78% of the fixed salary in Finland.

Viewing pay of a higher-ranked employee (typically a CEO) as a prize in the promotion game, proponents of the tournament theory (Lazear & Rosen, 1981; Rosen, 1986) focus on motivational effects of employee pay dispersion. This agency-theoretical perspective argues that employees are incentivized by higher compensation levels of their relatively higher-ranked co-workers that leads to increased equilibrium effort and, as a result, to improved overall organizational performance. Because compensation of higher-ranked employees is regarded as a potential prize for lower-level employees, the focus of the tournament theory is on the vertical pay dispersion, i.e., pay dispersion across hierarchical levels of organizations. Implicit in this view is also the assumption of an employee's promotion possibility to higher organizational levels, complete with a possible increase in compensation (i.e., size of the promotional prize) being known in advance. The tournament theory recognizes, however, that the rank-order tournament game may also create incentives for collusion amongst employees, because such uncooperative behavior may also increase the chances of the participants to win the promotion contest (e.g., Lazaer, 1989).

An alternative theoretical perspective is rooted in sociology and psychology research. Drawing on the theory of equity (Adams, 1963) and the theories of relative deprivation and social exchange (Blau, 1955; Homans, 1961), Akerlof & Yellen (1990) develop a fair wage-effort hypothesis, according to which, more dispersed compensation of group members creates perceptions of unfairness that undermines morale and leads to the deterioration of organizational performance. As opposed to the tournament theory, the fair wage-effort hypothesis focuses primarily on the horizontal pay dispersion by predicting the adverse performance consequences of the pay dispersion to be concentrated among employees with similar duties at the same organizational levels.[2] The theory further differentiates between the notions of pay inequity and pay inequality. Specifically, the pay inequity implies a disparity in the absolute amounts of compensation without regard for the inputs supplied by each team member (e.g., Adams, 1963). Yet, paying each team member the same compensation without considering his or her individual inputs may also be regarded as unfair. The notion of pay equality thus stipulates compensating employees in proportion to their contributed input of effort (Leventhal, 1976; Porter & Steers, 1983). However, because the employees' amounts of input may be difficult to measure and because of humans' tendency to overestimate own contributions relative to others, large pay disparities even irrespective of the individuals' productive input may create perceptions of unfairness (Bloom, 1999; Cowherd & Levine, 1992; Martin, 1981; Pfeffer & Langton, 1993).

A number of subsequent studies test predictions of these theories empirically. The largest strand in this literature focuses on testing the tournament theory by relating pay dispersion in the group of top executives to firm performance. With some exceptions (e.g., Conyon, Peck, & Sadler, 2001), these studies generally find a positive relationship between measures of pay disparity and various measures of firm performance (e.g., Leonard, 1990; Main et al., 1993; Eriksson, 1999; Lee et al., 2008; Kale et al., 2009). Several other studies extend this line of research by including in their measures of pay dispersion compensation of employees below management level of corporate hierarchy (Hibbs & Locking, 2000; Lallemand et al., 2004; Heyman, 2005; Rouen, 2020) and generally report results supportive of the tournament theory.

2 Building on similar arguments, the relative depravation theory suggests that individuals compare their pay to that of others at higher organizational ranks (Cowherd & Levine, 1992; Martin, 1981; Henderson & Fredrickson, 2001), implying that individuals may be demotivated not only by horizontal, but also by large vertical pay disparities.

Unlike the tests of the effect of vertical pay dispersion, the implications of employee horizontal pay dispersion received less attention in the academic literature. The evidence on the adverse effects of horizontal pay dispersion comes primarily from non-corporate settings, including the performance of sports teams (e.g., Jewell & Molina, 2004; Sommers, 1998; Franck & Nuesch, 2011) and academic departments (Pfeffer & Langton, 1993). In business settings, exceptions include Ding, Akhtar, & Ge (2009), who relate both vertical and horizontal pay dispersion to sales growth and product/service quality in a sample of Chinese organizations and Hunnes (2009), who study similar effects in Norwegian organizations. Limiting the analysis to top management team members, Siegel & Hambrick (2005), address the effect of managers' horizontal pay dispersion on firm performance and its interaction with the companies' needs for coordination among managers. Additionally, Shaw, Gupta, & Delery (2002) investigate a moderating impact of task interdependence on the effects of pay dispersion in the trucking industry. Job-related attributes other than coordination needs or task interdependence have not, however, received sufficient attention in the academic literature on horizontal pay dispersion.

Among the job-related attributes, which may potentially affect pay dispersion and its perceptions among employees, is the complexity of the tasks employees perform. The task complexity can be conceptualized with the degree of knowledge required from an employee to solve a specific problem. Garicano (2000) develops a theory of knowledge hierarchies where employees at the higher organizational layers handle the most difficult problems and lower-level employees deal with the most routine problems. To map the concept of knowledge hierarchies into empirical measures, Caliendo, Monte & Rossi-Hansberg (2015) utilize information on organizational occupational categories of French organizations, while Tag (2013) validates that Swedish occupational categories can be used to construct the knowledge-based hierarchies. We build on this literature by assuming that employees at higher organizational ranks face more knowledge-based tasks and that occupational categories capture the groups of employees with similar characteristics, knowledge, and the level of task complexity.

For employees, who are engaged in more complex tasks and whose performance outcomes are not directly observable, pay-setting and performance evaluations are often subjective (e.g., Prendergast, 1999; Baik, Evans, Kim, & Yanadori, 2016). The subjectivity in performance evaluations is, for example, posited to affect the strength of monetary and promotional incentives across hierarchical levels. Supporting this assumption, Brown (1990) and MacLeod & Parent (2000) report that more complex tasks are associated with lower use of incentive pay. As also noted by Milkovich, Newman, & Gerhart (2011, p. 491), firms "struggle to figure out what [their] pay should be" because of the difficulty in measuring employees' knowledge-based outputs. Due to the multidimensional nature of tasks and greater subjectivity and flexibility in performance evaluations, we expect employees engaged in more complex tasks to have greater bargaining power vis-à-vis an employer in the pay negotiations resulting in greater horizontal pay dispersion relative to employees engaged in easier tasks, leading to the first hypothesis:

H1: Employee horizontal pay dispersion increases with the level of task complexity.

Our second prediction posits that the strength of the relationship between horizontal pay dispersion and organizational performance will differ depending on the job complexity level of the employee group. Compensation differences within the same organizational levels may result from legitimate factors such as performance and seniority (Milkovich et al., 2011; Gupta, Conroy, & Delery, 2012), but may also indicate supervisor's subjective preferences among em-

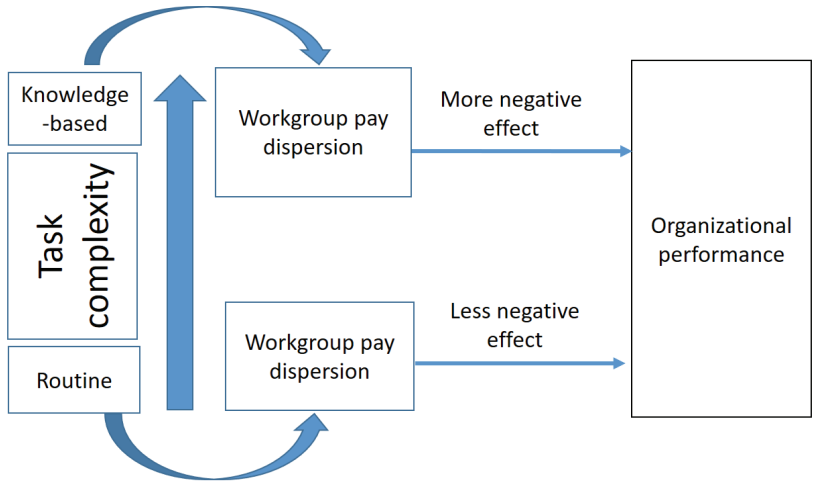
ployees (Gupta & Jenkins, 1996) or may signal that employees have different economic value to the organizations (Siegel & Hambrick, 2005). Several studies provide evidence that pay differences may result from non-legitimate political influence, that is, the exercise of power on the decision-maker (Fossum & Fitch, 1985; Welbourne & Trevor, 2000). Kepes, Delery, & Gupta (2009) further predict and find that pay differences resulting from such political behavior evoke stronger perceptions of unfairness among employees as opposed to pay differences resulting from legitimate factors.

When employees' inputs and outputs are not directly observable as in the case of complex knowledge-based tasks, there is less transparency regarding pay determination and more possibilities for the political behavior, as opposed to the pay-setting process of employees engaged in more routine jobs. The lack of transparency, thus, may open more room for non-legitimate pay practices. Hence, pay dispersion among groups of employees engaged in more complex tasks is likely to evoke stronger perceptions of injustice, leading to a greater decrease in employee effort and organizational performance as a result. These arguments lead to our second prediction that the disincentive effects of the WCE horizontal pay dispersion will be most pronounced among the groups of employees engaged in complex knowledge-based tasks:

H2: The negative relation between horizontal employee pay dispersion and firm performance is concentrated in the corporate organizational levels characterized by more complex tasks.

The conceptual model illustrating both of the hypotheses is presented in Figure 1.

Figure 1 Conceptual model



3. Data and methodology

3.1 Data sources

The data on each individual WCE's pay structure originates from a survey questionnaire administered by the Confederation of the Finnish Industries (Elinkeinoelämän Keskusliitto [EK]).[3] Although the survey covers the entire private sector, we analyze only the manufacturing companies, because the job codes of service companies do not contain a code of job complexities, our key variable of interest. The questionnaire was systematically mailed to all Finnish-based member firms of EK in October of each year during our sample period, from 2002 to 2007. These companies represent over 70 percent of the Finnish GDP and employ about 40 percent of the workforce in Finland. Since EK conducts this survey regularly among its member firms as a basis for its official salary statistics used in the subsequent labor union salary negotiations, response rates are high. The main fields of the survey ask for information on WCE pay components, including fixed monthly salary, annual bonus, and possible perquisites. The salaries are reported accurately, as with most companies, the information comes directly from the companies' pay systems. In addition to compensation details, the pseudonymized data contain information on firm location, employee gender, tenure, job code, displaying such information as job name and complexity level, and education level code according to the definition of Bureau of Statistics Finland.[4]

The accounting data needed to calculate the profitability, size, and degree of financial leverage of each firm-year are obtained from a publicly available Voitto+ database maintained by the credit bureau Suomen Asiakastieto Ltd. This database contains the financial statement information of all Finnish firms.

3.1 Research design and variable definitions

To test the relation between WCE pay dispersion and firm performance, we estimate the following baseline regression model:

$$PERF_{it} = \beta_0 + \times \sum_{n=1}^{4} \beta_n DISPARITY_{it} + \gamma' CONTROLS + \epsilon \qquad (1)$$

The dependent variable ($PERF_{it}$) is firm accounting performance measured as either return on assets (ROA_{it}) or net profit margin ($PROFIT\_MARGIN_{it}$). We measure the main test variable, $DISPARITY_{it}$, in several ways at each of the levels of job complexity.

First, we use the standard deviation of WCE fixed salaries (STD_SALARY_{it}) within the same task complexity level in a firm in a given year. Second, we compute the coefficient of variation ($VARIANCE\_RATIO_{it}$) in WCE fixed pay by dividing the STD_SALARY_{it} by a mean value of the employee fixed salary ($MEAN\_SALARY_{it}$) within the same task complexity level in a firm in a given year. Third, we compute the range of WCE fixed pay as a logarithmically transformed difference between the highest and the lowest pay ($LNGRANGE_{it}$) within the same complexity level in a given year. Fourth, in an attempt to distinguish between concepts of inequity versus inequality (e.g., Trevor, Reilly, & Gerhart, 2012), we compute the standard deviation of the portion of the fixed compensation, which is unexplained by demographic and other employee-specific fac-

3 The Confederation of Finnish Industries (https://ek.fi/en/) is the leading employers' business organization in Finland representing the entire private sector. Other studies using similar data include Huttunen, Pirttilä, & Uusitalo (2013) and Ikäheimo et al. (2018).

4 The full list of variables together with their definitions by industry (in Finnish) may be accessed at: https://ek.fi/jasenille/kyselyt-yrityksille/palkkatiedustelut/syyskuun-palkkatiedustelu/syyskuun-palkkatiedustelun-vastausohjeet/.

tors. Specifically, we calculate the standard deviation of the residuals ($STD\_RES\_SALARY_{it}$) from the following employee-level regression model estimated separately by industry and year:

$$SALARY_{jt} = \alpha_0 + \sum_{k=1}^{5} \delta_k \, EDUCATION_{jt} + \sum_{m=1}^{3} \varphi_m \, COMPLEXITY_{jt} + \alpha_1 TENURE_{jt} + \alpha_2 GENDER_{jt} + \alpha_3 AGE_{jt} + \alpha_4 CAPITAL_{jt} + \varepsilon \quad (2)$$

where $SALARY_{jt}$ is the employee's monthly fixed salary; $EDUCATION_{jt}$ is a categorical variable capturing employee's educational level (secondary, short-cycle tertiary, bachelor, master, doctoral, unknown) with 'unknown' representing a reference category; $COMPLEXITY_{jt}$ is a categorical variable capturing employee's task complexity level (non-executive managers, senior expert, experts, clerks) with 'clerks' representing a reference category; $TENURE_{jt}$ is the number of years the employee has worked in the company; $GENDER_{jt}$ is an indicator variable taking a value of one for male employees, and zero for females; AGE_{jt} is the employee's age; $CAPITAL_{jt}$ is an indicator variable taking a value of one if a company in which the employee works in a given year is located in Helsinki region; zero otherwise. We include the last variable to take into account higher salaries in the capital region. To estimate Eq. (2), we use all available employee-level information without any sample restrictions.

To identify groups of employees facing similar job complexity, we use information on the EK job code and follow the WCE classification of Coates (1986) into clerical, professional, and managerial. Each WCE in the data is originally placed into one of five task complexity categories, which follow survey data regarding the WCEs' responsibilities and task description according to the International Standard Classification of Occupations (ISCO) -classification. WCEs at Level 1 are non-executive managers who have subordinates and comprehensive responsibility for managing a reporting unit, such as a division, a department, or a production line. Level 1 WCEs make decisions about the business strategy and the operations of the managed unit as a whole (e.g., the quality and quantity of production, budget, and recruitment of personnel). WCEs at Level 2 consist of senior experts who work in demanding development and planning tasks and are accountable for the progress and results of their projects. Level 3 WCEs consist of technicians and professionals who work as experts in planning and implementation positions. They are also responsible for the progress and performance of projects. Finally, Level 4 consists of foremen with workers as direct subordinates, and Level 5 includes clerical support workers in departments such as customer service, bookkeeping, warehousing, sales, and production. Since WCEs at Levels 4 and 5 do more routine work than those at other levels, we combine these two groups into one for the purpose of our analysis, resulting in four task complexity categories.[5]

Returning to Eq. (1), γ is a vector of control variables. Specifically, we control for firm size with a natural logarithm of annual sales ($SIZE_{it}$), for firm riskiness with equity-to-assets ratio ($EQRATIO_{it}$), and for growth using percentage change in annual sales ($SALES\_GROWTH_{it}$). We also control for the proportion of white-collar employees in the total firm's workforce, which we define by dividing the number of WCEs from the EK survey by the total number of employees as reported in the Voitto+ database (WCE_PERC_{it}). This ratio is a rough approximation of the white-to-blue ratio used in related studies (e.g., Lallemand et al., 2004; Hunnes, 2009). When estimating the regressions, we also use both industry and yearly fixed effects and cluster

5 While employees at Levels 2 and 3 also perform tasks of similar complexity, we do not combine those groups, because that would result in a disproportionately larger number of observations relative to other categories. See Table 2 Panel A for the breakdown of the sample by the complexity level groups.

standard errors by firm. In additional specifications, we employ firm-fixed effects instead of industry-fixed effects. Detailed definitions of all of the variables appear in Appendix 1.

To construct our sample, we keep full-time employees (37.5 – 40 working hours per week) and require the availability of employee-level variables necessary to estimate Eq. (2) and the firm-level variables necessary to estimate Eq. (1). In order to calculate pay dispersion measures, we require at least three persons being employed at each of the four job complexity levels described above. After applying these screens, we are left with 1,305 firm-year observations (425 unique firms) over the period 2002-2007.

4. Empirical results

4.1 Descriptive statistics and univariate analysis

Table 1 reports employee- and firm-level descriptive statistics of the variables used in the empirical analysis. To mitigate any impact of extreme observations, we truncate variables expressed as ratios ($PROFIT\_MARGIN_{it}$, ROA_{it}, $EQRATIO_{it}$, $SALES\_GROWTH_{it}$) at the 1st and 99th percentile of the distribution. Average salary Panel B is 2,953 euros and the median is 2,916 euros, suggesting that there are no large outliers in the compensation variable. The median number of WCEs ($WHITE\text{-}COLLAR\ EMPLOYEES_{it}$) in our sample companies is 100, constituting roughly 34% of that company's total workforce (WCE_PERC_{it}). An average company in the sample has approximately 47% of equity in its capital structure and the majority of companies are profitable.

The descriptive statistics of the pay disparity measures presented in Table 1 also offer support for Hypothesis 1, which states that employee horizontal pay dispersion increases with task complexity. Specifically, both the mean and median values of all pay disparity measures (STD_SALARY_{it}, $STD\_RES\_SALARY_{it}$, $VARIANCE\_RATIO_{it}$, $LNRANGE_{it}$) increase as we move from the jobs characterized by the easiest tasks (Level 4) to the jobs characterized by the most complex tasks (Level 1). For example, Table 1 illustrates that the median standard deviation of salary at Level 4 is 267 euros, whereas at Level 3 it almost triples to 719 euros. Notably, the differences in the pay disparity measures between senior experts (Level 2) and non-executive managers (Level 1) are less pronounced relative to differences between Level 2 and lower levels.

Table 2 further presents the distribution of the employee-level sample by the level of job complexity (Panel A) and by the level of education (Panel B). As reported in Panel A, the majority of the WCEs are employed in expert and senior expert positions. Moreover, Panel B reports that half of the sample employees have either short-cycle tertiary or bachelor-level education.

Table 1 Descriptive statistics

VARIABLE	MIN	Q1	MEDIAN	MEAN	Q3	MAX	STD DEV
Panel A: Employee-level variables							
$SALARY_{jt}$	284.00	2397.00	2928.00	3186.81	3710.00	29608.11	1143.10
$TENURE_{jt}$	0.00	2.00	7.00	10.91	17.00	50.00	10.46
$GENDER_{jt}$	0.00	0.00	1.00	0.65	1.00	1.00	0.48
AGE_{jt}	18.00	34.00	41.00	42.00	50.00	100.00	10.06
$CAPITAL_{jt}$	0.00	0.00	0.00	0.26	1.00	1.00	0.44
Panel B: Firm-level variables							
$WHITE\text{-}COLLAR\ EMPLOYEES_{it}$	15.00	52.00	100.00	266.97	181.00	21649.00	1319.88
WCE_PERC_{it}	0.02	0.24	0.34	0.40	0.51	1.00	0.21
$MEAN\_SALARY_{it}$	1829.75	2678.96	2916.26	2952.90	3189.73	5427.01	404.91
$STD\_SALARY1_{it}$	18.73	603.56	885.49	945.16	1221.13	3975.04	480.49
$STD\_SALARY2_{it}$	93.22	549.44	718.72	729.05	880.97	1816.19	254.13
$STD\_SALARY3_{it}$	68.61	333.80	426.47	459.68	547.39	2037.95	190.65
$STD\_SALARY4_{it}$	24.66	198.22	266.85	291.70	353.98	3863.53	185.19
$STD\_RES\_SALARY1_{it}$	11.41	557.70	820.52	874.07	1112.50	3851.40	451.95
$STD\_RES\_SALARY2_{it}$	70.06	481.14	634.21	644.59	779.00	1691.97	225.22
$STD\_RES\_SALARY3_{it}$	93.94	308.07	381.55	409.96	480.45	1717.06	160.60
$STD\_RES\_SALARY4_{it}$	10.85	230.15	284.47	301.15	347.66	3334.16	155.09
$VARIANCE\_RATIO1_{it}$	0.01	0.14	0.19	0.20	0.25	0.61	0.08
$VARIANCE\_RATIO2_{it}$	0.03	0.16	0.20	0.20	0.24	0.41	0.06
$VARIANCE\_RATIO3_{it}$	0.03	0.13	0.16	0.17	0.20	0.47	0.06
$VARIANCE\_RATIO4_{it}$	0.01	0.10	0.13	0.13	0.16	0.83	0.06
$LNRANGE1_{it}$	3.61	7.34	7.84	7.75	8.25	9.64	0.71
$LNRANGE2_{it}$	5.22	7.52	7.92	7.86	8.26	9.44	0.58
$LNRANGE3_{it}$	5.31	7.23	7.57	7.56	7.92	9.13	0.54
$LNRANGE4_{it}$	3.83	6.46	6.93	6.85	7.27	9.10	0.67
$PROFIT\_MARGIN_{it}$	-83.40	1.20	5.60	5.47	10.50	38.90	11.03
ROA_{it}	-40.60	2.60	8.80	9.84	15.40	62.90	11.64
$LNSALE_{it}$	7.79	10.38	11.16	11.24	11.94	17.29	1.31
$EQRATIO_{it}$	0.20	30.00	47.10	46.23	61.40	95.80	21.29
$SALES\_GROWTH_{it}$	-0.60	-0.03	0.05	0.09	0.14	2.55	0.27

Notes:
The table reports descriptive statistics of the sample. The variable definition is presented in Appendix 1. The number of observations is 879,095 in Panel A and 1,305 in Panel B.

Table 3 reports correlations among the variables used in the firm-level regression analysis.[6] The correlations of pay dispersion measures with $PROFIT\_MARGIN_{it}$ and ROA_{it} are negative and generally statistically significant for jobs characterized by complex tasks (Levels 1-3). Notably, correlations between pay disparity measures at Level 4 ($STD\_SALARY4_{it}$, $VARIANCE\_RATIO4_{it}$

6 For presentational convenience, we do not include variables $STD\_RES\_SALARY1_{it}$ – $STD\_RES\_SALARY4_{it}$ into the correlation matrix. We note that their correlation coefficients are very similar to the correlation coefficients on $STD\_SALARY1_{it}$ – $STD\_SALARY4_{it}$.

and $LNRANGE4_{it}$) and profitability measures are insignificant. The measures of pay dispersion at each of the four organizational levels are positively correlated with each other, however, their correlation coefficients are less than perfect, implying that multicollinearity should not be a problem when these variables are included simultaneously into a regression model. For example, out of Pearson correlations among $STD\_SALARY1_{it}$ – $STD\_SALARY4_{it}$, the strongest is 0.44 between $STD\_SALARY2_{it}$ and $STD\_SALARY3_{it}$. Further, the measures of pay dispersions are positively correlated with firm size, necessitating controlling for the firm-size effect in the multivariate setting. Finally, firm size exhibits a positive correlation with the performance measures, consistent with Ikäheimo et al. (2018).

Table 2 Sample distribution by job complexity level and employee level of education

	FREQUENCY	%
Panel A: COMPLEXITY level		
Level 1 (Non-executive managers)	63,154	7.18
Level 2 (Senior experts)	259,565	29.53
Level 3 (Experts)	390,441	44.41
Level 4 (Clerks)	165,935	18.88
	879,095	100.00
Panel B: EDUCATION level		
Level 3 (Secondary education)	178,179	20.27
Level 5 (Short-cycle tertiary education)	230,896	26.27
Level 6 (Bachelor or equivalent)	222,862	25.35
Level 7 (Master or equivalent)	166,651	18.96
Level 8 (Doctoral or equivalent)	10,670	1.21
Level 9 (Unknown)	69,837	7.94
	879,095	100.00

Notes:
The table reports the distribution of the employee-level sample by the employees' job complexity and education levels.

4.2 Regression analysis

As the first step, we present and discuss the results of estimating Eq. (2), which is necessary to compute $STD\_RES\_SALARY1_{it}$ –$STD\_RES\_SALARY4_{it}$. The results of estimating Eq. (2) are presented in Table 4.

When estimating this regression model, we use education level 9 (Unknown) as a reference

Table 3 Correlations among variables used in the firm-level empirical analysis

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	STD_SALARY1it		0.39	0.37	0.31	0.91	0.28	0.31	0.24	0.80	0.35	0.34	0.26	-0.06	-0.04	0.09	0.21	-0.02	-0.01
2	STD_SALARY2it	0.40		0.44	0.25	0.28	0.89	0.41	0.24	0.36	0.79	0.48	0.36	-0.04	-0.05	0.03	0.31	0.03	-0.05
3	STD_SALARY3it	0.37	0.48		0.37	0.26	0.27	0.93	0.35	0.31	0.33	0.75	0.39	-0.08	-0.05	0.17	0.18	-0.01	-0.01
4	STD_SALARY4it	0.27	0.34	0.43		0.24	0.14	0.29	0.92	0.20	0.20	0.26	0.64	-0.03	-0.01	0.12	0.10	-0.04	0.02
5	VARIANCE_RATIO1it	0.92	0.29	0.26	0.18		0.28	0.26	0.19	0.79	0.25	0.26	0.19	-0.06	-0.06	0.01	0.14	-0.04	0.00
6	VARIANCE_RATIO2it	0.29	0.90	0.32	0.20	0.27		0.33	0.16	0.29	0.73	0.34	0.21	-0.03	-0.07	-0.06	0.24	0.02	-0.07
7	VARIANCE_RATIO3it	0.31	0.42	0.94	0.32	0.26	0.34		0.32	0.29	0.31	0.76	0.32	-0.07	-0.06	0.09	0.16	0.02	-0.02
8	VARIANCE_RATIO4it	0.21	0.27	0.37	0.96	0.16	0.19	0.32		0.19	0.20	0.26	0.74	-0.02	-0.02	0.07	0.09	-0.02	0.02
9	LNRANGE1it	0.89	0.38	0.36	0.28	0.84	0.30	0.31	0.22		0.50	0.46	0.35	-0.03	-0.02	0.09	0.45	-0.04	0.00
10	LNRANGE2it	0.41	0.81	0.42	0.32	0.30	0.73	0.37	0.26	0.53		0.58	0.45	0.01	0.01	0.11	0.60	-0.02	-0.03
11	LNRANGE3it	0.37	0.49	0.82	0.37	0.27	0.36	0.78	0.32	0.47	0.61		0.47	-0.01	-0.01	0.14	0.53	0.01	0.03
12	LNRANGE4it	0.30	0.39	0.43	0.83	0.21	0.25	0.34	0.80	0.39	0.48	0.50		0.00	0.01	0.14	0.40	0.00	0.02
13	PROFIT_MARGINit	-0.06	-0.03	-0.07	-0.02	-0.07	-0.05	-0.08	-0.02	-0.04	0.02	0.00	0.02		0.66	-0.04	0.20	0.25	0.07
14	ROAit	-0.04	-0.06	-0.04	0.00	-0.06	-0.08	-0.05	0.00	-0.02	0.00	0.01	0.00	0.82		0.05	0.13	0.21	0.08
15	WCE_PERCit	0.09	0.04	0.16	0.07	0.02	-0.04	0.11	0.04	0.11	0.14	0.13	0.16	0.05	0.05		-0.08	0.02	-0.01
16	LNSALEit	0.25	0.34	0.22	0.15	0.17	0.28	0.20	0.12	0.46	0.61	0.51	0.39	0.15	0.12	-0.08		-0.02	0.08
17	EQRATIOit	-0.03	0.02	0.02	-0.02	-0.05	0.00	0.03	0.00	-0.04	-0.02	0.00	-0.01	0.32	0.24	0.03	-0.05		-0.10
18	SALES_GROWTHit	0.03	-0.02	0.00	0.06	0.01	-0.06	-0.03	0.02	0.02	0.01	0.03	0.05	0.17	0.22	0.03	0.08	-0.07	

Notes:
The table reports correlations among variables used in the firm-level empirical analysis. Pearson (Spearman) correlations appear above (below) the main diagonal. Correlations with absolute value greater than 0.05 are significant at the 0.01 level. The variable definition is presented in Appendix 1. The number of observations is 1,305.

Table 4 Employee-level determinants of WCE fixed salaries

	DEPENDENT VARIABLE = $SALARY_{JT}$
Intercept	1117.253***
	(21.93)
$EDUCATION_{jt}$ (Level =3)	-34.384
	(-0.71)
$EDUCATION_{jt}$ (Level = 5)	66.670
	(1.06)
$EDUCATION_{jt}$ (Level =6)	276.657***
	(3.43)
$EDUCATION_{jt}$ (Level =7)	714.749***
	(4.92)
$EDUCATION_{jt}$ (Level =8)	917.036***
	(5.49)
$COMPLEXITY_{jt}$ (Level =1)	2251.147***
	(11.52)
$COMPLEXITY_{jt}$ (Level =2)	1093.911***
	(17.37)
$COMPLEXITY_{jt}$ (Level =3)	354.429***
	(18.65)
$TENURE_{jt}$	-5.658***
	(-4.52)
$GENDER_{jt}$	338.608***
	(13.79)
AGE_{jt}	22.411***
	(31.26)
$CAPITAL_{jt}$	319.065***
	(15.54)
Industry and year fixed effects	YES
N	879,095
Adj. R^2	64.8%

Notes:
The table reports the results of estimating Eq. (2). All of the variables are defined in Appendix 1. The numbers in parentheses are t-statistics. Standard errors are clustered at the firm level. Coefficient estimates on industry and year-fixed effects are suppressed. ***, **, and * denote significance levels of 1%, 5%, and 10%, respectively.

category for the $EDUCATION_{jt}$ indicator variable, and complexity level 4 (Clerks) as a reference category for the $COMPLEXITY_{jt}$ indicator variable. The coefficient estimates from this regression are generally consistent with predictions. For example, there are no pay differentials for employees with the education levels 3 or 5 relative to the education level 9, suggesting that a lack of education is the most plausible reason for leaving the education field blank. The level of pay, however, increases gradually across education levels 6 to 8 (relative to level 9), meaning that more educated employees receive higher salaries. In a similar vein, employees facing the highest level of job complexity (non-executive managers) receive significantly higher pay relative to employees with the lowest level of job complexity (clerks). Male employees, employees of companies located in the Helsinki region, and older employees receive higher salaries. Unexpectedly, the coefficient on $TENURE_{jt}$ is negative, implying that employees who have been employed longer, receive lower pay. However, in interpreting this coefficient, it is important to consider that we control for employee age. Posited differently, for employees of the same age, those with shorter tenure receive a higher salary. When we re-estimate Eq. (2) without controlling for AGE_{jt}, the coefficient on $TENURE_{jt}$ is positive and significant, as expected. Finally, the adjusted *R*-squared from this regression is 64.8%, suggesting that the independent variables explain the majority of variation in the fixed salary.

Table 5 reports the results of estimating Eq. (1). Columns (1)-(4) and (5)-(8) show the results of the estimations with ROA_{it}, and $PROFIT\_MARGIN_{it}$ used as a dependent variable, respectively.

Table 5 OLS regression analysis: WCE horizontal pay dispersion and firm profitability

	DEPENDENT VARIABLE =							
	ROA_{it}				$PROFIT\_MARGIN_{it}$			
	(1) *DISPARITY= STD_SALARY*	(2) *DISPARITY= STD_RES_ SALARY*	(3) *DISPARITY= VARIANCE _RATIO*	(4) *DISPARITY= LNRANGE*	(5) *DISPARITY= STD_SALARY*	(6) *DISPARITY= STD_RES _SALARY*	(7) *DISPARITY= VARIANCE _RATIO*	(8) *DISPARITY= LNRANGE*
$DISPARITY1_{it}$	-0.001	-0.001	-3.077	-1.015	-0.001	-0.001	-3.305	-0.979
	(-1.03)	(-1.26)	(-0.63)	(-1.57)	(-0.83)	(-0.89)	(-0.68)	(-1.38)
$DISPARITY2_{it}$	-0.003*	-0.004*	-11.421*	-0.841	-0.003*	-0.003	-6.077	-1.259
	(-1.71)	(-1.84)	(-1.74)	(-0.90)	(-1.76)	(-1.60)	(-0.98)	(-1.51)
$DISPARITY3_{it}$	-0.005*	-0.006*	-19.006**	-2.148*	-0.005*	-0.006**	-17.482**	-2.182**
	(-1.83)	(-1.88)	(-2.34)	(-1.92)	(-1.91)	(-2.08)	(-2.10)	(-2.25)
$DISPARITY4_{it}$	0.000	0.001	-1.999	-0.838	0.002	0.002	1.875	-0.622
	(0.26)	(0.63)	(-0.30)	(-1.25)	(1.04)	(0.90)	(0.33)	(-0.96)
WCE_PERC_{it}	4.048	4.278*	3.679	5.347**	-3.100	-2.906	-3.548	-1.556
	(1.63)	(1.70)	(1.48)	(2.10)	(-1.16)	(-1.10)	(-1.33)	(-0.61)
$LNSALE_{it}$	1.892***	1.876***	1.835***	2.695***	2.402***	2.351***	2.257***	3.273***
	(5.55)	(5.50)	(5.60)	(5.83)	(4.94)	(4.95)	(4.87)	(5.07)
$EQRATIO_{it}$	0.111***	0.112***	0.111***	0.111***	0.128***	0.129***	0.127***	0.127***
	(5.31)	(5.42)	(5.30)	(5.28)	(5.92)	(6.03)	(5.89)	(5.87)
$SALES\_GROWTH_{it}$	3.346***	3.383***	3.391***	3.335***	2.330**	2.409**	2.470**	2.285**
	(2.77)	(2.81)	(2.83)	(2.83)	(2.18)	(2.26)	(2.36)	(2.21)
Industry and year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
N	1,305	1,305	1,305	1,305	1,305	1,305	1,305	1,305
Adj. R^2	13.4%	13.7%	13.5%	13.9%	15.5%	15.4%	14.9%	16.1%

Notes:
The table reports the results of estimating Eq. (1). All of the variables are defined in Appendix 1. The numbers in parentheses are t-statistics. Standard errors are clustered at the firm level. Coefficient estimates on intercept, industry and year fixed effects are suppressed.
***, **, and * denote significance levels of 1%, 5%, and 10%, respectively.

The regression coefficients across the specifications generally show a significantly negative relation between WCE pay disparity at Level 2 and Level 3 and the accounting measures of profitability, after controlling for economic determinants of firm performance. In terms of economic significance, the coefficient of -0.005 on $DISPARITY3_{it}$ in column (1), for example, indicates that a one standard deviation increase in $DISPARITY3_{it}$ is associated with a 0.953 (9.7%) decrease in ROA_{it} when evaluated at the mean. Furthermore, the relation between $DISPARITY4_{it}$ and firm performance is insignificant across all of the eight specifications, also consistent with our prediction that horizontal pay dispersion does not impair the motivation of employees whose work entails relatively simpler tasks.

The results in Table 5 also indicate that the relation between the pay disparity measures of employees at Level 1, who are also faced with presumably complex tasks, and firm performance measures, are insignificant as well, contrary to our prediction. This pattern may result from relatively high correlations among the pay disparity measures, whereby the strongest effect subsumes the predictive ability of the other variables. To test for this possibility, we re-estimate specifications (1) and (5) of Table 5 with the pay disparity measures included one at a time. The untabulated results indicate that the pay disparity at Level 1 exhibits a significantly negative relationship with both ROA_{it} and $PROFIT\_MARGIN_{it}$, whereas the pay disparity variable of Level 4 is insignificant in both specifications. Moreover, coefficient estimates on pay disparity measures at Levels 2 and 3 are statistically significant, similarly to the results presented in Table 5. Taken together, the results of this analysis suggest that, when considered in isolation, pay disparity measures at organizational levels characterized by complex tasks (Levels 1, 2, and 3) are significantly negatively associated with firm performance, whereas pay disparity measures of employees engaged in relatively simple tasks (Level 4) are not.

Finally, we test whether our primary results are robust to the inclusion of firm-fixed effects. Table 6 presents the results of estimating Eq. (1) with firm-fixed effects in place of industry-fixed effects.

Table 6 Firm fixed effects regression analysis: WCE horizontal pay dispersion and firm profitability

	DEPENDENT VARIABLE =							
	ROA_{it}				$PROFIT\_MARGIN_{it}$			
	(1) *DISPARITY= STD_SALARY*	(2) *DISPARITY= STD_RES_ SALARY*	(3) *DISPARITY= VARIANCE _RATIO*	(4) *DISPARITY= LNRANGE*	(5) *DISPARITY= STD_SALARY*	(6) *DISPARITY= STD_RES _SALARY*	(7) *DISPARITY= VARIANCE _RATIO*	(8) *DISPARITY= LNRANGE*
$DISPARITY1_{it}$	0.001	0.001	5.327	0.082	0.000	0.000	0.607	-0.116
	(1.15)	(1.02)	(1.08)	(0.13)	(0.35)	(0.41)	(0.15)	(-0.19)
$DISPARITY2_{it}$	-0.001	-0.002	-1.350	-1.248	-0.002*	-0.003**	-6.500	-1.439**
	(-0.45)	(-1.51)	(-0.22)	(-1.37)	(-1.78)	(-2.35)	(-1.35)	(-2.03)
$DISPARITY3_{it}$	-0.005**	-0.003	-18.173**	-2.694**	-0.001	0.000	-5.718	-1.201
	(-2.41)	(-1.24)	(-2.24)	(-2.29)	(-0.50)	(0.18)	(-0.76)	(-1.29)
$DISPARITY4_{it}$	0.003	0.002	10.434*	0.358	0.002	0.002	5.831	-0.149
	(1.42)	(1.04)	(1.77)	(0.47)	(1.33)	(1.05)	(1.16)	(-0.25)
WCE_PERC_{it}	0.957	0.924	1.173	3.256	0.890	0.716	1.247	2.771
	(0.27)	(0.26)	(0.33)	(0.89)	(0.28)	(0.22)	(0.38)	(0.81)
$LNSALE_{it}$	6.996***	7.003***	7.001***	7.597***	6.953***	6.958***	6.979***	7.524***
	(4.24)	(4.16)	(4.19)	(4.29)	(4.40)	(4.43)	(4.41)	(4.47)
$EQRATIO_{it}$	0.252***	0.251***	0.253***	0.246***	0.136***	0.135***	0.136***	0.133***
	(6.47)	(6.40)	(6.48)	(6.33)	(4.35)	(4.32)	(4.35)	(4.27)
$SALES\_GROWTH_{it}$	4.364***	4.282***	4.335***	4.291***	2.783**	2.717**	2.771**	2.743**
	(3.47)	(3.41)	(3.43)	(3.48)	(2.53)	(2.46)	(2.52)	(2.51)
Firm and year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
N	1,305	1,305	1,305	1,305	1,305	1,305	1,305	1,305
Adj. R^2	67.5%	67.3%	67.5%	67.4%	72.8%	72.8%	72.7%	72.8%

Notes:
The table reports the results of estimating Eq. (1) using firm-fixed effects. All of the variables are defined in Appendix 1. The numbers in parentheses are t-statistics. Coefficient estimates on intercept, industry and firm fixed effects are suppressed. ***, **, and * denote significance levels of 1%, 5%, and 10%, respectively.

The results reported in Table 6 show significantly negative coefficients on either Level 2 or Level 3 pay disparity measures in six out of eight specifications, and thereby suggest that our primary results are unlikely to be driven by the omitted variable bias.

4.3 Additional analysis and robustness tests

To assess the robustness of our results, we perform several additional analyses.

First, we perform a 'placebo test' by estimating Eq. (1) using pay disparity measures calculated using total pay instead of fixed pay. In addition to fixed pay, total pay includes bonuses and perquisites. Since the amount of bonuses is usually determined based on pre-set performance targets and, as such is less subjective relative to the fixed pay component, we expect to find a weaker relation between the pay disparity measure calculated in this way and the measures of accounting performance. The untabulated results indicate that neither of the measures of total pay dispersion are statistically significant at conventional levels in regressions with either ROA_{it} or $PROFIT\_MARGIN_{it}$ used as a dependent variable. Taken together, the results of this test suggest that considering non-fixed compensation components in computing the pay disparity measures weakens the relationship between pay disparity and firm performance and that the effect we document is concentrated within pay dispersion of the fixed component of total compensation.

Second, we test the sensitivity of our results to the exclusion of the smallest firms. In the main regression analysis, we form our sample by requiring at least three employees at each of the task complexity level. However, standard deviation estimates based on a few observations may be inaccurate. We, therefore, replicate our tests using a sample, in which we require at least five employees to be employed at each of the task complexity level. Table (7) reports the results of re-estimating specifications reported in columns (1) – (3) of Table 5 and columns (1) – (3) of Table (6) using this more restrictive sample.

Table 7 Sensitivity of the results to the exclusion of the smallest firms

	DEPENDENT VARIABLE = ROA_{IT}					
	(1) DISPARITY= STD_SALARY	(2) DISPARITY= STD_RES_ SALARY	(3) DISPARITY= VARIANCE _RATIO	(4) DISPARITY= STD_SALARY	(5) DISPARITY= STD_RES _SALARY	(6) DISPARITY= VARIANCE _RATIO
$DISPARITY1_{it}$	0.000	-0.001	2.984	0.002	0.002	9.272
	(-0.33)	(-0.42)	(0.40)	(1.15)	(0.94)	(1.25)
$DISPARITY2_{it}$	-0.005**	-0.005*	-15.555*	-0.002	-0.004**	-7.049
	(-2.13)	(-1.89)	(-1.78)	(-1.07)	(-2.13)	(-0.87)
$DISPARITY3_{it}$	-0.008***	-0.010***	-29.664***	-0.007***	-0.003	-18.369**
	(-2.94)	(-3.02)	(-2.99)	(-2.81)	(-1.11)	(-2.01)
$DISPARITY4_{it}$	0.007	0.008	10.687	0.005	0.004	9.224
	(1.50)	(1.40)	(1.06)	(1.32)	(0.85)	(1.03)
WCE_PERC_{it}	3.967	4.328	3.497	-0.977	-1.251	-0.769
	(1.31)	(1.44)	(1.17)	(-0.21)	(-0.27)	(-0.17)
$LNSALE_{it}$	1.917***	1.855***	1.832***	7.940***	7.981***	8.043***
	(5.04)	(4.81)	(4.85)	(3.44)	(3.36)	(3.46)
$EQRATIO_{it}$	0.121***	0.120***	0.120***	0.231***	0.230***	0.231***
	(4.70)	(4.63)	(4.64)	(4.71)	(4.65)	(4.72)
$SALES\_GROWTH_{it}$	5.378***	5.467***	5.629***	4.724**	4.734**	4.711**
	(3.05)	(3.12)	(3.16)	(2.15)	(2.15)	(2.13)
Year fixed effects	YES	YES	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	NO	NO	NO
Firm fixed effects	NO	NO	NO	YES	YES	YES
N	867	867	867	867	867	867
Adj. R^2	18.3%	18.6%	18.1%	67.0%	66.9%	66.9%

Notes:
The table reports the results of estimating Eq. (1) after exclusion of firm-year observations with less than five employees at the each complexity level. All of the variables are defined in Appendix 1. The numbers in parentheses are t-statistics. Standard errors are clustered at the firm level in the specifications with industry fixed effects. Coefficient estimates on intercept, industry, year and firm fixed effects are suppressed. ***, **, and * denote significance levels of 1%, 5%, and 10%, respectively.

The sign and statistical significance of the coefficients reported in Table 7 are similar to the ones we documented in the main analysis. Specifically, pay dispersion measures in the groups of experts and senior experts exhibit significantly negative associations with the accounting profitability. Moreover, when compared to the estimates reported in Tables 5 and 6, the coefficients on $DISPARITY3_{it}$ and $DISPARITY2_{it}$ are more pronounced and more significant, consistent with the smallest firms biasing the measures of pay dispersion.

Third, we re-estimate Eq. (1) using alternative measures of firm performance, such as Return on capital employed and labor productivity measured as a natural logarithm of sales per employee (e.g., Faleye, Mehrotra, & Morck, 2006; Sengupta & Yoon, 2018) and continue to find regression coefficients similar in sign and significance to the ones reported in Tables 5 and 6.

Fourth, in untabulated tests, we continue to document significantly negative relations between expert-level WCE pay disparity and firm performance in the majority of specifications when we use one-year-ahead instead of concurrent measures of accounting performance. We perform this test in order to address a potential reverse causality between the dependent and independent variables. We, however, note that because fixed salaries are typically set at the beginning of the performance period, investigating the concurrent relation between WCE pay disparity and firm performance takes into account the possibility of lead-lag relations. Moreover, because we focus on the pay dispersion of fixed salaries rather than performance-based salaries, the channel through which reverse causality may affect the relationship we examine is not immediately evident.[7]

5. Conclusions

In this study, we examine the moderating role of task complexity in the relation between WCE horizontal pay dispersion and firm performance in a sample of Finnish manufacturing companies. Using accounting profitability as a measure of firm performance, we document that a significantly negative relation between WCE pay dispersion and firm performance is attributed to the groups of employees facing more complex tasks. Specifically, the relation is driven by the pay dispersion of employees engaged in expert and senior expert tasks. In contrast, the relation between the pay dispersion of employees involved in the most routine tasks and firm performance is insignificant. Taken together, these results indicate that task complexity plays a role in employees' perceptions of horizontal pay disparities as is subsequently revealed in the levels of organizational performance.

Our study has implications for practitioners. Specifically, the results of our study suggest that there are performance benefits of compressed pay structures in the groups of employees facing complex knowledge-based expert tasks. Human resource professionals could consider this in developing compensation practices.

Future studies could identify and examine other characteristics of employees or their job profiles, which moderate the relation between pay dispersion and organizational performance and, in general, explain the balance between the tournament theory and the fair-wage hypothesis. For example, the prediction of the positive relationship between employee pay disparity and organizational performance of the tournament theory builds on the assumption of a possibility and willingness of employees to be promoted to higher ranks. However, not all of the individuals may be motivated by promotions to the same extent. One avenue for future

7 Lallemand et al. (2004), for example, argue that better-performing firms may pay larger bonuses. Because we compute the WCE pay disparity measures using fixed compensation, which is insensitive to current performance, this argument does not apply to our setting.

research is, thus, to identify personal traits that are associated with employees' responsiveness to promotional incentives and examine whether those traits moderate the relation between employee pay disparity and organizational outcomes.

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Appendix 1. Variable definitions

VARIABLE	DEFINITION
WHITE_COLLAR EMPLOYEES	The number of employees per firm-year for whom the salary information is available in the EK survey.
WCE_PERC	The number of employees per firm-year for whom the salary information is available in the EK survey divided by the total number of employees reported in the Voitto+ database.
MEAN_SALARY	The average fixed monthly salary of white-collar employees per firm-year.
STD_SALARY1- STD_SALARY4	The standard deviation of the fixed monthly salary calculated at the firm, year and job complexity level.
STD_RES_SALARY1- STD_ RES_SALARY4	The standard deviation of the residual fixed monthly salary calculated at the firm, year and job complexity level. The residual fixed monthly salary is calculated from a regression of the fixed monthly salary on the employee's education level *(EDUCATION*), tenure (*TENURE*), job complexity level (*COMPLEXITY*), gender (*GENDER*), age (*AGE*) and an indicator variable for the Helsinki metropolitan region (*CAPITAL*).
VARIANCE_RATIO1- VARIANCE_ RATIO4	The standard deviation of the fixed monthly salary calculated at the firm, year and job complexity level divided by average fixed monthly salary at the firm, year and job complexity level.
LNRANGE1- LNRANGE4	Natural logarithm of the difference between the maximum and minimum level of fixed salary per firm-year-complexity level.
DISPARITY1-DISPARITY4	General name of pay disparity measures (*STD_SALARY1- STD_SALARY4, STD_RES_SALARY1- STD_RES_SALARY4, VARIANCE_RATIO1- VARIANCE_RATIO4* or *LNRANGE1- LNRANGE4).*
PROFIT_MARGIN	Net income divided by sales, multiplied by 100.
ROA	The ratio of income before interest and special items to total assets, multiplied by 100.
LNSALE	The natural logarithm of sales.
EQRATIO	The equity-to-total assets ratio.
SALES_GROWTH	The annual percentage sales growth.
SALARY	The fixed monthly salary of a white-collar employee.
EDUCATION	Level of education according to the definition of Bureau of Statistics Finland.
TENURE	Number of years the employee is employed by the company.
COMPLEXITY	Employee job complexity taking values from 1 to 4 (non-executive managers, senior experts, experts, clerks). Level 1 indicates the most demanding tasks (non-executive managers) and Level 4 indicates the least demanding routine tasks (clerical tasks).
GENDER	Indicator variable taking a value of one for male employees, and zero for females.
AGE	Employee's age.
CAPITAL	An indicator variable taking a value of one if a company is located in the Helsinki region; zero otherwise.

Does Sales Management Matter? A Case of Growth-Oriented SMEs from Northern Finland

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Abstract

Sales management is one of the basic factors that determine the success and growth of any company. This study applies a systematic approach to sales management in order to explore sales capability. A sales maturity model is developed and used to analyse the sales capabilities of growth-oriented SMEs in Northern Finland. The secondary purpose of this study is to explore proactive versus reactive sales management and its relation to sales capability. This study found that sales capability is higher in strategic process management as well as in issues relating to people and organisations, but lower in issues relating to customer communication and customer data utilisation. Actively seeking new sales opportunities seems to be important for enhanced sales capability. Based on the results, growth-oriented SMEs should invest in systematic and proactive sales management. The developed sales maturity model can be utilised to enhance SMEs' sales capability.

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1 Introduction

Earlier research has pointed out the crucial role of sales management in enterprise efficiency and profitability, which enables an enterprise to succeed and grow (Fisher, 2012). Instead of being just an organisational function, sales should be a vital strategic business process for any enterprise. Intense market competition requires companies to develop and build up their internal resources and business to achieve their goals (Zhang et al., 2015). Companies that know the market have the best chance of gaining an edge over their competition and one way to develop business is to increase the skills and competencies of sales personnel. Furthermore, salespeople need to be able to manage and understand market situations when interacting with buyers (Rocco & Bush, 2015).

Selling and sales management is more than just closing a deal – it is a critical component of the long-term competitive strategy of a firm (Olson et al., 2001). Small and medium-sized companies are essential to the Finnish economy. Micro companies, which employ less than 10 people or whose turnover is less than 2 million euros in a year (Statistics Finland, 2018) have an especially important role. In Finland, around 95% of all enterprises are micro-companies (Statistics Finland, 2018), in which lies a huge economic potential. Micro companies' share of Finland's total national exports is lower than in neighbouring countries: Finland 3,8%, Sweden 12,4%, and Estonia 18,0% (Eurostat, 2017). Thus, it is important to understand the sales related-challenges of these micro-companies and make an investment in their sales capabilities. In sparsely populated areas, such as Northern Finland, the role of micro-companies is an even more pivotal one as there are typically fewer large or medium-sized companies.

The driving force behind the sales growth of SMEs has been often debated (Uhlaner et al., 2013). The size of the enterprise affects the factors that determine sales growth. Parvinen et al. (2013) suggest that more research is needed in order to systematise sales processes and to integrate the effects of this systematisation into the company's production processes. In this study, a systematic approach to sales has been used. A Sales Maturity Model is developed and used to analyse the sales capability of 31 small and medium-sized (SME) companies. Maturity models have been used to analyse various types of business processes before (Chrissis et al., 2003; Weber, 2008; Harmon, 2009), but they have not been used specifically in regards to sales. In the analyses presented in this paper, the viewpoint of proactive versus reactive sales management is highlighted. Based on the developed Sales Maturity Model, companies can evaluate their current state of sales processes and gain insight into how they can further improve their sales process performance.

2 Theoretical background

Being proactive is typically considered an important skill for business management. However, micro-companies, especially those that are in the start-up phase, may not have enough time or other resources for proactive business management. Being proactive is about acting in advance instead of speculating. It is about aiming to manage situations and looking to benefit from potential future scenarios instead of merely reacting to the circumstances. According to Pitt et al. (2002), being proactive in sales shows as a behaviour and attitude of systematic activeness towards a potential customer, seeking new opportunities, and introducing new products. It also shows in dimensions such as assertiveness, implementation, perseverance, adjustability, experimentation, searching for opportunities, and strategy making. Pitt et al. (2002) found a significant correlation between a sales person's proactiveness and their sales performance.
Bremer & Rehme (2009) divide proactiveness–reactiveness in sales organisations into three

types of behaviour: the proactive management that is driven by sales opportunities, the reactive management that is driven by customer demands, and the organisation-based management that is driven by customer-centric organisational units. This categorisation is utilised in this study. However, as the results from Bremer & Rehme (2009) are based on a study concerning a highly complex context, which SMEs rarely are, the categorisation applied to the context of SMEs only includes the following:

- Proactive sales management: Sales opportunities are actively pursued.
- Reactive sales management: New sales typically occur due to buyer activity.
- Customer-centric organisation: The company pursues new sales opportunities but also remains flexible towards demands and inquiries coming from potential customers approaching the company.

A systematic approach to management is advantageous in the case of complex systems, such as large companies, but also in the case of SMEs. Maturity models provide a systematic means to evaluate and develop business processes (Vereecke et al., 2018). Maturity models were originally applied to project management processes (Paulk, 1997), but also to Sales and Operational Planning (S&OP) processes. S&OP focuses on cross-functional interaction to support smooth supply chain management and value creation while minimising mismatches and conflicts between functions (Oliva & Watson, 2011). S&OP combines supply, operation, and sales functions in the company, i.e., functions that enable smooth customer service (Thome et al., 2012). Moreover, S&OP processes enable companies to pursue supply chain alignment within company networks (Valadez & Perez, 2019). In addition, the aim of S&OP is, through vertical and horizontal alignment, to line up operational and strategic plans (Wagner et al., 2014). S&OP is a key mechanism in mid-term business processes, matching customer demand, and supply chain capabilities (Tuomikangas & Kaipia, 2014). Uncertainties derived from both inside and outside the company may cause difficulties: new product launches, changes in customer demands, and business cycles are examples of changes that need to be considered for smooth customer service (Wagner et al., 2014). Successful S&OP concentrates on creating common goals and fostering mutual understanding through sharing knowledge and holding joint meetings between various disciplines (Rangarajan et al., 2018). S&OP includes perspectives of management (formal instructions, information management, performance) and leadership (cooperation, commitment, common culture) (Tuomikangas & Kaipia, 2014). Table 1 lists the S&OP maturity models utilised in this study.

Table 1. S&OP maturity models.

REFERENCE	METHOD USED	DIMENSIONS
Pedroso et al., 2017	Fussy set theory and literature review	• Tools: metrics & technology • Processes: integrated planning, people / organisational culture, process organisation
Danese et al., 2018	Three case studies regarding level transitions	• Not specified
Vereecke et al., 2018	Presents Demand Planning maturity model based on iterations of theoretical and empirical work -> online survey (N=128)	• Data management • The use of forecasting methods • Management of the forecasting system • Performance management • The forecasting organisation • People management
Wagner et al., 2014	Multi-method: (1) single case study, medium-sized pharmaceutical company, (2) literature review, (3) interviews, (4) questionnaire N=88	• Process effectiveness • Process efficiency • People and organisation • Information technology
Lapide, 2005a; Lapide, 2005b	Professional findings	• Meetings • Process • Technology & applications
Grimson & Pyke, 2007	Literature review and company interviews	• Meetings & collaboration • Organisation • Measurement • Information technology • S&OP plan integration
Hulthén et al., 2017	Multiple case study, 22 interviews from 6 companies	• Effectiveness and efficiency

S&OP maturity models (Table 1) characteristically include two to six dimensions. Most typically the dimensions include process performance, people, organisation, metrics, and data management viewpoints.

The basic idea of maturity models is that strategic and operative capabilities are evaluated through a specific analysis model. Typically, the analysis models present definitions for various capability levels or stages, and the capability in question is considered to grow by each stage. One of the philosophies of maturity models is to encourage companies to develop their operations towards the next stage. For example, Danese et al. (2018) studied what a company needs in order to move from one stage to another. They noticed that lower-level transitions required a different type of focus than higher-level transitions. S&OP maturity models typically include four to six maturity stages that show how well the process dimensions are considered and applied in the organisation.

Table 2. S&OP maturity models' maturity stages.

REFERENCE	STAGES					
Pedroso et al., 2017	Very low		Low	Median	High	Very high
Vereecke et al., 2018	No stages, 1..5 Likert -scale answers					
Wagner et al., 2014	Undeveloped	Rudimentary	Reactive	Consistent	Integrated	Proactive
Lapide, 2005a; Lapide, 2005b	Stage 1: Marginal process		Stage 2: Rudimentary process	Stage 3: Classic process	Stage 4: Ideal process	
Grimson & Pyke, 2007	1 No process		2 Reactive	3 Standard	4 Advanced	5 Proactive
Hulthén et al., 2017	0 No process	1 No process	2 Reactive	3 Standard	4 Advanced	5 Proactive

S&OP can be described as a cross-functional process that aims to increase both company effectiveness (customer satisfaction) and efficiency (sales, cost reduction) (Hulthén et al., 2017). Pedroso et al. (2017) conclude that there is no widespread agreement about which metrics should be used to evaluate S&OP maturity. There is no common agreement of what the maturity stages are and what to call them.

The contents of what to evaluate when evaluating sales capability can be approached from different viewpoints. To start with the seller perspective, earlier literature has been interested in numerous aspects related directly to salespersons. According to Verbeke et al. (2011), sales-related knowledge, degree of adaptiveness, role ambiguity, cognitive aptitude, and the work engagement of salespersons are the most important sales performance drivers.

The seller should be able to adjust his/her selling strategy depending on the potential customer in question, requiring certain situational awareness ('adaptive selling' see, e.g., McFarland et al., 2006). In many cases, sales situations involve interpersonal communication where the seller attempts to influence buyer decision-making. The seller may have various influence tactics, and their effectiveness depends on versatile issues such as what sales tactics are used, individual differences among sales personnel, and their ability to effectively use various tactics, the product or selling situation, and customer differences (Plouffe et al., 2014). Thus, adaptive selling does not only mean adapting communication to the customer but also concerns several other factors, such as the tactics used, salesperson variables, and selling context.

There exists an extensive amount of literature that discusses the relationships between the salespersons' motivation, job satisfaction, and performance (Brown & Peterson, 1994). Instead of investing solely in job satisfaction (Brown & Peterson, 1994), it seems that it would be beneficial to focus more on incentive scheme development.

The orientation in sales has moved from effective interpersonal communication situations towards building and maintaining long-term relationships with profitable customers (Moncrief & Marshall, 2005). Moncrief & Marshall (2005) discuss the traditional seven steps of selling, originating from the early 20th century, in relation to current advancements in information technology and data management. The main trends are the increased possibilities that the enhanced information technology brings to data storing, analysing, presenting, and communication. In addition, the sales process has become more complex, typically involving a team instead of an individual sales/buyer person. Additionally, the sales process tasks

are more and more spread across the organisation rather than being conducted solely by a sales department. Customer relationship management (CRM) is seen as the responsibility of everyone in the company. Reinartz et al. (2004) argue that CRM strategies should consider the three different phases of customer relationships, i.e., initiation, maintenance, and termination. CRM requires business process re-engineering in order for customer-focused, cross-functional, company-wide cooperation to emerge. CRM is not just about technology but needs the balanced involvement of people, processes, and technology (Chen & Popovich, 2003).

Bolander & Richards (2018) justify as to why to study intra-organisational issues in selling and sales management. First, although there are measurable performance metrics with which to evaluate sales performance, some studies point out that intra-organisational matters maybe even stronger predictors of sales performance (Plouffe & Barclay, 2007; Bolander et al., 2015). Murphy & Coughlan (2018) found that neither internal nor external relationships alone explain the performance of long-term customer relationship management, but it is the interaction of both internal and external collaboration. In addition, non-customer relationships may play an even more influential role than customer communication. Salespeople need to manage their portfolios, including customers, internal business functions, and external business partners (Plouffe, 2018).

Organisational culture and climate affect sales performance. McKay et al. (2008) found that stores, where cultural and racial differences are considered as strengths, sell more. Intra-organisational relationships are important to sales success. Sales personnel should consider the company internal functions as strategic partners instead of colleagues. Effective sales communication does not use the same approach with customers and various intra-organisational functions, such as marketing or operations (Claro & Ramos, 2018). Managing long-term customer relationships is advanced by salespersons' (key account managers') proactive behaviour, that is, the joint effect of company internal and external collaboration driving positive performance (Murphy et al., 2018).

Parvinen et al. (2013) present a study concerning sales activities affecting firms' performance in business-to-business companies selling products or services. They found that the activities are different in product versus service-oriented companies. Company-specific business models should be considered when tailoring sales processes, tools, and metrics.

Table 3. Maturity levels used in this research.

LEVEL	DESCRIPTION
1 The sales process is not specified – no process	In terms of sales, the company has largely acted on what it feels like. The company has not specifically begun to complete, for example, job descriptions, process descriptions, strategic guidelines, or other written instructions on responsibilities. The flow of information between sales and production via Excel, for example, is not always straightforward. Success and fluency are the results of good human performance. Success becomes known when the company gets the deals, it does not need separate indicators. The company is happy with the current situation. (Vereecke et al., 2018; Danese et al., 2018; Pedroso et al., 2017; Wagner et al., 2014; Grimson & Pyke, 2007; Lapide, 2005a; Lapide, 2005b)
2 The sales process is partly specified – reactive	Success is still largely dependent on the good performance of individuals, and people in sales operations can do other work tasks in addition to their own work. Work tasks and responsibilities are partly documented. The company wants to develop sales activities and has defined certain metrics for it. There is a system in which information is stored and transmitted between departments/functions. (Vereecke et al., 2018; Danese et al., 2018; Pedroso et al., 2017; Wagner et al., 2014; Grimson & Pyke, 2007; Lapide, 2005a; Lapide, 2005b)
3 The sales process is specified – standard process	Tasks and responsibilities related to sales work are documented and come with instructions so that replacing personnel does not cause any problems. The company collects sales information, for example, by customer segment, vendor, and / or region. Customer feedback is also actively collected, and activities are developed based on that feedback. Information systems communicate whether the business is doing well or not. (Vereecke et al., 2018; Danese et al., 2018; Hulthén et al., 2017; Pedroso et al., 2017; Wagner et al., 2014; Grimson & Pyke, 2007; Lapide, 2005a; Lapide, 2005b)
4 The sales process is optimised – advanced processes across corporate functions	The company has cut down on unnecessary sales activities and focused on essentials. There are hardly any surprises in sales activities. The information system can predict whether the company will do well in the next cycle. The staff understands how sales operations affect production and the whole business. The company's strategy is reflected in sales milestones. (Vereecke et al., 2018; Danese et al., 2018; Pedroso et al., 2017; Wagner et al., 2014; Grimson & Pyke, 2007; Lapide, 2005a; Lapide, 2005b)
5 The sales process is optimised and is being constantly developed, taking into account the supply chain – proactive	Sales operations automatically take into account not only the company's own (production) situation but also the situation of the customer and suppliers / subcontractors. Efforts are being made to eliminate potential problems in advance. The information system is able to provide knowledge of upwards or downwards trends in advance and how to prepare for them. Personnel development is active but carefully considered. Sales activity is constantly compared to the best in the industry. (Vereecke et al., 2018; Danese et al., 2018; Pedroso et al., 2017; Wagner et al., 2014; Grimson & Pyke, 2007; Lapide, 2005a; Lapide, 2005b)

Table 3 presents the sales maturity levels used in this research. At the lowest level of maturity, there are hardly any guidelines or process descriptions for staff to follow. Therefore, the company may be overly satisfied with the situation. The need for a more systematic management approach is understood at the intermediate level. With higher degrees of maturity, systematic management includes all company operations, also smoothly integrating vendors and customers into the processes. Throughout the maturity model, coordination mechanisms are in an important role (Tuomikangas & Kaipia, 2014) and thus should be considered in the process definition, organisation, and strategic alignment as well as in culture creation. Master data management is important, however, and Lehtinen & Järvinen (2015) emphasise that the more complex the system, the more there is a need for personal contacts instead of automation.

The maturity level of a company is not only explained by how much managerial effort is put into it but it is more related to leadership issues and, specifically, if people are committed to the process and making improvements (Pedroso et al., 2017). The higher the level, the more

there is a need to emphasise leadership, people, and organisational perspectives (Danese et al., 2018). To attain higher levels of maturity, the importance of peoples' roles (Lapide, 2005a; Wagner et al., 2014; Hulthén et al., 2017) and the informal mechanism (McCormack & Lockamy, 2005) are highlighted.

Hulthén et al. (2017) studied typical challenges that companies face when measuring performance at each maturity level. At level 2 the challenges include designing metrics in general, increasing the quality of information sharing, and improving IT systems to support the process. At level 3, the challenges include visualisation of metrics, analysing actual versus planned, and improving information consistency. At the fourth level, alignment with strategy, visualisation, and advanced metrics, such as how to evaluate planning scenarios, become challenging.

3 Methodology

This study utilises a case study approach (Yin, 2003), starting from the creation of a sales maturity model and then testing its suitability in 31 company cases. The study is based on both qualitative and quantitative analysis and was undertaken with the case study approach. As Richie et al. (2003) have stated, qualitative research provides a unique tool for understanding the phenomenon. A case study is also an investigation of the transaction in a particular real-life context (Creswell, 2012).

To measure companies' overall sales competence, a sales capability maturity model was created. Considering the needs of SMEs, the purpose was to create a lightweight and agile process. This process included several steps. First, a literature survey was conducted to reveal earlier S&OP maturity research. Based on this, a preliminary questionnaire was formed. Then, the questionnaire was tested and commented on by two professionals. A second version was created based on these comments. Again, a larger group of 15 professionals tested and commented on the reformed questionnaire. Improvement needs were then discussed with this group of professionals and suggestions were integrated into the questionnaire. Then, the questionnaire was tested by two micro-entrepreneurs. After this, the questionnaire form was finalised. The finalised questionnaire form included 10 open-ended questions, 35 questions with a Likert-scale from 1 to 5, and 19 questions concerning company background information.

Sales maturity related questions were divided into five themes: 1) Strategic management and the process, 2) Customer communication, 3) Utilisation of customer data, 4) Personnel and organisation, and 5) Information management and metrics. In addition, the questionnaire included two additional categories. The purpose of the first additional category was to cross-check survey results, and it included questions such as how the respondent would evaluate his/her company's overall sales maturity level. The second one included demographical and business-related questions. The questions originated from earlier literature of sales performance management and S&OP maturity research (Table 4).

Table 4. Sales maturity model themes, the number of questions, and related references.

THEME	NUMBER OF QUESTIONS	REFERENCES
Strategic management and the process	4	Pedroso et al. (2017), Moncrief & Marshall (2005), Danese et al. (2018), Wagner et al. (2014), Bremer & Rehme (2009)
Customer communication	12	Parvinen et al. (2013), Vereecke et al. (2018)
Utilisation of customer data	6	Parvinen et al. (2013), Moncrief & Marshall (2005), Danese et al. (2018)
Personnel and organisation	10	Parvinen et al. (2013), Moncrief & Marshall (2005), Danese et al. (2018), Vereecke et al. (2018), Wagner et al. (2014)
Information management and metrics	7	Pedroso et al. (2017), Moncrief & Marshall (2005), Danese et al. (2018), Vereecke et al (2018), Wagner et al. (2014)
Demographical and business-related questions	16	Danese et al. (2017), Vereecke et al. (2018)
Questions for cross-checking, e.g., overall sales maturity	3	Pedroso et al. (2017), Wagner et al. (2014)

In the previous S&OP maturity studies, the Likert scale has been used only rarely (Wagner et al., 2014; Vereecke et al., 2018). Therefore, its suitability has also been tested in this study. The final questionnaire included 34 Likert-scale questions.

The research data was gathered from 31 manager directors working in 31 micro and small companies located in the Oulu South region in Finland. Respondents included company sales management persons, which was typically the entrepreneur him/herself. The companies operated in different fields and represented both new and older companies. The companies employed altogether around 410 persons. The backgrounds of researched companies are presented in Table 5.

Table 5. Background information of studied companies.

COMPANY NO	STANDARD INDUSTRIAL CLASSIFICATION TOL 2018	MARKETS & CUSTOMERS (B-TO-B, B-TO-C, BOTH)	NUMBER OF EMPLOYEES	COMPANY OFFERINGS (PRODUCTS, SERVICES OR BOTH)	TURNOVER 2017 OR 2018 (1000€)	PROFIT (1000€)
1	Home help services for the elderly and disabled	B-to-C	10	services	107	-9
2	Other social work activities without accommodation n.e.c.	B-to-C	6	services	93	5
3	Construction of residential and non-residential buildings	both	10	both	1,339	6
4	Publishing of newspapers	both	7	products	580	*
5	Manufacture of office and shop furniture	B-to-B	32	both	6,015	254
6	Letting of dwellings	both	0	services	1,183	-63

7	Retail sale of tyres	both	2	both	135	-16
8	Beer and drink bars	B-to-C	3	both	**	**
9	Computer programming activities	B-to-B	42	services	2,987	59
10	Temporary employment agency activities	both	14	services	2,039	171
11	Agents involved in the sale of machinery, industrial equipment, ships, and aircraft	both	2	both	368	-21
12	Retail sale of footwear and leather goods	both	46	both	4,729	93
13	Other architectural and engineering activities and related technical consultancy	B-to-B	3	both	173	8,7
14	Retail sale of watches and jewellery in specialised stores	both	3	both	120	4
15	Manufacture of agricultural and forestry machinery	B-to-B	9	both	1,105	-15
16	Construction of residential and non-residential buildings	both	16	both	2,911	23
17	Extraction of peat	both	25	both	1,191	23
18	Installation of industrial machinery and equipment	B-to-B	4	both	272	25
19	Construction of residential and non-residential buildings	both	15	both	1,449	90
20	Restaurants	both	21	both	1,993	33
21	Letting of dwellings	both	11	both	4,443	-46
22	Manufacture of builders' carpentry and joinery n.e.c.	both	26	both	4,246	180
23	Letting of dwellings	B-to-C	2	services	1,801	-177
24	Repair of fabricated metal products	both	16	both	1,470	113
25	Other social work activities without accommodation n.e.c.	both	2	both	170	18

26	Wholesale of electrical equipment and supplies	both	3	both	800	5
27	Manufacture of other special-purpose machinery n.e.c.	both	9	products	236	8
28	Retail sale of motor vehicle parts and accessories (excl. tyres)	both	58	both	5,354	61
29	Growing of vegetables in a greenhouse	B-to-B	2	both	129	5
30	Treatment and coating of metals	B-to-B	5	services	293	55
31	Manufacture of fasteners and screw machine products	both	4	products	945	87

* unknown (a non-profit organisation)
**newly founded company, information not available

Results

Business management literature typically presumes that proactive management is advantageous for the success of businesses. In this study, the results are presented by highlighting the proactive–reactive sales management perspective in order to reveal the potential importance of the proactive management approach. Categories for sales management and their abbreviations include the following (Bremer & Rehme, 2009):

- P: Proactive sales management – Sales opportunities are actively pursued.
- R: Reactive sales management – New sales typically come due to buyer activity.
- C: Customer-centric organisation – Company pursues new sales opportunities but also remains flexible toward demands and inquiries coming from potential customers approaching the company.

The results show that companies typically evaluated their overall sales maturity rather conservatively (Fig. 1). Most of the companies evaluated their overall sales maturity to be level one, two, or three. Maturity level 2 had the most replies (35%). A considerable proportion (29%) of the companies evaluated their sales management to be at level 1. Level 3, which reflects a rather systematic sales process management, received only 26% of the replies.

Sales maturity evaluated by management (Fig. 1) also shows that companies with proactive sales management evaluated their sales capability higher than the others. Half of the level 3 evaluations were given by proactive (P) sales management companies. In addition, almost half of the level 1 evaluations were given by reactive (R) sales management companies. Most of the customer-centric (C) companies evaluated their overall sales maturity be at level 2.

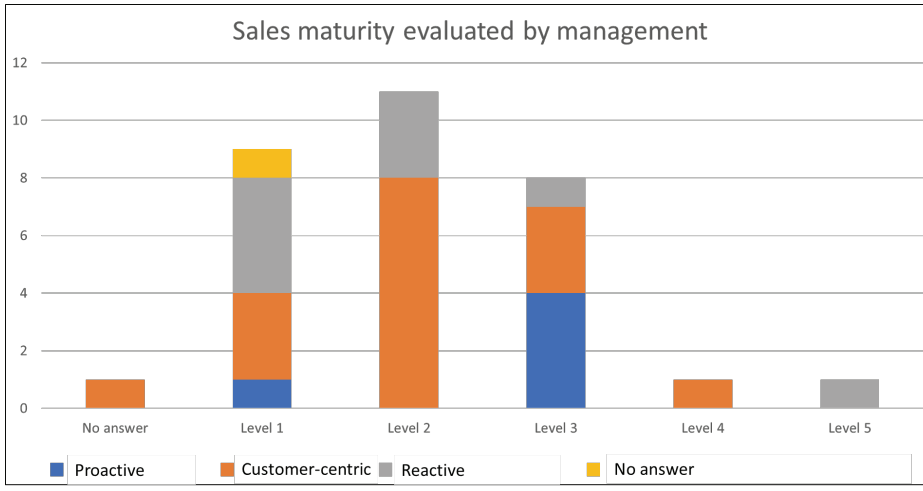

Fig. 1. Overall sales maturity evaluated by management.

The research data shows certain variation among the average values in all replies to different sales maturity themes (Fig. 2). In fact, the biggest differences were between *People and organisation* (3,6) and *Customer communication* (2,8). In addition, there were rather big differences in the replies between the P-C-R categorisation. Reactive companies seemed to get the lowest-rated replies in most of the themes whereas customer-centric companies typically got the highest averages for the themes. When looking in detail at each theme, the same trend can be found: customer-centric companies typically had the highest averages for individual questions, although exceptions could also be found.

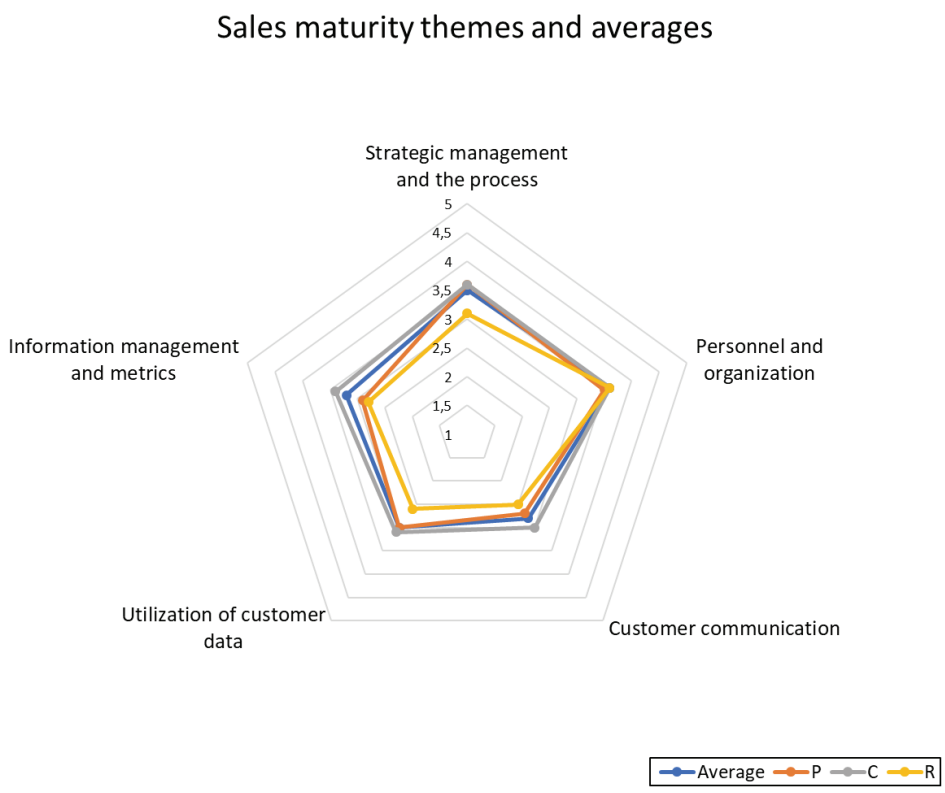

Fig. 2. Sales maturity themes and averages for each category (P=proactive, C=customer-centric, R=reactive).

The theme of *Strategic management* (Fig. 3) included four questions of which the lowest average (3,0) was given to the statement "We have a clearly defined sales process in our company". There was no notable variation among the replies between P-C-R categories concerning this question. However, proactive and reactive companies' responses to the statements "Cooperation between different units in our company" and "Cooperation with other external partners" varied considerably, and proactive companies' given average scores were higher. To sum up Fig. 3, all statements under the *Strategic management* theme were given good scores (avg. 3 or more).

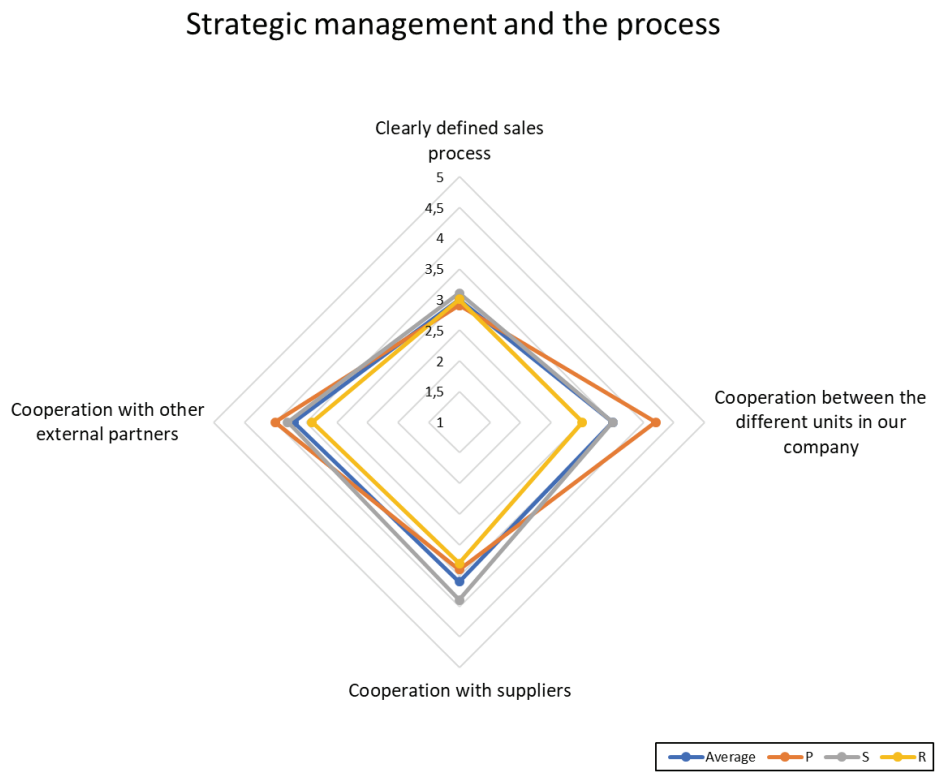

Fig. 3. Average values of *Strategic management and the process* statements.

Under the *Personnel and organisation* theme (Fig. 4), there were altogether nine questions. The statement "Our sales personnel have significant relevant experience" received the lowest average score. There was no notable variation among the different categories in relation to this statement.

Another notable low average (2,7) was received by the statement "I find my job very satisfactory", where the lowest average score was given by proactive companies (2,4) and the highest by customer-centric companies (2,9). The results regarding this theme show three statements where reactive companies had higher results than the others: "We share an excellent customer service orientation in our company" (4,0), "The personnel working in customer contacts have strong adaptive selling skills" (4,0), and "We have an excellent working climate in our company" (4,0).

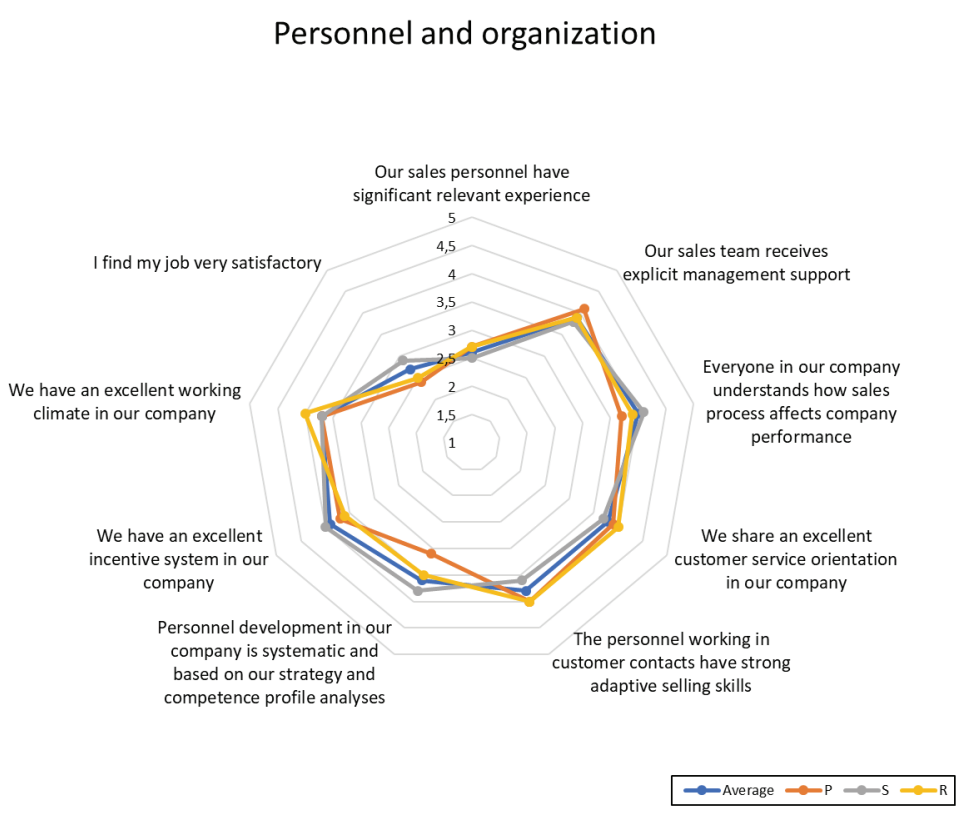

Fig. 4. Average values of *Personnel and organisation* statements.

Proactive companies gave the highest average for the statement "Our sales team receives explicit management support" (4,1). Overall, the statements under the theme *Personnel and organisation* were given the highest values. The most significant shortages are shown in sales personnel experience and job satisfaction.

Under the theme *Customer communication* (Fig. 5), several questions received significantly low grades. These include the company's preliminary analysis of the customer before contact (avg. 2,7) and utilising this information in the selection of the target person in the purchasing organisation (avg. 2,5), as well as the selection of the communication channel (avg. 2,6), and the decision regarding the offering (avg. 2,8) based on the preliminary analysis.

In addition, significantly low grades were given to how well companies analyse the way customers buy or use products through different channels (avg. 2,9), as well as to how well companies analyse customers' reactions to sales activities (avg. 2,9). Proactive companies had the lowest averages for this statement (avg. 2,3).

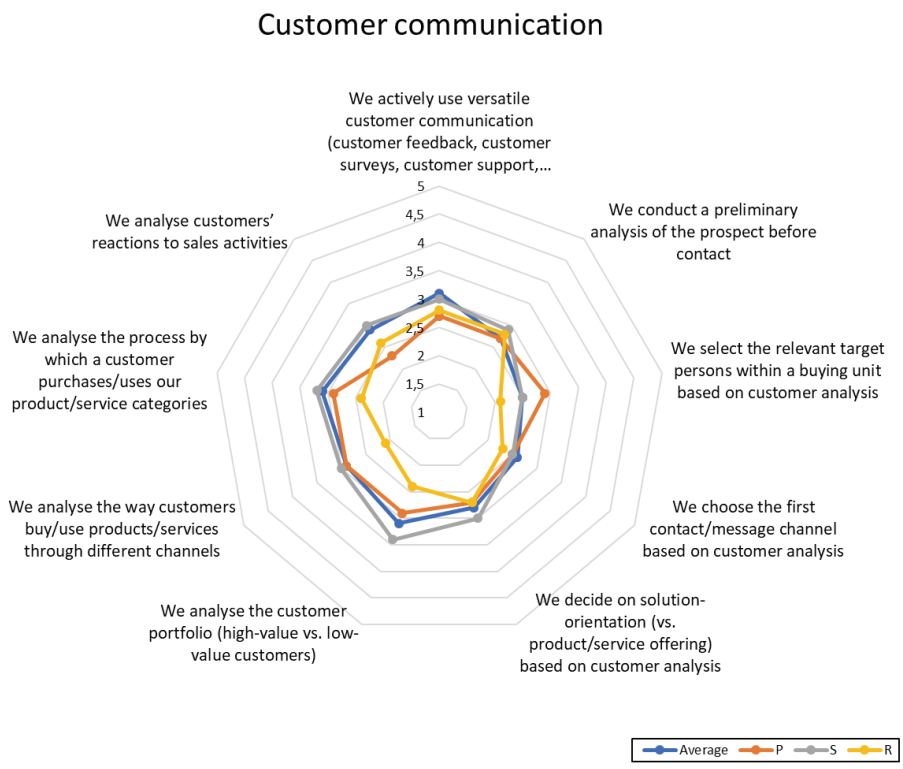

Fig. 5. Average values of *Customer communication* statements.

For the statement "We select the relevant target persons within a buying unit based on customer analysis", proactive companies had the highest average (2,9) while reactive companies had the lowest (avg. 2,1).

Questions under the theme *Utilisation of customer data* were given moderate values (Fig. 6). However, the lowest values were given to providing low-value customers motives to end the customer relationship (2,6) and to checking customer reactions (in non-personal contacts) (avg. 2,5). To the latter reactive companies' average (1,7) was relatively low compared to others.

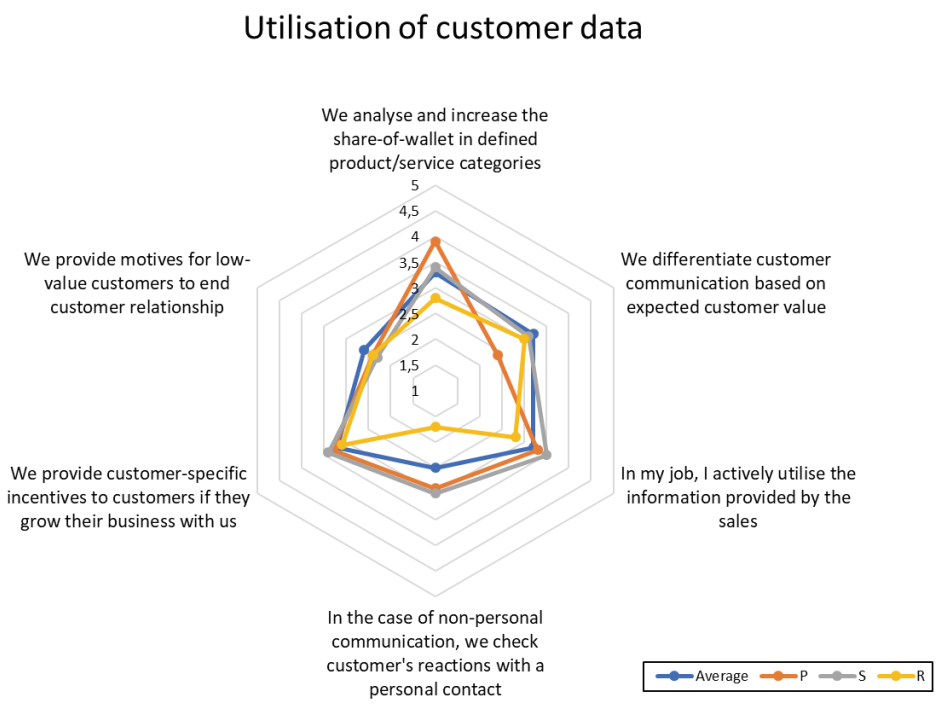

Fig. 6. Average values of *Utilisation of customer data* statements.

Notable differences were also found in the averages for the statement "We analyse and increase the share-of-wallet in defined product/service categories", where proactive companies had the highest average (3,9).

Looking more closely at the statements under the theme *Information management and metrics* (Fig. 7), the companies seem to have adequate data management systems in place (avg. 3,9). However, there are shortages especially in integrating sales performance metrics into the company's other metrics (avg. 3,0) as well as adjusting sales performance targets in relation to industry benchmarks (avg. 3,0).

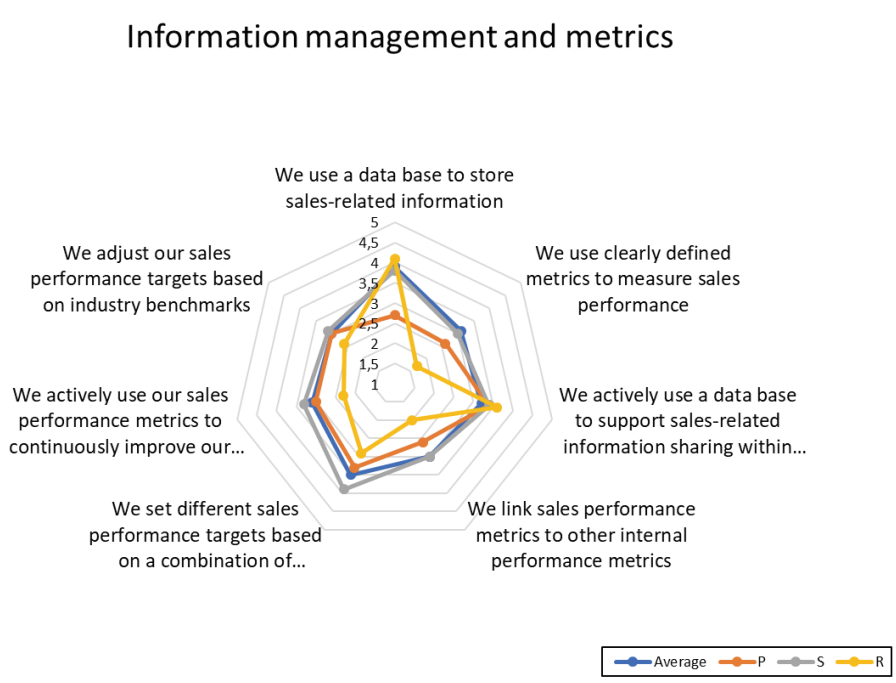

Fig. 7. Average values of *Information management and metrics* statements.

The largest differences in statement averages were by the reactive companies. Reactive companies had the highest averages compared to others for the statements "We use a database to store sales-related information" (avg. 4,1) and "We actively use a database to support sales-related information sharing within our company" (avg. 3,6), but a very low average for the statement "We use clearly defined metrics to measure sales performance" (avg. 1,7) and "We link sales performance metrics to other internal performance metrics" (avg. 2,0). Also, for the statement "We actively use our sales performance metrics to continuously improve our sales process" (avg. 2,3), reactive companies had the lowest average.

4 Discussion

In this paper, the authors present a process where a Sales Maturity Model was created and tested in 31 SMEs. A survey was created to study companies' sales capability. The survey included five substance themes, namely 1) Strategic management and the sales process, 2) Personnel and organisation, 3) Customer communication, 4) Utilisation of customer data, and 5) Information management and metrics. Based on the results, the studied companies had higher capabilities in strategic management as well as personnel and organisation-related issues and lower capabilities related to customer communication and utilisation of customer data. The maturity levels of the studied companies varied. It should be noted, as Wagner et al. (2014) point out, that the desired maturity level is context and company-dependent, as not every company needs to reach level 5. Attempting to reach level 5 would require an effort that an SME might not be able to invest. In addition, in the case of micro-companies or start-ups, the business could still be small-scale, and the organisation that maturity level 5 involves is not practical and maybe

not even possible. Additionally, developing the business towards maturity level 5 requires a certain learning curve that would include time and experience borne of past actions.

The survey results revealed interesting findings. Firstly, the theme *People and organisation* was given the highest average values. Wagner et al. (2014) and Vereecke et al. (2018) also show similar results. Personnel and organisation-related issues seem to be a strong point when assessing maturity. In this study, the biggest challenge under the theme of *People and organisation* was identified to be sales personnel experience. This may reflect the huge recruiting challenge that micro-entrepreneurs are facing: although the company would need and benefit from the additional sales force, labour shortages are typical for the area that the studied companies represent. Investing in new personnel in a micro-enterprise is a massive risk if the person turns out to be unsuitable for the job.

This research paper has highlighted the viewpoint of proactive, reactive, and customer-centric management. Customer-centric companies' lowest capability in the statement "sales personnel experience" may reflect that in a micro or small company the whole organisation is harnessed for sales, or simply that customer-centric companies realise the need for more competitive sales personnel better than other companies. According to Kruger & Dunning (1999) people tend to evaluate their capabilities as better than they really are, meaning that the lower the capability, the greater the meta-cognitive gap there is to evaluate one's own capability.

Job satisfaction was given a relatively low value, but it should be noted, according to Brown & Peterson (1994), that job satisfaction does not correlate with sales performance. Customer-centric companies' highest value for this statement could reflect the dynamic context where the company is active towards new sales opportunities but also that buyers are active towards the company.

This research shows that the studied SMEs do not conduct a proper preliminary analysis of potential customers. Preliminary analysis should be the starting point for further communication with the buyer. However, it could be that the companies do conduct some kind of intuitive analysis which may affect the selection of the target person(s) and communication channel(s) as well as offering decisions. This study suggests that this process should be managed in a more systematic manner. In addition, it seems that the studied companies do not invest enough in familiarising themselves with their customers' buying behaviour. A more advanced understanding of customer buying behaviour would benefit from utilising company marketing efforts more effectively and improve sales process efficiency. Compared to other companies, this lack was considerably higher for reactive companies.

A shortage of checking customers' reactions with personal contacts may reflect that non-personal contacts seldom exist or that companies have insufficient abilities in managing the process of non-personal contacts. Another significant shortage that was identified was that companies were unable to provide low-value customers' motives to end the customer relationship. For example, a small local company may be engaged in low-profit business with neighbours in order to support the company's good reputation in the area.

Additional shortages are related to industry benchmarks, which could be conducted more intuitively than systematically, and sales performance targets, which could be based more on in-house issues, such as the production situation. Another significant shortage, that of linking sales performance metrics to other internal performance metrics, supports this conclusion. Reactive companies' lower capability was especially shown in this theme and is related to a lack of clearly defined metrics for sales, which leads to shortages in linking sales performance metrics to internal metrics and improving the sales process based on the metrics.

This research has several academic implications. First, this paper enriches academic maturity model discussions by broadening the debate towards sales management. In addition, the results support earlier maturity model literature in that strategic management and personnel management gain typically the highest scores (Wagner et al., 2014; Vereecke et al., 2018).

Secondly, this research highlights the importance of better management of intra-organisational relations, as stated also by Claro & Ramos (2018). The whole organisation should be utilised in order to support sales and company growth. It should be noted that intra-organisational communication is different from customer communication. Intra-organisational relations may affect sales effectiveness even more than customer communication (Bolander & Richards, 2018; Plouffe & Barcklay, 2007; Bolander et al., 2015). Like Plouffe (2018) stated, an interesting question for future SME sales research would be: who is your most important internal partner or co-worker?

Thirdly, this study has highlighted the viewpoint of proactive versus reactive sales management. Proactiveness has typically been studied in very complex environments and in large organisations (e.g., Brehmer & Rehme, 2009). This study indicates that this kind of categorisation is also relevant for SMEs. This study suggests that a simply reactive sales process may not be effective in the long run and especially when the company is looking for growth. Also, Covin & Slevin (2006) pointed out that being proactive and an entrepreneurial attitude were both related to sales growth. In many perspectives, activeness towards new sales opportunities, which also exists in customer-centric companies, seems to relate to higher sales capability.

The fourth academic implication concerns methodology. Earlier literature has mainly used stage-models in assessing maturity (Wagner et al., 2014; Vereecke et al., 2018). The developed Likert-scale sales capability model proved to be suitable for studying micro and small entrepreneurs' sales competence. However, it is important to further analyse the internal validity of each scale-dimension and focus on scale-development.

The current research also has several managerial and policy implications. Firstly, the results of the study strongly indicate that proactive and customer-centric sales management is beneficial to companies. It seems that companies that focus on customers have higher sales capability. These companies have possibly also invested in sales capability development. Based on the results, SMEs should invest in proactive and customer-centric sales management.

Secondly, SMEs should invest in more systematic analyses of potential customers, their contact persons, and contact channels as well as customer buying behaviour. Organisations supporting new businesses and start-ups could assist in this. Thirdly, the developed sales maturity survey can be used to evaluate and enhance SMEs sales capability. The model can also be used by organisations supporting new businesses and start-ups.

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Lahjoittaminen on tulevaisuuteen sijoittamista – Liikesivistysrahasto tukee apurahoin liikkeenjohtoa palvelevaa tutkimusta, koulutusta ja julkaisutoimintaa.

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The Nordic Journal of Business is a scholarly journal that publishes original scientific research in all fields of business studies. Different aspects of business theory and practice related, among others, to accounting, corporate governance, entrepreneurship, finance, information systems, international business, management, and marketing are within the scope of the Journal.

The Nordic Journal of Business welcomes submissions of high-quality empirical and theoretical papers that contribute to knowledge of business theory and practice. The Journal is primarily interested in contributions based on the foundational disciplines of business studies, but we also encourage creative approaches and multidisciplinary research that reflects the intricate real- life relationships between functional areas of business. While the Journal provides an international forum for business research, submissions that focus on Nordic research problems or use data from Denmark, Finland, Iceland, Norway, and Sweden are particularly encouraged.

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The Nordic Journal of Business features:
- Empirical and theoretical research articles
- Survey and review articles
- Research notes

The core of the Journal comprises empirical and theoretical research articles. Comprehensive survey and review articles as well as short research notes will also be considered for publication. The Journal regularly publishes special issues that focus on specific research topics. All submissions are subject to initial editorial screening and are subsequently double-blind refereed by two reviewers who are recognized experts in the field of the manuscript.

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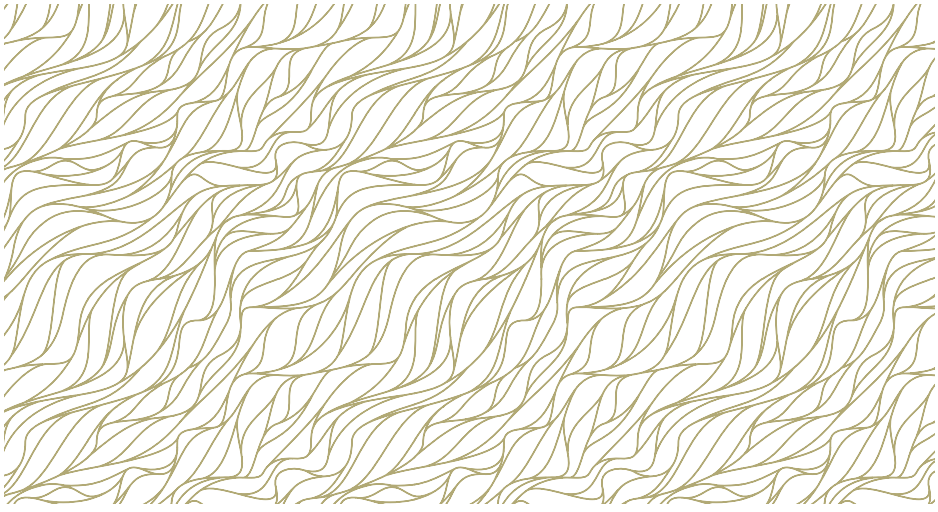

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