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How to retain motivated employees in their jobs?

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Abstract
This article examines the contribution of human resource management (HRM) and information and communication technologies (ICTs) in the retention of motivated employees. The author uses a representative random sample of private sector employees from Western Europe. The data set contains information on employees' motivations, on-the-job search and workplace environment. The results show that HRM and ICT bundles are positively related to motivations. Being motivated for intrinsic and personal growth reasons decreases the likelihood to search while being motivated for rewards or compulsion reasons increases it. HRM strengthens the likelihood to search in the same way, while ICTs tend to increase the likelihood to search of all employees.

Keywords
Human resource management, information and communication technologies, on-the-job search, work motivation, working conditions

Introduction

Firms dedicate resources to increase firm-specific skills, enhance employees' commitment, and stimulate collaborations and efforts with the goal of raising firm performance. The mobility of employees and especially of the most productive ones is costly for employers who want to recover their investment in human capital (Boxall and Macky, 2009; Huselid, 1995; Morrow and McElroy, 2007). Labour turnover also incurs costs due to attracting, selecting, recruiting and training new productive employees (Oi, 1962).

Earlier research has examined variables that are related to employee turnover intention. First, existing evidence underlines that turnover intention is a strong predictor of actual turnover (e.g. Böckerman and Ilmakunnas, 2009; Griffeth et al., 2000; Kristensen

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and Westergaard-Nielsen, 2006). Second, the workplace environment plays a role in the turnover intention. Researchers have focused on adverse working conditions, discrimination or low social support and on specific human resource management practices such as granting voice or training (Antecol and Cobb-Clark, 2009; Böckerman and Ilmakunnas, 2009; Böckerman et al., 2013; Cottini et al., 2011; Delfgaauw, 2007; Garcia-Serrano, 2004; Green et al., 2000). Third, dissatisfied employees are those that want to quit their current job (Antecol and Cobb-Clark, 2009; Antecol et al., 2009; Böckerman and Ilmakunnas, 2009; Scott et al., 2006; Shields and Wheatley Price, 2002). However, very little is known about how the organizational and technological workplace environment can retain employees, or about the type of motivation that employees who are more prone to stay in their current job have. These are very important issues.

On the one hand, an important limitation of existing research is that it pays attention to few facets of the workplace environment, which is mainly shaped by the investment of firms in human resource management (HRM) practices covering participation in the organization's life, team working, career development, family-friendly policies, incentives, and associated information, and communication technologies (ICTs) such as enterprises' resource planning, workflow, groupware, intranet, internet and email use for professional purposes. There is, in fact, a considerable consensus in the literature on the role played by HRM and ICTs in firm performance (e.g. Bresnahan et al., 2002; Brynjolfsson and Hitt, 2000; Combs et al., 2006; Ichniowski and Shaw, 2013; Ichniowski et al., 1996; MacDuffie, 1995; Wu et al., 2015). Several existing studies support positive relationships between HRM, ICTs and employees' attitudes such as job satisfaction, organizational commitment, citizenship or pride (e.g. Böckerman et al., 2012; Brown et al., 2008; Gallie et al., 2012; Godard, 2001; Guest, 1999; Kalmi and Kauhanen, 2008; Martin and Omrani, 2015; Mohr and Zoghi, 2008; White and Bryson, 2013). The underlying assumption is that employees have a positive motivational response to HRM and ICTs due to reciprocal behaviour (Fehr et al., 1997), as supported by various theoretical frameworks: mutual gains, social exchange theory, job demands–resources model, psychological contract and self-determination theory (Blau, 1964; Deci and Ryan, 1985; Osterman, 2000; Rousseau, 1995; Schaufeli and Bakker, 2004). Nevertheless, the relationships between HRM, ICTs and individual motivations to exert effort are largely untested (except Godard, 2001; Martin, 2017) and on-the-job search behaviour (or turnover intention) is largely ignored.

On the other hand, acquiring new knowledge on the type of employees that want to stay is important as firms face higher costs of turnover if the most motivated employees that exert higher levels of effort are those that want to quit their current job. Since the work of Deci and Ryan (1985), two main types of motivations are at the centre of theories of motivation: autonomous motivation and controlled motivation. First, autonomous motivation is a desired attribute of employees for managers as the former will exert effort because of values, identification and intrinsic reasons and have positive behaviours at work such as cooperation, information sharing, commitment, intra- and extra-role performance (Akerlof and Kranton, 2005; Gagné and Deci, 2005). Second, controlled motivation is not sought by managers as employees concerned in this type exert effort because of rewards and out of feelings of compulsion, and this motivation is unrelated to positive behaviours at work except continuance commitment (i.e. staying in the current job to

avoid the costs related to quitting; see e.g. Kuvaas et al., 2017). Thus, to increase the quality and quantity of work effort and boost productivity, employers need to strengthen above all the autonomous motivation of their staff and to retain the most autonomously motivated employees.

The purpose of this article is to provide new evidence on on-the-job search of employees, especially motivated ones, by analysing the role of HRM practices and associated ICTs. The article combines various fields of research, i.e. human resource management, organizational psychology, labour, behavioural and personnel economics, that have independently developed analyses of the association between the workplace environment and employee on-the-job search, and aims to narrow the gap between these fields. Rooted in these literatures, it provides new results on how firms, by investing in HRM and ICTs, strengthen employees' motivations. Moreover, it analyses two main research questions: first, do autonomously motivated employees want to stay in their current job? Second, are they retained through their participation in HRM practices and their use of ICTs?

The article is based on a representative random sample of private sector employees that is uniquely suited to examine these questions. Unlike existing data used by prior research, the work environment studied covers not only employees' working conditions but also their participation in HRM practices and ICT use. Moreover, the data set contains not only job satisfaction but also work motivations as defined by the self-determination theory (Deci and Ryan, 1985, 2000; Gagné and Deci, 2005; Gagné et al., 2010) and turnover intention. In addition, the data were collected recently (2013) in a Western European country characterized by the predominance of its service sector and by a multinational working population, namely Luxembourg. Hence, the article provides new results on employees working in a service economy and covers not only Luxembourgish employees but also French, Belgian, German and some other nationalities.

The article proceeds as follows. The second section discusses the related literature and hypotheses. The third section presents the data and the estimation strategy. The results are shown in the fourth section. The fifth section discusses the results and concludes.

Related literature and hypotheses

The workplace environment and employees' attitudes

Employers build their workplace environment to stimulate employees' effort, increase their utility and make quits an uninteresting option. First, through the investment in their HRM strategy employers favour information sharing and provide voice channels for employees through participation activities (McGovern et al., 2007). They give more autonomy, responsibilities and discretion via team working (Gallie et al., 2012). They invest in workforce skills through development activities like training (Boxall and Macky, 2009). They reduce work–family conflict through family-friendly policies (Ernst Kossek and Ozeki, 1998). They incentivize employees through monetary and non-monetary compensations (Eriksson and Kristensen, 2014). Moreover, it has been shown that these practices are complementary, overlap each other and are mutually reinforcing. HRM practices need to be implemented in a bundle to effectively improve employees'

behaviours (Böckerman et al., 2012; Bowen and Ostroff, 2004; Ichniowski et al., 1997; White and Bryson, 2013) and firm economic performance (Bowen and Ostroff, 2004; Combs et al., 2006; Godard, 2004; Wood, 1999). The underlying mechanism is that the greater the number of HRM practices adopted, the greater the positive results obtained by firms. The overall influence on employees' behaviours will therefore depend on how intensively firms invest in HRM.

Secondly, nowadays HRM strategy cannot be designed independently from ICTs, which have become increasingly prevalent in workplace life. ICTs are positively associated with HRM practices such as team work or people management (Askenazy et al., 2006; Bloom et al., 2012). Adopted together, HRM practices and ICTs make the organization more adaptive and increase firm performance (Askenazy et al., 2006; Bloom et al., 2014; Bresnahan et al., 2002; Brynjolfsson and Hitt, 2000; Caroli and Van Reenen, 2001; Dessein and Santos, 2006; Milgrom and Roberts, 1990). As underlined by Bloom et al. (2014), the technologies implemented to optimize the workplace environment are those that facilitate information access inside the firm (such as ERP – enterprise resource planning) and those that reduce internal communication costs (such as intranet). Moreover, internet and emails strengthen access to external information and knowledge.

Theoretical frameworks have been developed to explain how the workplace environment influences employees' attitudes. They focus mainly on the HRM strategy, but ICTs are closely associated with this and can apply to the organizational and technological strategy built by the employer. First, in the tradition of mutual gains, the quality of the workplace environment shaped by HRM and ICTs is a way of convincing employees that their work values and contribution are recognized (Batt, 2004; Kalmi and Kauhanen, 2008; Osterman, 2000). Second, in social exchange theory, the organizational and technological strategy sets up a positive exchange relationship implying trust, in which employees reciprocate (Blau, 1964). Third, in the job demands–resources model, while demands are the 'things that have to be done' (Schaufeli and Bakker, 2004: 296), HRM practices and ICTs can act as resources to reduce job demands costs and stimulate employees' personal growth. Fourth, according to the psychological contract perspective (Rousseau, 1990, 1995; Sturges et al., 2005), the organizational and technological strategy shapes the psychological contract by influencing employee and employer promises fulfilment (Suazo et al., 2009). Through the investment in their organizational and technological strategy, employers indeed create a positive workplace environment that reflects how they see their employees. Investing in employees, giving voice, responsibilities, reducing work–family conflict inherently involve a long-term relationship and show that the employers see their employees as being part of the permanent staff and fulfil the relational part of the psychological contract. Monetary and non-monetary incentives (Eriksson and Kristensen, 2014), which are in essence targeted and available short-term, fulfil the transactional part of the psychological contract. Fifth, the organizational and technological strategy, by giving employees responsibilities via team working, raising their competence through training and social affiliation via participation practices such as meetings between management and staff and coordinating ICT tools, also echoes the self-determination theory (Deci and Ryan, 1985). By fulfilling the three basic psychological needs for

autonomy, competence and social affiliation, HRM practices and ICTs should improve employees' motivations and other attitudes (Baard, 2004; Marescaux et al., 2013).

The main underlying assumption in all these theoretical frameworks is that employees reciprocate to a positive workplace environment built by the employer. Moreover, it is well established by both survey and experimental data that reciprocity is a motivating factor for employees (e.g. Fehr et al., 1997; Gould-Williams, 2007).

Based on these theoretical frameworks, the following hypothesis is proposed:

Hypothesis 1: The organizational and technological strategy is positively associated with employees' reciprocity.

The relationship between the workplace environment and on-the-job search behaviour

A major stream of empirical research on labour turnover has examined employees' turnover intentions. While it has been shown that management practices lead to lower firm-level quit rates (Batt et al., 2002; Haines et al., 2010; Huselid, 1995) and encourage non-performers to leave the firm (Jones and Wright, 1992), existing empirical research pays attention to only a few facets of the workplace environment. Scholars indeed focus on either working conditions, or specific management practices. First, it has been shown that adverse working conditions (such as harm, hazard), poor promotion prospects, discrimination and low social support are positively related to employees' on-the-job search (Böckerman et al., 2013; Griffeth et al., 2000). Second, scholars that studied human resource management practices focus on specific practices. Cottini et al. (2011) underline that granting voice to employees decreases their probability of voluntary turnover. Green et al. (2000) show that training provided by employers decreases employee turnover intention. Marescaux et al. (2013) observe that training, career development, direct employee participation and developmental appraisal are negatively related to turnover intention of employees. Garcia-Serrano (2004) shows that autonomy, and participation in firm life, including training and knowledge about the objectives of the firm, diminish turnover intention. Delfgaauw (2007), meanwhile, points out that dissatisfaction in relation to autonomy, responsibility, financial prospects, training and organizational management increases on-the-job search of public sector employees.

Empirical evidence on HRM practices taken as a bundle underlines positive links with employee attitudes such as job satisfaction, organizational commitment, involvement, organizational citizenship, pride or motivation (Bauer, 2004; Böckerman et al., 2012; Brown et al., 2008; Gallie et al., 2001, 2012; Godard, 2001; Guest, 1999; Kalmi and Kauhanen, 2008; Macky and Boxall, 2007; Martin, 2017; Martin and Omrani, 2015; Mohr and Zoghi, 2008; Ramsay et al., 2000; White and Bryson, 2013). The analysis of the relationship between the HRM strategy and on-the-job search that is largely ignored in existing studies constitutes one of the contributions of the article to the literature.

Regarding ICTs, the literature has examined the linkage of employee behaviours with only a few technologies used at work – mostly computer, internet and email use (Gallie et al., 2001; Martin, 2017; Martin and Omrani, 2015; Mohr and Zoghi, 2008). In the most recent studies, internet and email appear to be positively linked with employees' attitudes

such as job satisfaction and extra effort (Martin and Omrani, 2015), as are workflow and intranet with intrinsic motivation, whereas groupware is negatively related to intrinsic motivation (Martin, 2017). On the other hand, an increased use of ICTs for professional purposes may also be associated with the blurring of work–life boundaries and stress. Positive relationships between ICTs and work–family conflict or stress (especially email use) have indeed been underlined (e.g. Fenner and Renn, 2010; Mark et al., 2016; Schieman and Young, 2013). Moreover, in the tradition of skill-biased technological change literature, technological changes disadvantage low skilled employees (Bauer and Bender, 2004; Bresnahan et al., 2002; Caroli and Van Reenen, 2001; Chennels and Van Reenen, 2002). The assessment of the relationship between ICTs and on-the-job search is untested in existing studies, and this is another contribution the article hopes to make to the literature.

Based on empirical evidence, I hypothesize the following:

Hypothesis 2a: Turnover intention is expected to be negatively related to HRM.

Hypothesis 2b: The relationship between ICTs and turnover intention is indeterminate.

The role of employees' motivations

As motivated employees are those who provide a high degree of effort, which is needed to increase firm performance (e.g. Gagné and Deci, 2005), it is important to analyse their turnover intention, and this is one of the aims of the article.

Social psychology researchers and especially Deci and Ryan (2000) provide a theory that defines sources of motivation and the role of each type in individual development – the self-determination theory. Two main types of work motivation are distinguished: autonomous motivation and controlled motivation. The first type covers not only the intrinsic motivation, i.e. performing an activity for its own interest, but also identified regulation, i.e. exerting effort due to identification with job values, or alignment with individual goals. The second type encompasses not only the extrinsic motivation, i.e. exerting effort to obtain a reward or avoid a sanction, but also the introjected regulation, i.e. performing a task due to self-worth contingencies.

Researchers in the tradition of the self-determination theory and models of behavioural economics reveal that autonomous motivation is associated with employees' positive behavioural outcomes such as affective commitment, intra and extra-role performance (see the reviews by Gagné and Deci, 2005; Kuvaas et al., 2017). They suggest that 'autonomous motivation … is superior in situations that include both complex tasks that are interesting and less complex tasks that require discipline. When a job involves only mundane tasks, however, there appears to be no performance advantage to autonomous motivation' (Gagné and Deci, 2005: 347). Thus, for all tasks except mundane tasks, autonomous motivation outweighs controlled motivation in terms of performance. Gómez-Miñambres (2012) shows that intrinsic motivation leads individuals to achieve their highest productivity. Minkler (2004) underlines that autonomous forms of motivation increase the likelihood of keeping to the contract of best effort.

On the contrary, as shown by Kuvaas et al. (2017) and Gagné et al. (2010), the only employee behaviours positively correlated with controlled motivation is continuance commitment (i.e. staying in the current organization 'to avoid costs associated with leaving', Meyer et al., 2002: 39). The relationship between controlled motivation and individual work performance is indirectly highlighted in the literature. Behavioural economics experiments reveal that, indeed, it is for the uninteresting tasks that do not embed autonomous motivation such as simple, standardized and easily rewardable tasks that there is a positive effect of monetary incentives on performance, suggesting that controlled motivation matters for such tasks (Bareket-Bojmel et al., 2014; Weibel et al., 2010). As many current jobs in industrialized countries are not based on strictly defined and quantifiable measures of individual performance but are much more multidimensional and not completely undertaken by each individual alone, the link with individual work performance can be negative. Indeed, Kuvaas et al. (2017) show that in two business activities (gas stations and financial companies) extrinsic motivation is negatively related to individual work performance and affective commitment. In this context, this type of motivation even if it is not necessarily bad, will not be a highly desired attribute for the employer.

Therefore, it is fundamental for employers to stimulate work motivation and preferably the autonomous form and to find a way to retain autonomously motivated employees through investments in HRM and ICTs. Nevertheless, the role of the workplace organizational and technological environment in strengthening employees' motivation remains largely untested. Godard (2001), without disentangling the type of motivation, shows that an intensive participation in HRM practices is positively related to motivation. Martin (2017) provides some interesting results on how HRM practices and ICTs can influence employees' motivations but has no results on turnover intention. Employees with high autonomous motivation (intrinsic motivation or identified regulation) are motivated by HRM practices that satisfy one of the three basic psychological needs of: autonomy (e.g. flexible work time, telework, team working), competence (through trainings) and social affiliation (e.g. team working, formal appraisal), and intensive participation is also positively related. Technologies that reduce the cost to communicate and to have access to information (workflow, intranet, internet, email, but not groupware) are positively related to autonomous motivation and the use of a large number of technologies is also positively related. Employees with high controlled motivation (external or introjected regulation) focus more on the transactional part of the psychological contract with their employer. They indeed positively react to monetary incentives, but also to HRM practices that can be linked to potential sanction directly via the manager, i.e. formal appraisal, or indirectly via peers in team working. Technologies related to a reduction of the cost to access information such as workflow and internet are positively related to controlled motivation and the use of a large number of technologies is slightly positive.

Based on empirical evidence, I hypothesize the following:

Hypothesis 3: HRM and ICTs are positively related to employees' motivations.

Moving on to the turnover intention by type of employees, since the seminal work of Freeman (1978) and Akerlof et al. (1988), the literature on turnover intention puts a large

amount of emphasis only on dissatisfied employees. They underline that job dissatisfaction is a good predictor of turnover intention or actual separation (Clark, 2001; Clark et al., 1998; Delfgaauw, 2007; Green, 2010; Kristensen and Westergaard-Nielsen, 2006; Lévy-Garboua et al., 2007; Pissarides and Wadsworth, 1994; Sousa-Poza and Henneberg, 2004). From these previous studies, it is well established that dissatisfied employees have a higher willingness to quit their current employer.

Gagné and Deci (2005) and Karasek and Theorell (1990) argue that motivated employees have lower turnover intentions, especially those that are autonomously motivated, but do not provide empirical evidence.[1] The underlying hypothesis is that beyond the increase of individual performance, autonomous motivation energizes employees and protects them against stress and negative emotions (Gagné et al., 2010). Focusing on intrinsic motivation, Dysvik and Kuvaas (2008, 2010) and Kuvaas et al. (2017) show, on data collected in specific business sectors (medical technology, finance, services or industries), that this motivation reduces employee turnover intention.

In the self-determination theory tradition, employees motivated by controlled motivation act to obtain rewards and avoid punishment that can negatively affect their emotional and psychological states. Focusing on extrinsic motivation, Gagné et al. (2010) show that, for correctional officers working at a Canadian prison, this motivation is positively related to psychological distress. Lemyre et al. (2007) underline that extrinsically motivated elite athletes are more susceptible to burnout. Kuvaas et al. (2017) or Vansteenkiste et al. (2007) (on administrative staff of a community) reveal that extrinsic motivation or extrinsic work-value orientation is positively associated with turnover intention. Hence, the following hypotheses are proposed:

Hypothesis 4a: Autonomous motivation is negatively related to turnover intention.

Hypothesis 4b: Controlled motivation is positively related to turnover intention.

Whereas the relationships between organizational and technological practices and motivation or turnover intention have been the object of some empirical analyses, the links between the workplace environment and turnover intentions of motivated employees remain untested. This constitutes another contribution of the article to the literature. Nevertheless, grounded in the literature related to the workplace environment and employees' motivation and turnover intention and according to Hypotheses 2a and 2b, autonomously motivated employees are those that should positively react to the positive organizational workplace environment built by their employer. And the organizational workplace environment should strengthen their willingness to stay. Depending on the weight of the perverse effects of ICTs compared to their benefits, the technological environment can be positively, negatively or neutrally related to their turnover intention. For employees with controlled motivation, as they stay in a job for reasons of necessity, and are subject to negative emotions and psychological distress, it is not simple to determine if the organizational and technological workplace environment thwarts or reinforces the positive relationship with turnover intention stated in Hypothesis 4b.

The following hypotheses are proposed:

Hypothesis 5a: For autonomous motivation, the organizational workplace environment is negatively related to turnover intention.

Hypothesis 5b: For controlled motivation, the relationship between the organizational workplace environment and turnover intention is indeterminate.

Hypothesis 5c: The relationships between the technological workplace environment and turnover intention related to employees' motivations are indeterminate.

Empirical strategy

Data

The opportunity to conduct this analysis was provided by an original data set coming from the 'Survey on Working Conditions and Quality of Work Life' (QVT) collected in 2013 by the Luxembourg Institute of Socio-Economic Research (LISER) (formerly CEPS/INSTEAD) on behalf of the National Social Security Ministry in line with the guidelines provided by the MEADOW Consortium (2010). The representative random sample was drawn from the exhaustive administrative database of the National Social Security Department. A stratified sampling strategy, on employees working in Luxembourg aged at least 15 years, was used in order to question at least one employee from all organizations in the private sector with a minimum of 15 employees. The non-compulsory survey was conducted online between March and June 2013 in four countries (Luxembourg, Belgium, France and Germany) and three languages (French, German and English). Approximately 60,000 employees were surveyed and around 26% participated. Because of job switching between the time of the sample selection and when the survey was conducted, missing information on a large number of survey items for some respondents and the exclusion of employees with less than 12 months' tenure in the current organization, the final sample size was 14,248 employees. The data set was supplemented with administrative data from the National Social Security Department to characterize the firm in which the employee works. Observations are weighted to ensure that the distributions by country of residence, nationality, gender, age, white and blue collar, economic activity and size of the firm in which the employee works are representative of people at work in the private sector, whether they are resident (about 47% of the working population) or cross-border employees (about 53% of the working population). Thus, the results do not concern only Luxembourgish employees (18% of the studied population) but also employees from other nationalities: French (31%), Belgian (15%), Portuguese (14%), German (13%) and other (9%). It should be noted that the Luxembourgish labour market offers the best employment opportunities for employees (at least in terms of wages and labour market dynamics) compared to the cross-border labour markets. Like most existing data used to study the workplace environment, employees' attitudes and on-the-job search, the data are cross-sectional, thus the analysis tests the strength of conditional correlations and not causal relationships.

Measuring motivations

The survey includes the Motivation at Work Scale (MAWS) developed and validated by Gagné et al. (2010) based on the self-determination theory (Deci and

Table 1. Components of work motivation indexes.

Variable name	Measurement	Mean	SD	Median
External_1	Because of sanctions (being fired because of low effort)	5.06	3.39	5
External_2	Because of the pay-cheque	6.54	2.89	7
External_3	Because it allows me to get rewards (bonuses or promotion)	3.87	3.40	4
Introjected_1	Because otherwise I feel bad about myself	6.91	3.15	8
Introjected_2	Because I have to prove to myself that I can do it	5.86	3.35	7
Introjected_3	Because my reputation depends on it	5.21	3.39	6
Identified_1	Because this job fulfils my career plans	4.59	3.17	5
Identified_2	Because it allows me to reach my personal goals	4.83	3.32	5
Identified_3	Because this job fits my personal values	5.37	3.19	6
Intrinsic_1	Because I have fun doing my job	6.63	2.89	7
Intrinsic_2	Because my job is stimulating	5.11	3.07	5
Overall work motivation α = .84	Index based on the 10 items retained: $M(i) = \sum_{j=1}^{10} cl_j x_j(i)$; where cl_j gives the coordinates of the items on the first factor and $x_j(i)$ the values taken by the responses given by each employee (*i*) to the items	31.93	12.83	33
Controlled motivation α = .67	Similar formula based on the 5 items of controlled motivation revealed by the second factor	12.51	5.04	13
Autonomous motivation α = .88	Similar formula based on the 5 items of autonomous motivation revealed by the second factor	19.42	9.38	21
Observations		14,248		

Notes: Weighted statistics. Descriptive statistics and Cronbach's alpha (α) are prior to standardization. The related question in the survey is '*Using a scale from 0 to 10, please indicate from the following statements to what extent they apply to you. I dedicate myself to my work …*'.

Ryan, 1985, 2000). It covers the spectrum of work motivation. Employees exert effort because the tasks are interesting and enjoyable (intrinsic motivation), because the job corresponds to their values and goals (identified regulation) or because of guilt or to maintain their self-esteem (introjected regulation) and, in addition, to obtain rewards (external regulation). The 11 separate items comprising this spectrum are summarized in Table 1. Factor analysis is used to create a measure of employee work motivation based on the number of meaningful common factors. As shown in Figure 1, the factor analysis indicates that the first factor describes the average employee position on the spectrum of motivation because it affects the responses to all items positively. The second factor separates autonomous motivations (identified regulation and intrinsic motivation) from controlled motivations (external and introjected regulation), which is consistent with the research in conceptualizing motivations (Deci and Ryan, 2000; Gagné et al., 2010). The variable 'external_1' is not well explained by the two factors (uniqueness

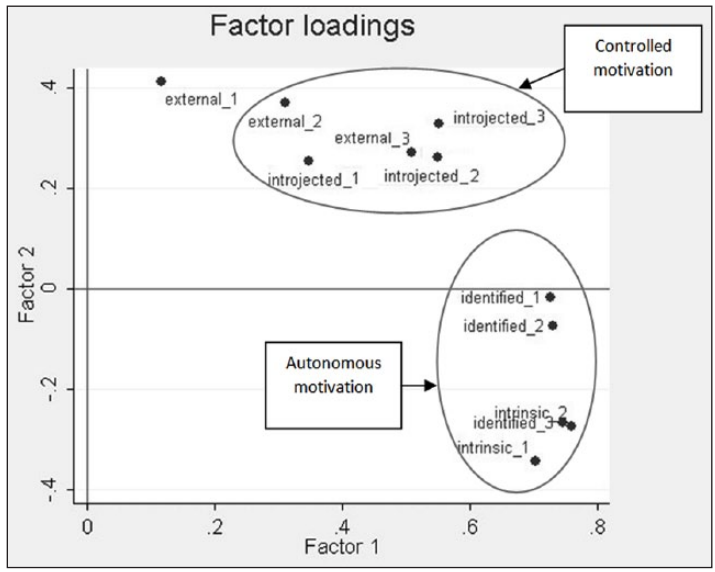

Figure 1. Factor loading of the work motivation items.
Reading guide: The work motivation items labels are described in Table 1. Factor 1 describes the spectrum of motivation. Factor loadings of Factor 2 reveal the distinction between the two clouds of motivation items, i.e. autonomous motivation and controlled motivation while 'external_1' (motivated because of sanctions) is excluded.

above 0.7) and is discarded. The consistency of Cronbach's alpha (α in Table 1) is good for autonomous motivation and acceptable for controlled motivation (Hair et al., 2006). The indexes used in the empirical analyses are constructed as described in Table 1 and are standardized via *z*-score (i.e. by subtracting the mean and dividing by standard deviation).

Work motivation and on-the-job search behaviour

Empirical evidence revealed by social psychology research shows that for all tasks undertaken by employees (except mundane ones) autonomous forms of motivation are associated with positive attitudes and better performance compared with controlled motivation (Gagné and Deci, 2005; Kuvaas et al., 2017). From a managerial point of view, it is thus fundamental for employers to retain autonomously motivated employees while encouraging non-motivated employees and those motivated by external reasons to leave.

The data set gives no information on actual turnover but as shown by Böckerman and Ilmakunnas (2009) and Kristensen and Westergaard-Nielsen (2006), on-the-job search is a strong predictor of actual turnover. The on-the-job search behaviour measure is close to that of Delfgaauw (2007): '*Have you tried to leave your current job in the last 12 months?*' with three possible answers '*No, not at all*', '*Yes, I have been looking around*', '*Yes, I have intensively searched*'. As only less than 6% of the weighted sample declared

the third answer, a dummy variable of on-the-job search was constructed and grouped together the two last answers (32.6% of the weighted sample).

Participation in HRM practices and use of ICTs

The studied organizational environment of the employee is in line with papers that analysed how management practices enable the enhancement of employees' attitudes such as job satisfaction, organizational commitment, motivation, citizenship or pride but in which turnover intentions are largely ignored (e.g. Bauer, 2004; Böckerman et al., 2012; Brown et al., 2008; Gallie et al., 2012; Godard, 2001; Guest, 1999; Kalmi and Kauhanen, 2008; Martin, 2017; Martin and Omrani, 2015; Mohr and Zoghi, 2008; White and Bryson, 2013). Based on the bundle view supporting synergistic benefits between HRM practices, the participation of the employee in management practices is captured by a score or bundle of practices. The practices summed in the HRM bundle cover the following domains: participation,[2] team working, development, family-friendly policies and incentives. The technologies used by employees studied are the very ones that have been shown to be implemented by employers to optimize their workplace environment (Bloom et al., 2014): technologies that facilitate internal information access (ERP – enterprise resource planning, workflow) and technologies that reduce internal communication costs (groupware, intranet). ICTs that favour external access to information and knowledge are also included (internet and email). They are measured at the employee level and summed up to calculate the ICT bundle. Appendix Tables A1 and A3 give the descriptive statistics of the HRM practices and ICTs included and the distribution of the bundles. Appendix Tables A2 and A4 show the distribution of the percentage of employees concerned in an HRM practice or who use an ICT for all levels of each bundle. The HRM practices that concern the most employees in the highest level of the HRM bundle are meetings between management and the staff, attitude surveys, quality circles, quality norms, development policy, training, formal appraisal, flexible work time, work–life balance and fringe benefits. The HRM practice that concerns the most employees in the lowest level is job rotation. For the ICT bundle, the technologies that concern most employees in the highest level are ERP, workflow, groupware, intranet and email use for professional purposes.

An interaction term between the two bundles is also studied (specification 2 in the empirical strategy). It captures the parallel diffusion of management practices and ICTs in organizations that can have an additional association with employees' motivations and on-the-job search behaviour.

Control variables

Since individual, job and organization characteristics could affect the results of the analysis, careful control variables are introduced. In line with existing research on job dissatisfaction and turnover intentions, adverse working conditions that can influence employees' motivations are included (Antecol and Cobb-Clark, 2009; Antecol et al., 2009; Böckerman and Ilmakunnas, 2009; Böckerman et al., 2013; Scott et al., 2006;

Shields and Weathley Price, 2002). In line with existing evidence that underlines the role played by outside opportunities in employees' utility in the current job and turnover intentions, measures of outside opportunities are also included (Antecol and Cobb-Clark, 2009; Böckerman and Ilmakunnas, 2009; Clark and Oswald, 1996; Green, 2010; Theodossiou and Zangelidis, 2009). The quality of the match between the employee and the current job, which can also influence employees' attitudes and search decisions, is included (Boxall, 2013; Van Ophem, 1991).[3] Information on these variables is provided in Appendix Table A5.

Estimation strategy

A model inspired by Antecol and Cobb-Clark (2009) and Böckerman and Ilmakunnas (2009) constitutes the estimation strategy. It investigates, in a first part, the relationships between employees' participation in the HRM strategy of the employer, use of ICTs and work motivation. In a second part, the associations between employees' motivations and on-the-job search are estimated taking into account the role played by HRM and ICTs. This model is recursive in the sense that work motivation(s) explains on-the-job search but on-the-job search does not explain work motivation(s). In a first model, only one equation for the overall work motivation index is introduced (M). In a second model, which disentangles controlled motivation (CM) and autonomous motivation (AM), two equations are introduced.

A model written as follows is estimated (for Model 2 – specification 2):

$$\begin{cases} S_i^* = \alpha_1 CM_i + \beta_1 AM_i + \gamma_1 H_i * CM_i + \varphi_1 H_i * AM_i + \delta_1 H_i + \pi_1 I_i + \omega_1 H_i * I_i + \tau_1 X_i + \varepsilon_{1i}^S \\ CM_i = \delta_2 H_i + \pi_2 I_i + \omega_2 H_i * I_i + \tau_2 X_i + \vartheta_2 Z_i + \varepsilon_{2i}^{CM} \\ AM_i = \delta_3 H_i + \pi_3 I_i + \omega_3 H_i * I_i + \tau_3 X_i + \vartheta_3 Z_i + \varepsilon_{3i}^{AM} \end{cases}$$

where i indexes the employee, S_i^* is the unobserved (latent) measure of on-the-job search behaviour, CM_i and AM_i measure controlled motivation and autonomous motivation, respectively. H_i, I_i are respectively the HRM bundle and ICT bundle observed at the employee level and $H_i * I_i$ is the interaction term between the two bundles. In specification 2, interaction variable(s) between work motivation measure(s) and HRM bundle $(H_i * CM_i + H_i * AM_i)$ are added. Further, X_i includes adverse working conditions variables, outside opportunities proxies, matching quality indicators and other control variables about employee, job and organization characteristics (and a constant) included in all models, and Z_i includes the instruments (described below) which are only included in the motivation equation(s) as the exclusion restriction. $\varepsilon_i^{CM}, \varepsilon_i^{AM}, \varepsilon_i^S$ are random errors normally distributed.

Because of the potential behavioural correlations between being motivated and searching for another job, an instrumenting strategy is implemented. Identification and

consistent estimation of the above model depend on the lack of correlation between, on the one hand, potentially endogenous motivations and, on the other hand, the error term of the on-the-job search equation, or on the availability of instruments correlated with potentially endogenous motivations and uncorrelated with the error terms of the on-the-job search equation. The choice of instruments has empirical and theoretical appeal (Deci and Ryan, 1985; Gagné and Deci, 2005; Gagné et al., 2010). Based on the self-determination theory and empirical results on it and beyond the HRM practices covered by the HRM strategy, task discretion, work dependence with colleagues, feedback from the superior and quintile of hourly wages, which can be sources of the three basic psychological needs of autonomy, competence and social affiliation that must be fulfilled to support motivation and are not supposed to be related to the error term of the on-the-job search equation, are used as instruments. Following Antecol and Cobb-Clark (2009), the validity of this exclusion restriction is explored by using two-stage least squares regression analysis (2SLS), which estimates independently a linear probability specification of on-the-job search using sources of basic needs as excluded instruments and motivation indexes as endogenous. Appendix Table A6 provides indicative tests for Model 2 – specification 2 (disentangling controlled and autonomous motivations). The *F*-statistics from the first-stage regressions exceed 10, which is indicative that weak instruments are not a particular concern (Staiger and Stock, 1997). The over-identification tests reveal that the excluded instruments are not incorrectly omitted from the estimation equation of on-the-job search (Baum et al., 2007).

The two or three equations (depending on the model of the estimation strategy) form a system of continuous (motivation indexes) and binary (on-the-job search) dependent variables with potentially endogenous explanatory variables (motivations). It is assumed that all equations include unobserved heterogeneity and therefore the error terms of the two (or three) equations are allowed to be correlated. Because of the recursive structure and assuming normally distributed errors, the model is estimated using the conditional recursive mixed process estimator based on the Geweke–Hajivassiliou–Keane (GHK) simulated maximum likelihood estimator implemented in Stata by Roodman (2011). Moreover, the model is estimated with robust standard errors that are clustered at the firm level to correct for the fact that some employees are employed by the same employer and therefore the observations may not be entirely independent.

Results

The main results are summarized in Table 2.[4] Two models are estimated and vary only at the level of motivation measures: (i) the first model includes the overall work motivation index (M), (ii) the second model disentangles controlled motivation (CM) from autonomous motivation (AM). For each model, Table 2 reports two specifications: specification 1 including work motivation measures, HRM bundle, ICT bundle and an interaction variable between the two, and in specification 2 interaction variable(s) between work motivation measure(s) and HRM bundle are added to deepen the analysis of how the HRM and ICT strategy permits to retain or push employees towards the exit. The average marginal effects are reported for on-the-job search (which is estimated with a probit model in the system of equations) in columns (2), (4), (7) and (10)

Table 2. HRM, ICT, work motivation and on-the-job search.

	Model 1				Model 2					
	Specification 1		Specification 2		Specification 1			Specification 2		
	Overall work motivation	On-the-job search	Overall work motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Overall work motivation (M)		−0.10***		−0.09***						
		(0.016)		(0.019)						
Controlled motivation (CM)							0.24***			0.21***
							(0.0378)			(0.0405)
Autonomous motivation (AM)							−0.22***			−0.18***
							(0.0174)			(0.0222)
HRM bundle (H)	0.12***	−0.02***	0.12***	−0.02***	0.084***	0.12***	−0.02***	0.08***	0.12***	−0.02***
	(0.0063)	(0.0040)	(0.0063)	(0.0042)	(0.0066)	(0.0062)	(0.0033)	(0.0066)	(0.0062)	(0.0034)
H*M				−0.003*						
				(0.0017)						
H*CM										0.004***
										(0.0015)
H*AM										−0.01***
										(0.0017)
ICT bundle (I)	0.06***	0.04***	0.06***	0.04***	0.057***	0.05***	0.019**	0.06***	0.05***	0.016**
	(0.0157)	(0.0075)	(0.0157)	(0.008)	(0.0157)	(0.016)	(0.008)	(0.0157)	(0.016)	(0.0079)
I*M				0.0006						
				(0.0026)						
I*CM										−0.00002
										(0.0021)
I*AM										0.001
										(0.0023)
H*I	−0.01***	−0.001	−0.01***	−0.001	−0.01***	−0.01***	−0.0001	−0.01***	−0.01***	0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.0009)

(Continued)

Table 2. (Continued)

	Model 1				Model 2					
	Specification 1		Specification 2		Specification 1			Specification 2		
	Overall work motivation	On-the-job search	Overall work motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Instruments	Yes	No	Yes	No	Yes	Yes	No	Yes	Yes	No
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rho M-job search	0.126** (0.0509)		0.126** (0.0508)							
Rho CM-job search					–0.573*** (0.145)			–0.572*** (0.144)		
Rho AM-job search					0.101** (0.0423)			0.0959** (0.0420)		
Rho CM - AM					0.517*** (0.0113)			0.517*** (0.0113)		
Log L	–25952.95		–25951.13		–43295.65			–43283.11		
Wald χ^2	7847.79***		7854.93***		14339.11***			14268.83		
Pseudo R^2	0.12		0.12		0.09			0.09		
Observations	14,248		14,248		14,248			14,248		

Notes: Each column of the table reports the key variables of interest in the model. The unreported results are available on request. Robust standard errors clustered at the level of working in the same organization are in parentheses. Weighted estimations. Columns (2), (4), (7) and (10) report average marginal effects; other columns report coefficients. Rho are correlation parameters between error terms of equations. * significant at 10%; ** significant at 5%; *** significant at 1%.

while other columns report coefficients (which are estimated with continuous maximum likelihood estimators).

Correlation coefficients between the error terms of all equations are given at the bottom of Table 2. Significant correlation terms between errors terms of the equations suggest that unobserved heterogeneity across equations leads to bias results obtained with independent regressions. In particular, there is a positive and significant correlation between the error terms of autonomous motivation and on-the-job search equations while the correlation is significant and negative between controlled motivation and on-the-job search equations.

The relationships between the workplace environment and employees' motivations

The results are in line with the theoretical frameworks of mutual gains, social exchange theory, job demands–resources model, psychological contract and self-determination theory (Blau, 1964; Deci and Ryan, 1985; Osterman, 2000; Rousseau, 1995; Schaufeli and Bakker, 2004) as stated in Hypothesis 1, and empirical evidence summarized in Hypothesis 3. Employees indeed reciprocate to the organizational and technological workplace environment created by their employer by increasing their motivations. In detail, in Model 1, the reported results underline that both the HRM and the ICT bundles are each positively related to the overall work motivation index, while the combined intensity of both bundles is negatively related. This result is consistent with that of Martin (2017). It suggests that it is lightly detrimental to both participate in HRM practices and use ICTs intensively. When the distinction between the controlled and the autonomous part of employees' motivations is made in Model 2, the same results are observed. HRM and ICTs taken separately contribute to create a motivational environment but a high number of the two is lightly detrimental.

The relationship between the workplace environment and on-the-job search behaviour

The results are in line with Hypothesis 2a and reveal a link between the ICT bundle and on-the-job search that is indeterminate in Hypothesis 2b. The results of Model 1 show indeed a direct negative relationship between the HRM bundle and on-the-job search and a positive relationship between the ICT bundle and on-the-job search.[5] In Model 2, the distinction between controlled and autonomous motivations provides similar results. HRM investments support employers to retain employees in their current job. This result is in line with the empirical evidence underlining negative associations between some HRM practices and turnover intention (e.g. Cottini et al., 2011; Green et al., 2000).

Looking more closely at the practices that receive the highest scores in the HRM bundle (see Appendix Table A2 for details), it is important that employees are encouraged to participate in workplace life (meetings, attitude surveys and quality circles), to take advantage of opportunities offered by employers for career development (such as training and formal appraisal) and for work–life reconciliation (such as flexible work time) and to obtain fringe benefits.[6]

Conversely, the increase in motivations linked to the ICT bundle may be outweighed by the positive link of the ICT bundle with on-the-job search. The work–family conflicts and/or stress that can be generated by an intensive use of all the ICTs covered in the present analysis (except internet use, see Appendix Table A4 for details) seem to push employees to search for a new job (e.g. Schieman and Young, 2013).

This result for ICTs is deepened by the results of other variables included in the model, and especially the matching quality variables about ICT skills (the results are reported in Appendix Table A7). They underline that being over-skilled in ICT increases the probability of searching for another job. This result reflects higher employment opportunities on the market for employees over-skilled in ICT related to the fact that high ICT skills are largely sought by employers in the current context of digitalization of jobs (Brynjolfsson and McAfee, 2016). On the contrary, and in line with the skill-biased technological changes literature (e.g. Chennels and Van Reenen, 2002), being under-skilled in ICT pushes employees towards the exit. The interaction term between the HRM bundle and the ICT one is not significant.

The potential endogeneity of HRM (or ICTs) in on-the-job search due to reverse causality is a standard issue for any analysis with such variables as independent variables and this analysis is not immune to this issue. Nevertheless, as underlined by Batt et al. (2002), the negative effect of HRM on quit rate remains significant after taking into account the potential presence of reverse causality. Moreover, as stated by Cottini et al. (2011: 877), 'it is not obvious that [HRM practices (called HIWPs in their paper)] are adopted by those firms with already low employee turnover'.

The role of employees' motivations in on-the-job search behaviour

The results related to the type of employee motivation are in line with the self-determination theory (e.g. Gagné and Deci, 2005), as stated in Hypothesis 4a and Hypothesis 4b. They support the fact that the two types of motivations need to be disentangled as they have opposite relationships with on-the-job search. The present study, which enlarges the spectrum of employees' motivations assessed in recent studies like those conducted by Kuvaas et al. (2017), shows that the highly motivated are less likely to search. When the two facets of work motivation are disentangled, the results presented in columns (7) and (10) of Table 2 stress that autonomously motivated employees are more likely to stay. On the contrary, employees motivated by reasons of reward and compulsion have a higher likelihood to search for another job. This result is in line with those of Kuvaas et al. (2017) and Vansteenkiste et al. (2007), focusing on the link between extrinsic motivation (or extrinsic work-value orientation) and turnover intention.

Specifications 2 of the models, which include interaction variables between the HRM bundle and motivation measures, emphasize interesting additional results. The results in column (4) show that HRM practices reinforce the desire to stay with the employer among intensively motivated employees. The results in column (10) reveal that autonomously motivated employees are those who are more likely to stay, in line with Hypothesis 5a. Furthermore, even if the HRM bundle increases controlled motivations, it appears that the HRM strategy has a turnover-increasing effect on those employees and it reveals a link that is indeterminate in Hypothesis 5b. The organizational

workplace environment does not seem to thwart the relationship, shown in the literature, between extrinsic motivation and continuance commitment (Gagné et al., 2010; Kuvaas et al., 2017) to obtain a positive relationship with affective commitment that can retain those employees. Moreover, they can be attracted by external job opportunities and especially those with better wages, as indirectly highlighted by the fact that the control variable 'better wages in the sector than in the firm' is positively related to on-the-job search (see Appendix Table A7).

Specifications 2 of the models, which include interaction variables between the ICT bundle and motivations, reveal that ICT interactions with motivation type do not provide significant results (columns (4) and (10)). This result suggests a neutral influence of motivation in the positive relationship between the ICT bundle and turnover intention (Hypothesis 5c).

A final comment is required about the issue of the potential self-selection into jobs of autonomously motivated employees based on the publicly available information on the management practices and technologies of the firm. They could attract autonomously motivated employees, strengthen their motivation and retain them. The available data do not permit to resolve this issue.

Robustness checks[7]

To measure the impact of accounting for the potential endogeneity of motivations and the control for the unobserved heterogeneity across equations, the reduced-form of models presented in Table 2 is estimated. The main results about HRM, ICT bundles and on-the-job search behaviour of motivated employees are not modified. Given that the significant correlations in the error terms across equations are not zero, it is not surprising that single equation estimates of motivation(s) are smaller than those resulting from the results presented in Table 2. The HRM bundle remains negative and statistically significant, the ICT bundle positive and significant. Autonomously motivated employees remain those who want to stay in their current job, while controlled motivated employees want to quit their current job. The turnover-increasing effect of HRM on controlled motivated employees and the turnover-reducing effect of HRM on autonomously motivated employees remain. Nevertheless, in this specification, the average marginal effect associated with controlled motivation disappears, suggesting the need to take into account the correlations between the two types of motivations to disentangle on-the-job search behaviour of those mainly motivated by internal reasons from those mainly motivated by external reasons.

In a second robustness check, the overall measure of job satisfaction instead of work motivation(s) is studied. As the overall job satisfaction measure is highly correlated with the autonomous motivation measure (correlation coefficient of 0.6155 and significant at the 1% level), it is not surprising to observe the same pattern of results between the participation in HRM and the use of ICTs and the measure of autonomous motivation. Nevertheless, the average marginal effect of job satisfaction in the on-the-job search equation is smaller than that of autonomous motivation shown in Table 2.

In a third robustness check, other bundles are created to introduce only the core High Involvement Management (HIM) practices (participation, team work, training, incentive

pay) as defined, for example, by Kalmi and Kauhanen (2008), and the core ICTs (internet and email excluded) as defined by Bloom et al. (2014). The main results are not modified.

Conclusion

Analysis of the on-the-job search behaviour of employees is important as employee turnover is costly for employers, especially if the motivated employees choose to quit their current job. Motivated employees, and especially the autonomously motivated ones, who are, indeed, the ones assumed to provide the highest level of work effort, are a valuable resource for firms and need to be retained. In recent decades, the turnover intention of employees has attracted the attention of human resource management, organizational psychology, labour, behavioural and personnel economics scholars. The main result underlined by the literature is that satisfied employees are those who have no intention of leaving their current employer. But being satisfied does not necessarily mean that the employee is motivated and exerts a high degree of effort. To motivate their workforce and retain the motivated employees, employers could invest in a motivational organizational environment, but with what outcome?

This article adds to the literature in two major ways. First, while the working environment of employees has been captured by previous research mostly through adverse working conditions or at best a narrow range of management practices and of technologies, this article analyses the role played by participation in the human resource management strategy of the employer and the use of technologies taking into account adverse working conditions and controlling for a large set of employee, job and current employer characteristics. The underlying assumption is that employees have a positive motivational response to HRM and ICTs due to reciprocity (Fehr et al., 1997), as sustained by various theoretical frameworks: mutual gains, social exchange theory, job demands–resources model, psychological contract and self-determination theory (Blau, 1964; Deci and Ryan, 1985; Osterman, 2000; Rousseau, 1995; Schaufeli and Bakker, 2004).

Second, conversely to previous research studies that mainly focus their attention on job satisfaction in the analyses of turnover intention, I introduce the whole spectrum of work motivations which are the key drivers of employees' productivity efforts. The inclusion of the self-determination theory (Deci and Ryan, 1985, 2000; Gagné and Deci, 2005; Gagné et al., 2010) in labour market analysis provides new ways of characterizing employees: on the one hand, there are employees who exert effort because of autonomous motivation based on values, identification and intrinsic reasons, and, on the other hand, there are employees who exert effort because of controlled motivations based on rewards and out of feelings of compulsion. Autonomous motivation is a desirable attribute of employees for managers as those employees exert positive behaviours at work (such as cooperation, information sharing, commitment and high intra- and extra-role performance). Conversely, employees mainly driven by their controlled motivation are less sought by employers as they exert only one positive behaviour at work, that is continuance commitment (i.e. staying in the current job to avoid the costs related to quit; Kuvaas et al., 2017).

I took advantage of a recent original survey collected in 2013 to analyse the relationships between the participation in HRM practices, ICT use, motivations and on-the-job

search among employees working in the private sector of a Western European service economy, namely Luxembourg. The results do not concern only Luxembourgish employees but also employees from other European countries, and especially French, Belgian, German and Portuguese employees.

The main results of the article provide, first, insight into how the participation of employees in the organizational and technological strategy of their firm enhances their work motivations. The HRM bundle and the ICT bundle are, indeed, positively related to all facets of work motivation. Second, the results support the use of motivations in the analysis of on-the-job search. Employees motivated by values, identification and intrinsic reasons are those that do not want to leave. Conversely, employees motivated by reward and feeling of obligation are those that want to quit in order to find a more suitable workplace elsewhere. The participation in HRM is negatively related to the on-the-job search of autonomously motivated employees and, conversely, is positively related to the exit intention of controlled motivated ones.

My findings also have practical managerial implications for employers. First, it is important that employers see autonomous and controlled motivations as separate motives. Second, employers should invest as far as they can in a positive organizational environment. The results posit that the participation in a bundle of HRM practices is fruitful for increasing the work motivations of employees. More specifically, a motivational work environment supposes the recourse to a bundle of management practices that cover information sharing and staff 'pulse-taking' (through meetings, attitude surveys and quality circles), guiding employees in their job (via quality norms), career development activities (including encouraging staff development, training and formal appraisal), family-friendly policies (flexible work time and work–life balance consideration) and fringe benefits. Except training and fringe benefits, the other HRM practices covered in the highest levels of the HRM bundle are not costly to implement. Using technologies that decrease the access cost of information and the cost of communication participates in providing a motivational environment. Nevertheless, this positive link can be outweighed by a positive association with on-the-job search. Employers should find a way to mitigate this positive link by improving their ICT practices. For example, employers should define a charter that requires managers and employees to disconnect from their job after working hours. This should reduce the perverse effect of ICTs in terms of the blurring of work–life boundaries and stress. Furthermore, they should find a way to retain employees over-skilled in ICTs, especially in the current context of the digitalization of jobs (Brynjolfsson and McAfee, 2016).

Moreover, knowledge about the type of employees that intend to leave can help employers to improve retention of highly motivated employees and reduce the costs associated with employee turnover. Autonomous motivation is a desired attribute for firms. Thus, it is reassuring for managers to know that autonomously motivated employees are the ones that want to stay in their current position. Furthermore, with the investments in their HRM strategy employers find a way to retain these employees. Conversely, employees who want to quit their current job are those motivated by external reasons: reward and/or compulsion. The exit of such employees if it happens will not incur high costs for employers as they have been shown in the literature to not perform above autonomously motivated employees except for simple and easily measurable outcomes, are

subject to negative emotions and stay in the current organization mainly because of necessity. Moreover, the HRM strategy defined by managers has a turnover-increasing effect on these employees.

A potential shortcoming of this analysis is that the data set is cross-sectional. The fact that they could only be measured over one period of time, i.e. 2013, introduces some caution in the interpretation of the findings. Analyses that use panel data that permit correction of unobservable time-invariant heterogeneity could further investigate the effect of HRM and ICTs on work motivations and turnover intention of motivated employees. Another avenue for future research is to examine the complementarities between HRM practices, ICT uses and the combination of the two, to promote motivational and productive personnel management in organizations.

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The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Notes

1. Some scholars also provide evidence for the negative links between a concept related to motivations, i.e. organizational commitment and turnover intention (Meyer et al., 2002; Mowday et al., 1982).
2. The low degree of participation in decisions concerning major changes within their firm observed in Table A1 can be explained by the fact that, by law, firms with at least 15 employees (those covered in the sample) need to have a staff delegation. It is the consultation body of the firm and consists of seven members who are elected for a five-year term. Employers have the duty to inform the staff delegation about economic and financial developments and recent and future activities of the firm and to consult and inform the staff delegation on issues relating to working conditions.
3. It has been shown in the literature that work organizational practices are complementary to skills and that technological changes are skill-biased (e.g. Caroli and Van Reenen, 2001; Chennels and Van Reenen, 2002). Measures of matching quality concerning skills, educational level and occupations are included to control for skills in the estimates.
4. The results of all variables included in all models of Table 2 are available in Appendix Table A7.
5. The results (reported in Appendix Table A7) confirm what previous papers have said on the positive relationships between adverse working conditions and employee on-the-job search, especially when the two types of motivation are not disentangled. The foreign nationality of

the employee when significantly related to turnover intention is negative, sustaining the fact that the current job is preferred to the job they can find elsewhere including their country of origin (especially French and Portuguese employees).

6. It should be noted that among the four fringe benefits covered in this article, the most diffused are meal vouchers and supplementary pension/life insurance.
7. All of the results are available on request.

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Appendix

Table A1. Descriptive statistics on the management practices introduced in the HRM and HIM bundle (in %).

Domain name and content	Measurement	Mean	HRM	HIM
Participation				
Meeting between management and the staff	As regards information and communication within your company, how do you rate the usefulness of meeting(s) between employees and management? Very useful or Moderately useful = 1; Not useful or Does not exist = 0	65.83	Yes	Yes
Changes with employees involved	Do you participate in decisions concerning major changes within your company? Yes = 1; No = 0	12.77	Yes	No
Attitude surveys	As regards information and communication within your company, how do you rate the usefulness of internal survey(s) organized by the management? Very useful or Moderately useful = 1; Not useful or Does not exist = 0	41.12	Yes	Yes
Quality circle	Are you involved in a group which meets regularly to identify and resolve problems related to its work? (quality groups or quality circles) Yes = 1; No = 0	23.85	Yes	No
Team working				
Autonomous team work	Based on two survey questions: the employee works in a team of at least 3 individuals with the control of work quality done by team members = 1; otherwise = 0	30.91	Yes	Yes
Job rotation	When you are absent for one week, what proportion of your tasks must you catch up on when you return? Nothing or just a small proportion; Less than half = 1; More than half or Almost all my work = 0	52.15	Yes	No
Quality norms	Must you comply with quality standards (ISO standards, …) = 1; otherwise = 0	58.85	Yes	No
Development				
Development policy	Do you agree or disagree with the following statement: My company encourages its staff to develop their competences and their careers? Agree or Strongly agree = 1 ; Strongly disagree or Disagree = 0	53.01	Yes	No
Training	In the last 12 months, have you attend training related to your work paid by your company? Yes = 1; No = 0	41.60	Yes	Yes

(Continued)

Table A1. (Continued)

Domain name and content	Measurement	Mean	HRM	HIM
Formal appraisal	In the last 12 months, did you have at least one appraisal interview? Yes = 1; No = 0	57.76	Yes	No
Family-friendly policies				
Flexible work time	Do you have flexible working hours (you decide yourself when you start and stop work, taking into account certain daily fixed time slots)? Yes = 1; No = 0	38.24	Yes	No
Work–life balance	Do you agree or disagree with the following statement: My company implements policies which permit a good work–life balance? Agree or Strongly agree = 1; Strongly disagree or Disagree = 0	38.14	Yes	No
Working at home in work hours	Does your company permit you to do work at (or from) home in normal working hours? If yes, do you make use of this possibility? Sometimes or often = 1; Never = 0	7.63	Yes	No
Incentives				
Incentive pay	Do you have a fixed or variable salary (depending on productivity …)? Variable or Fixed + a variable element = 1; Fixed = 0	33.14	Yes	Yes
Fringe benefits	Are the following fringe benefits offered to you? At least one of the following: company car or car fee participation; supplementary pension or life insurance; meal vouchers = 1; otherwise = 0	49.47	Yes	No

Table A1. (Continued)

Domain name and content	Measurement	Mean	HRM	HIM
HRM bundle	0 or 1	3.38		
	2	5.94		
	3	9.75		
	4	10.95		
	5	13.10		
	6	14.05		
	7	12.43		
	8	11.52		
	9	8.26		
	10	5.76		
	11 or more	4.86		
HIM bundle	0	11.22		
	1	21.53		
	2	27.71		
	3	24.96		
	4 or 5	14.58		
Observations		14,248		

Notes: Weighted statistics. All management practices included in the HRM and HIM bundles are binary variables.

Table A2. Descriptive statistics on the percentage of employees concerned in each management practice according to the HRM bundle level (in %).

HRM bundle	Participation				Team working		
	Meetings between management and the staff	Changes with employees involved	Attitude surveys	Quality circles	Autonomous team work	Job rotation	Quality norms
	Mean	Mean	Mean	Mean	Mean	Mean	Mean
0 or 1	0.07	0.00	0.01	0.00	0.04	**0.29**	0.18
2	0.17	0.01	0.05	0.02	0.12	**0.53**	**0.37**
3	**0.30**	0.03	0.11	0.05	0.17	**0.56**	**0.51**
4	**0.47**	0.03	0.19	0.09	0.25	**0.57**	**0.56**
5	**0.60**	0.06	0.29	0.13	0.27	**0.56**	**0.58**
6	**0.71**	0.08	0.38	0.19	0.31	**0.53**	**0.60**
7	**0.83**	0.12	**0.52**	0.26	0.36	**0.51**	**0.63**
8	**0.89**	0.17	**0.62**	0.36	0.38	0.50	**0.64**
9	**0.94**	0.23	**0.71**	0.43	0.43	0.48	**0.67**
10	**0.96**	0.34	**0.81**	**0.55**	0.48	0.51	**0.73**
11 or more	**0.98**	0.59	**0.89**	**0.79**	0.53	0.51	**0.81**

Table A2. (Continued)

HRM bundle	Development			Family-friendly policies			Incentives	
	Development policy	Training	Formal appraisal	Flexible work time	Work–life balance	Working at home in work hours	Incentive pay	Fringe benefits
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
0 or 1	0.02	0.04	0.03	0.02	0.02	0.00	0.06	0.05
2	0.08	0.06	0.12	0.10	0.06	0.01	0.17	0.13
3	0.17	0.13	0.23	0.15	0.16	0.02	0.23	0.21
4	0.25	0.19	**0.38**	0.22	0.18	0.02	0.28	0.32
5	0.38	0.31	**0.48**	0.30	0.27	0.04	0.32	**0.41**
6	**0.55**	0.41	**0.63**	0.37	0.36	0.05	0.32	**0.51**
7	**0.68**	0.49	**0.74**	0.44	0.41	0.07	0.36	**0.58**
8	**0.81**	**0.60**	**0.81**	0.52	**0.56**	0.09	0.36	**0.69**
9	**0.89**	**0.73**	**0.87**	**0.63**	**0.66**	0.14	0.43	**0.76**
10	**0.94**	**0.81**	**0.90**	**0.67**	**0.76**	0.22	0.49	**0.82**
11 or more	**0.98**	**0.90**	**0.95**	**0.82**	**0.87**	0.32	0.62	**0.91**

Notes: Weighted statistics.

Table A3. Descriptive statistics on the ICT introduced in the ICT bundles (in %).

Content	Measurement	Mean	ICT	ICT 2
ERP	Do you use Enterprise Resources Planning (a tool for coordinating employees around the information system)? Yes = 1; No = 0	14.80	Yes	Yes
Workflow	Do you use a Workflow (a tool for coordinating employees around a business process)? Yes = 1; No = 0	15.11	Yes	Yes
Groupware	Do you use a Groupware (an information exchange tool)? Yes = 1; No = 0	24.37	Yes	Yes
Intranet	Do you use an intranet? Yes = 1; No = 0	50.18	Yes	Yes
Internet use	Do you use internet for professional purposes at least 25% of your working time? Yes = 1; No = 0	0.17	Yes	No
Email use	Do you use email for professional purposes? Yes = 1; No = 0	0.55	Yes	No
ICT bundle				
0		38.12		
1		8.79		
2		17.65		
3		17.24		
4		11.40		
5 or 6		6.79		
ICT 2 bundle				
0		44.37		
1		23.94		
2		18.29		
3 or 4		13.40		
Observations		14,248		

Notes: Weighted statistics. All ICT uses are binary variables.

Table A4. Descriptive statistics on the percentage of employees concerned in each ICT according to the ICT bundle level (in %).

ICT bundle	ERP	Workflow	Groupware	Intranet	Internet use	Email use
	Mean	Mean	Mean	Mean	Mean	Mean
0	0.00	0.00	0.00	0.00	0.00	0.00
1	0.05	0.02	0.05	0.36	0.03	**0.49**
2	0.07	0.03	0.11	**0.77**	0.12	**0.89**
3	0.20	0.18	**0.43**	**0.91**	0.32	**0.97**
4	0.40	**0.48**	**0.72**	**0.96**	0.46	**0.98**
5 or 6	**0.75**	**0.86**	**0.93**	**0.99**	0.65	**1.00**

Notes: Weighted statistics.

Table A5. Descriptive statistics of control variables.

Domain, content and mean							
Individual characteristics		**Job characteristics**		**Organization characteristics**		**Outside opportunities**	
Male	0.68	Permanent contract	0.94	15–49 employees (r)	0.25	Local unemployment rate	7.55 (2.56)
Age < 30 years (r)	0.16	Part-time	0.12	50–99 employees	0.14	Better wages in the sector than in the firm	1 (0.16)
Age 30–49 years	0.64	Tenure (in months) (12–590)	123.4 (99)	100–249 employees	0.20	Growth of employment in the sector	0.29 (2.91)
50 years and more	0.20	Experience (in years) (0–50)	19.53 (10.5)	250 employees and more	0.41	Firm in the upper third of employment growth	0.30
Luxembourgish (r)	0.18	Union	0.32	Manufacturing (r)	0.15	**Matching quality**	
German	0.13	Professionals and managers	0.20	Construction	0.15	Training paid alone	0.06
Belgian	0.15	Associate professionals	0.20	Trade, accommodation and food serv.	0.19	Too high educational level	0.27
French	0.32	Administrative and clerical	0.15	Transportation and storage	0.09	Too low skills	0.60
Portuguese	0.14	Sales and service personnel	0.11	IT and communication	0.06	Too low ICT skills	0.08
Other nationality	0.08	Craft	0.15	Finance	0.19	Too high ICT skills	0.19
Living with partner	0.80	Plant operatives	0.09	Other services	0.17		
Child	0.59	Non-qualified operatives (r)	0.10				

(Continued)

Table A5. (Continued)

Domain, content and mean					
Individual characteristics		**Adverse working conditions**		**Instruments**	
Education less than secondary (r)	0.18	Harm working conditions	0.33	Task discretion (0–30)	17.89
Secondary	0.45	Scheduling hazard	0.29	Work dependence with colleagues	0.53
Post-secondary	0.37	Accident risk	0.37	Feedback from the superior	0.58
Commuting time (1–8)	4.13 (1.96)	Feeling of being neglected by the hierarchy	0.16	Quintile of hourly wage (1–5)	3.02 (1.40)
		Discrimination	0.13		
Observations	14,248				

Notes: Weighted statistics. Standard deviations are shown in parentheses for non-binary variables. Reference variables omitted in the estimations are identified with (r).

Table A6. Validity of the exclusion restriction for Model 2 – specification 2 of Table 2.

	Controlled motivation	Autonomous motivation
First-stage *F* test	19.07	21.98
p-value	(0.000)	(0.000)
Over-identification test – Hansen J statistic	0.870	
$\chi 2$	(0.6471)	

Notes: These tests are given as indicative as they are based on 2SLS linear probability models and not on the estimation strategy used to obtain the results presented in Table 2.

Table A7. HRM, ICT, work motivation and on-the-job search – all results.

	Model 1				Model 2					
	Specification 1		Specification 2		Specification 1			Specification 2		
	Overall work motivation	On-the-job search	Overall work motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Overall work motivation (M)		−0.10***		−0.09***						
		(0.02)		(0.02)						
Controlled motivation (CM)							0.24***			0.21***
							(0.04)			(0.04)
Autonomous motivation (AM)							−0.22***			−0.18***
							(0.02)			(0.02)
HRM bundle (H)	0.12***	0.02***	0.12***	−0.02***	0.08***	0.12***	−0.02***	0.08***	0.12***	−0.02***
	(0.01)	(0.004)	(0.01)	(0.004)	(0.01)	(0.01)	(0.003)	(0.01)	(0.01)	(0.003)
H*M				−0.003*						
				(0.002)						
H*CM										0.004***
										(0.001)
H*AM										−0.01***
										(0.002)
ICT bundle (I)	0.06***	0.04***	0.06***	0.04***	0.06***	0.05***	0.02**	0.06***	0.05***	0.02**
	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)
I*M				0.001						
				(0.003)						
I*CM										−0.00002
										(0.002)
I*AM										0.001
										(0.002)

Table A7. (Continued)

	Model 1				Model 2					
	Specification 1		Specification 2		Specification 1			Specification 2		
	Overall work motivation	On-the-job search	Overall work motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
H*1	−0.01***	−0.001	−0.01***	−0.001	−0.01***	−0.01***	−0.0001	−0.01***	−0.01***	0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)
Control variables										
Individual characteristics										
Male	−0.05**	0.02**	−0.05**	0.02*	−0.03	−0.05**	0.02	−0.03	−0.05**	0.02
	(0.02)	(0.01)	(0.02)	(0.01)	(0.03)	(0.02)	(0.01)	(0.03)	(0.02)	(0.01)
Age 30–49 years	−0.09***	−0.02	−0.09***	−0.02	−0.13***	−0.05	0.01	−0.13***	−0.05	0.01
	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)	(0.03)	(0.01)	(0.03)	(0.03)	(0.01)
50 years and more	−0.13***	−0.15***	−0.13***	−0.15***	−0.21***	−0.06	−0.07**	−0.21***	−0.06	−0.07**
	(0.05)	(0.02)	(0.05)	(0.02)	(0.05)	(0.05)	(0.03)	(0.05)	(0.05)	(0.03)
German	−0.04	−0.04**	−0.04	−0.04**	−0.05	−0.03	−0.02	−0.05	−0.03	−0.02
	(0.03)	(0.02)	(0.03)	(0.02)	(0.04)	(0.03)	(0.01)	(0.04)	(0.03)	(0.01)
Belgian	0.01	−0.03*	0.01	−0.03*	−0.04	0.04	−0.005	−0.04	0.04	−0.01
	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.01)	(0.03)	(0.03)	(0.01)
French	−0.03	−0.06***	−0.03	−0.06***	−0.03	−0.02	−0.04**	−0.03	−0.02	−0.04**
	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.02)
Portuguese	0.02	−0.10***	0.02	−0.10***	−0.03	0.04	−0.06***	−0.03	0.04	−0.06***
	(0.04)	(0.02)	(0.04)	(0.02)	(0.04)	(0.04)	(0.02)	(0.04)	(0.04)	(0.02)
Other nationality	−0.04	−0.07***	−0.04	−0.07***	−0.11**	0.001	−0.02	−0.11**	0.002	−0.02
	(0.04)	(0.02)	(0.04)	(0.02)	(0.04)	(0.03)	(0.02)	(0.04)	(0.03)	(0.02)
Living with partner	0.04*	−0.03***	0.04*	−0.03***	0.03	0.04**	−0.02**	0.03	0.04**	−0.02**
	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)
Child	0.02	0.01	0.02	0.01	0.01	0.02	0.01	0.01	0.02	0.01
	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)

(Continued)

Table A7. (Continued)

	Model 1				Model 2					
	Specification 1		Specification 2		Specification 1			Specification 2		
	Overall work motivation	On-the-job search	Overall work motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Secondary education	−0.06**	0.04***	−0.06**	0.04***	−0.09***	−0.03	0.05***	−0.09***	−0.03	0.05***
	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)	(0.03)	(0.01)	(0.03)	(0.03)	(0.01)
Post-secondary	−0.14***	0.07***	−0.14***	0.07***	−0.18***	−0.10***	0.08***	−0.18***	−0.10***	0.08***
	(0.03)	(0.02)	(0.03)	(0.02)	(0.04)	(0.03)	(0.02)	(0.04)	(0.03)	(0.02)
Commuting time (1–8)	−0.001	0.002	−0.001	0.002	0.002	−0.003	0.002	0.002	−0.003	0.0001
	(0.005)	(0.002)	(0.005)	(0.002)	(0.01)	(0.005)	(0.002)	(0.01)	(0.005)	(0.002)
Job characteristics										
Permanent contract	−0.04	0.02	−0.04	0.02	0.08*	−0.10**	−0.02	0.08*	−0.10**	−0.02
	(0.04)	(0.02)	(0.04)	(0.02)	(0.04)	(0.04)	(0.02)	(0.04)	(0.04)	(0.02)
Part-time	−0.17***	−0.02	−0.17***	−0.02	−0.14***	−0.15***	0.002	−0.14***	−0.15***	0.003
	(0.03)	(0.01)	(0.03)	(0.01)	(0.04)	(0.03)	(0.01)	(0.04)	(0.03)	(0.01)
Tenure (in months) (12–590)	−0.0005***	−0.0005***	−0.0005***	−0.0005***	−0.0001	−0.001***	−0.0004***	−0.0001	−0.001***	−0.0004***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Experience (in years) (0–50)	0.004**	−0.002***	0.004**	−0.002***	0.002	0.005***	−0.001**	0.001	0.005***	−0.001**
	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)
Union	0.001	0.01	0.001	0.01	−0.01	0.01	0.01*	−0.01	0.01	0.01*
	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)
Professionals and managers	0.26***	0.15***	0.26***	0.15***	0.05	0.32***	0.14***	0.05	0.32***	0.14***
	(0.05)	(0.02)	(0.05)	(0.02)	(0.06)	(0.05)	(0.02)	(0.06)	(0.05)	(0.02)
Associate professionals	0.23***	0.11***	0.23***	0.10***	0.10*	0.26***	0.09***	0.10*	0.26***	0.09***
	(0.05)	(0.02)	(0.05)	(0.02)	(0.05)	(0.05)	(0.02)	(0.05)	(0.05)	(0.02)
Administrative and clerical	0.17***	0.07***	0.16***	0.07***	0.08	0.18***	0.06***	0.08	0.18***	0.06***
	(0.05)	(0.02)	(0.05)	(0.02)	(0.05)	(0.05)	(0.02)	(0.05)	(0.05)	(0.02)

Table A7. (Continued)

	Model 1				Model 2					
	Specification 1		Specification 2		Specification 1			Specification 2		
	Overall work motivation	On-the-job search	Overall work motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Sales and service personnel	0.22***	0.08***	0.22***	0.08***	0.10**	0.24***	0.07***	0.10**	0.24***	0.07***
	(0.05)	(0.02)	(0.05)	(0.02)	(0.05)	(0.05)	(0.02)	(0.05)	(0.05)	(0.02)
Craft	0.29***	0.05**	0.29***	0.05**	0.10*	0.34***	0.07***	0.10*	0.34***	0.06***
	(0.05)	(0.02)	(0.05)	(0.02)	(0.05)	(0.05)	(0.02)	(0.05)	(0.05)	(0.02)
Plant operatives	0.42***	0.06**	0.42***	0.06**	0.28***	0.41***	0.03	0.28***	0.41***	0.03
	(0.06)	(0.02)	(0.06)	(0.02)	(0.05)	(0.06)	(0.02)	(0.05)	(0.06)	(0.02)
Organization characteristics										
50–99 employees	−0.06**	0.02	−0.06**	0.02	−0.02	−0.07**	0.01	−0.02	−0.07**	0.01
	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)	(0.03)	(0.01)	(0.03)	(0.03)	(0.01)
100–249 employees	−0.05**	0.01	−0.05**	0.01	0.02	−0.08***	−0.01	0.02	−0.08***	−0.01
	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)	(0.03)	(0.01)	(0.03)	(0.03)	(0.01)
250 employees and more	−0.03	−0.04***	−0.03	−0.04***	0.05	−0.06**	−0.05***	0.05	−0.06**	−0.05***
	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)	(0.02)	(0.01)	(0.03)	(0.02)	(0.01)
Construction	0.26***	0.03	0.26***	0.03	0.14***	0.28***	0.03*	0.14***	0.28***	0.03
	(0.04)	(0.02)	(0.04)	(0.02)	(0.04)	(0.04)	(0.02)	(0.04)	(0.04)	(0.02)
Trade, accommodation and food serv.	0.16***	0.03	0.16***	0.03	0.04	0.19***	0.04***	0.04	0.19***	0.04***
	(0.04)	(0.02)	(0.04)	(0.02)	(0.04)	(0.04)	(0.02)	(0.04)	(0.04)	(0.02)
Transportation and storage	0.13***	0.01	0.13***	0.01	−0.09*	0.22***	0.06***	−0.09*	0.22***	0.06***
	(0.04)	(0.02)	(0.04)	(0.02)	(0.04)	(0.04)	(0.02)	(0.04)	(0.04)	(0.02)
IT and communication	0.01	−0.01	0.01	−0.01	0.02	−0.001	−0.01	0.02	−0.004	−0.01
	(0.04)	(0.03)	(0.04)	(0.03)	(0.05)	(0.04)	(0.03)	(0.05)	(0.04)	(0.03)
Finance	−0.06	0.03	−0.06	0.03	0.09**	−0.13***	−0.03*	0.09**	−0.13***	−0.03*
	(0.04)	(0.02)	(0.04)	(0.02)	(0.04)	(0.04)	(0.02)	(0.04)	(0.04)	(0.02)

(Continued)

Table A7. (Continued)

	Model 1				Model 2					
	Specification 1		Specification 2		Specification 1			Specification 2		
	Overall work motivation	On-the-job search	Overall work motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Other services	0.05	0.01	0.05	0.01	−0.02	0.08*	0.02	−0.02	0.08*	0.02
	(0.04)	(0.02)	(0.04)	(0.02)	(0.05)	(0.04)	(0.02)	(0.05)	(0.04)	(0.02)
Adverse working conditions										
Harmful working conditions	−0.02	0.05***	−0.02	0.05***	0.04	−0.05**	0.01	0.04	−0.05**	0.01
	(0.02)	(0.01)	(0.02)	(0.01)	(0.03)	(0.02)	(0.01)	(0.03)	(0.02)	(0.01)
Scheduling hazard	0.01	0.02*	0.01	0.02*	0.04*	−0.01	0.0004	0.04*	−0.01	0.001
	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)
Accident risk	0.02	0.04***	0.02	0.04***	0.11***	−0.04	−0.01	0.11***	−0.04	−0.01
	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.01)
Feeling of being neglected by the hierarchy	−0.22***	0.10***	−0.22***	0.10***	−0.13***	−0.23***	0.08***	−0.13***	−0.23***	0.08***
	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)	(0.03)	(0.01)	(0.03)	(0.03)	(0.01)
Discrimination	−0.10***	0.09***	−0.10***	0.09***	−0.01	−0.14***	0.04***	−0.01	−0.14***	0.04***
	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.02)
Outside opportunities										
Local unemployment rate	−0.01*	0.0001	−0.01*	0.0001	−0.004	−0.01	0.0003	−0.005	−0.01	0.0002
	(0.003)	(0.002)	(0.004)	(0.002)	(0.004)	(0.004)	(0.002)	(0.004)	(0.004)	(0.002)
Better wages in the sector than in the firm	0.05	0.04	0.05	0.04	0.02	0.06	0.04*	0.02	0.06	0.04*
	(0.06)	(0.03)	(0.06)	(0.03)	(0.07)	(0.05)	(0.02)	(0.07)	(0.05)	(0.02)
Growth of employment in the sector	−0.003	0.004*	−0.003	0.004*	0.01	−0.01	−0.0002	0.01	−0.01	−0.0002
	(0.01)	(0.002)	(0.01)	(0.002)	(0.005)	(0.01)	(0.002)	(0.005)	(0.01)	(0.002)

Table A7. (Continued)

	Model 1				Model 2					
	Specification 1		Specification 2		Specification 1			Specification 2		
	Overall work motivation	On-the-job search	Overall work motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Firm in the upper third of employment growth	0.02 (0.02)	−0.01 (0.01)	0.02 (0.02)	−0.01 (0.01)	−0.01 (0.02)	0.03 (0.02)	−0.001 (0.01)	−0.01 (0.02)	0.03 (0.02)	−0.001 (0.01)
Matching quality										
Training paid alone	0.07** (0.03)	0.09*** (0.02)	0.07** (0.03)	0.09*** (0.02)	0.03 (0.04)	0.07** (0.03)	0.07*** (0.02)	0.03 (0.04)	0.07** (0.03)	0.07*** (0.02)
Too high educational level	−0.20*** (0.02)	0.07*** (0.01)	−0.20*** (0.02)	0.07*** (0.01)	−0.07*** (0.02)	−0.23*** (0.02)	0.03** (0.01)	−0.07*** (0.02)	−0.23*** (0.02)	0.03** (0.01)
Too low skills	0.12*** (0.02)	0.03*** (0.01)	0.12*** (0.02)	0.03*** (0.01)	0.08*** (0.02)	0.12*** (0.02)	0.02** (0.01)	0.08*** (0.02)	0.12*** (0.02)	0.02** (0.01)
Too low ICT skills	−0.0003 (0.03)	0.05*** (0.01)	−0.0003 (0.03)	0.05*** (0.01)	−0.01 (0.03)	0.01 (0.03)	0.04*** (0.01)	−0.01 (0.03)	0.01 (0.03)	0.04*** (0.01)
Too high ICT skills	−0.03* (0.02)	0.03*** (0.01)	−0.03* (0.02)	0.03*** (0.01)	−0.05** (0.02)	−0.02 (0.02)	0.03*** (0.01)	−0.05** (0.02)	−0.02 (0.02)	0.03*** (0.01)
Instruments										
Task discretion (0–30)	0.03*** (0.002)		0.03*** (0.002)		0.02*** (0.002)	0.03*** (0.001)		0.02*** (0.001)	0.03*** (0.001)	
Work dependence with colleagues	0.01 (0.02)		0.01 (0.02)		0.09*** (0.02)	−0.02 (0.02)		0.09*** (0.02)	−0.02 (0.02)	
Feedback from the superior	0.13*** (0.02)		0.13*** (0.02)		0.11*** (0.02)	0.12*** (0.02)		0.11*** (0.02)	0.12*** (0.02)	

(Continued)

Table A7. (Continued)

	Model 1				Model 2					
	Specification 1		Specification 2		Specification 1			Specification 2		
	Overall work motivation	On-the-job search	Overall work motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search	Controlled motivation	Autonomous motivation	On-the-job search
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Quintile of hourly wage (1–5)	0.04***		0.04***		0.05***	0.04***		0.05***	0.04***	
	(0.01)		(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Constant	−1.62***		−1.62***		−1.15***	−1.59***		−1.15***	−1.59***	
	(0.11)		(0.11)		(0.11)	(0.10)		(0.11)	(0.10)	
Rho M-job search	0.126**		0.126**							
	(0.0509)		(0.0508)							
Rho CM-job search					–0.573***			–0.572***		
					(0.145)			(0.144)		
Rho AM-job search					0.101**			0.0959**		
					(0.0423)			(0.0420)		
Rho CM - AM					0.517***			0.517***		
					(0.0113)			(0.0113)		
Log L	–25952.95		–25951.13		–43295.65			–43283.11		
Wald χ^2	7847.79***		7854.93***		14339.11***			14268.83		
Pseudo R^2	0.12		0.12		0.09			0.09		
Observations	14,248		14,248		14,248			14,248		

Notes: Robust standard errors clustered at the level of working in the same organization in parentheses. Weighted estimations. Columns (2), (4), (7) and (10) report average marginal effects; other columns report coefficients. Rho are correlations parameters between error terms of equations. * significant at 10%; ** significant at 5%; *** significant at 1%.