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Middle Managers, Personnel Turnover and Performance: A Long-Term Field Experiment in a Retail Chain

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A Long-Term Field Experiment in a Retail Chain

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Abstract. In an RCT, a large retail chain's CEO sets new goals for the managers of the treated stores by asking them "to do what they can" to reduce the employee quit rate. The treatment decreases the quit rate by a fifth to a quarter, lasting nine months before petering out, but reappearing after a reminder. There is no treatment effect on sales. Further analysis reveals that treated store managers spend more time on HR and less on customer service. Our findings show that middle managers are instrumental in reducing personnel turnover, but they face a tradeoff between investing in different activities in a multitasking environment with limited resources. The treatment does produce efficiency gains. However, these occur only at the firm level.

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1. Introduction

Value in firms is not only created by finding the right strategy in the product market, but also by inducing employees to align their actions with the firm's strategic goals. This insight goes back to Barnard (1938) and is gaining prominence in strategy research (Gans and Ryall 2016). The strategic role of employees in reaching organizational outcomes is the focus of the Strategic Human Resource Management literature (Baron and Kreps 1999), which argues that firms must be aware that their goals cannot be reached unless they use the HR management practices that are best adapted to their technological and strategic environment and the needs of the workforce.

We investigate a strategic HR problem that many firms face and which is often triggered by discontent of the work force: excessive personnel turnover. While some turnover may be healthy (Siebert and Zubanov 2009) and can often not be avoided, too much of it is disruptive and has negative effects on profits, revenues, customer service, scrap rates, training costs, and other firm performance outcomes (for instance, Staw 1980, Kacmar et al. 2006, Detert et al. 2007, Allen et al. 2010, Hausknecht and Trevor 2011). Beyond these direct costs, it is the attention top management must give to the problem as well as the wider organizational repercussions that makes personnel turnover a strategic issue. This is the case even if the human capital lost as a result of turnover may not be of strategic importance, for instance in the case of retail workers, who are the subject of this paper.[1]

Management, consequently, should investigate the causes of turnover and design policies that are effective in reducing it. These policies may touch many different aspects of the work environment and may be executed at different levels in the hierarchy, from top executives to middle managers. It is the latter on whom we zoom in in this paper. Lazear et al. (2015) show that middle managers are important for unit performance, and Hoffman and Tadelis (2020) provide evidence that the HR-directed efforts of middle managers affect business performance and personnel turnover. Relatedly, since Goffman (1967), workplace face-to-face interactions are believed to be crucial for employee wellbeing and it is mostly the middle managers who engage in such interactions on a daily basis. As the saying goes: "People join firms but leave their boss". Causal evidence for middle manager's impact on personnel turnover is lacking, however.

The above rationale motivated us to design an RCT together with a large retail firm that meant to provide answers to the following research questions: Can a simple

messaging intervention alter store managers' actions even if these are not inventivized? What kind of messaging works? How does the intervention and potential store managers' actions affect employee turnover and business performance? If there are positive effects, on what level in the corporate hierarchy do they accrue? Inspired by the literature on multi-tasking (Holmström and Milgrom 1991), we suggest a framework in which store managers allocate their time across activities to serve various goals set to them. On top of their incentivized KPIs[2], they receive a new goal from top management to "do what they can" to bring down the quit rate. In our framework, managers are expected to react by shifting their time from sales-oriented to people-oriented activities. Such shift should reduce personnel turnover but its effect on sales is ambiguous.

We conduct a large-scale (238 store, 7,700 workers) and long-term (lasting 16 months) RCT in a retail firm. The firm provides a context with a large number of comparable units with a homogenous work force, thus facilitating causal inference on the role and effects of middle managers for employee quit rates and business performance. Interestingly, despite a high quit rate of 70-90% per year, HR initiatives had not been part of the firm's management system before (as in many other firms, see Widener 2006).

Our main treatment gave store managers a new goal. The CEO together with the Head of HR sent a letter to randomly selected store managers asking them to reduce personnel turnover in their stores, putting particular emphasis on interacting more with the workers. On average, quit rates in the treatment stores decreased by a fifth to a quarter relative to the control stores, an effect lasting nine months before petering out. A reminder treatment triggered a similar decrease for a shorter period.

While there was an appreciable treatment effect on the quit rate, we find no effect on business performance. This seems to be surprising at first glance because, in the pre-treatment data, we found negative correlations between quit rates and business performance on the store level, which is consistent with previous studies in the management literature (as reviewed in Hancock et al. 2013). The causality of this link, however, is questioned, for instance, by Hausknecht and Trevor (2011) in their review. Our RCT shows that lower quit rates will not necessarily cause higher business performance and we provide an explanation for this fact.

We carried out ten different surveys among different hierarchical levels within the firm to understand why sales do not increase after a drop in the quit rate. We find

that treated store managers spend more time – about an additional 20 minutes per day – on HR-related tasks. Other survey evidence hints at managers using their specific knowledge to focus on the workers that are most likely to leave. Managers compensate the extra time spent on HR activities by spending less time on interacting with customers; they do not work extra hours. Therefore, our treatment seems to cause a shift in the manager time use along the "isoquant curve" implied by the production function with manager input, rather than a net increase in the manager input.

Put differently, the time store managers allocate to different tasks mediates the impact of lower turnover on firm performance. Cashiers may be upselling to customers, but it is managers who have the ability to increase sales by engaging with customers and making the store more attractive. Lowering quit rates of the cashiers by moving some of the managerial time dedicated to customer service to employees unambiguously lowered aggregate costs associated with turnover, but the additional sales that "better cashier service" (through lower turnover) could have brought seems to be cancelled out by less managerial customer service time.[3]

Nonetheless, although business performance on the *store* level did not increase, the intervention was profitable at the *firm* level. Administrative costs associated with hiring, training, and quits of workers decreased, and so did the risk that high quit rates would jeopardize the functioning of the internal labor market and the firm's reputation. We thus show that HR measures on the operational level have firm-wide consequences, freeing more time, not only for the HR department, but also relaxing top management's constraints in developing and implementing strategic initiatives.

Beyond showing the causal effect of middle managers on personnel turnover and its attendant consequences, our study has broader implications. Supported by the qualitative survey evidence, it reveals some of the intricacies of goal setting. Based on a number of studies, Locke and Latham (2002, 2006) argue in favor of setting goals in a narrow, well-specified way to induce extra effort of workers and managers. Ordonez et al. (2009), however, argue that such specific goals can make people overlook other important aspects of their task, or may even tempt them to engage in counterproductive activities.[4] They also encourage a new type of goal-setting research that would allow to measure the effects of goal setting on intended and unintended reactions of those who are the subjects of goal-setting. The ambiguous effects of goal setting are also reflected on in Bénabou and Tirole's (2003) model, in which the principal's signals may create the agent's ambiguity and trigger counterproductive reactions.

Another implication of our results concerns the importance of formal contracts in enforcing norms. The effects of our treatment fade away after less than a year, which is consistent with an interpretation that the intangible norms communicated by the new goal failed to establish a new long-run equilibrium, arguably because there was no change in explicit contracts that would reflect and re-enforce these norms. We further discuss this interpretation in the conclusion, together with issues of external validity and methodological contributions of our paper.

2. Study Background
2.1. The Firm and its Workers
Our study firm is located in an Eastern EU country with an annual per-capita GDP of around 15,000 Euros. It operates one of the leading retail chains comprising 238 grocery stores spread over the whole country (half are located in urban areas), controls around one third of the grocery market, and is one of the largest employers in the country. Although the company is a big player in the grocery market, the entry of a large and very efficient competitor triggered numerous transformations in the firm (more background is provided below).

An average store sells ca. 200,000 Euros worth of goods per month and employs one store manager and 24 employees (see Table 1, panel A, column 1).

TABLE 1 ABOUT HERE

Store managers (91% female, average age 41 years, average tenure 6.8 years as of August 2015; see Table 1, panel B, column 1) run the day-to-day business of the stores. Managers are responsible for operations (maintaining the availability of the goods, store appearance, hygiene, and food safety standards) and customer relations. They also take care of most of the HR activities, which include scheduling work shifts as well as hiring, training, coordinating, and motivating employees. Each store manager reports to her regional manager, who oversees ten stores on average and reports to a sales executive. Thus, given their scope of responsibilities and position in the firm's hierarchy, store managers are the middle managers of the firm.

The largest employee group in the stores (82% on average) and the ones we focus on in this study, are general store employees, whom we label as "cashiers" in the following.[5] As shown in Table 1 (panel C, column 1), cashiers are 89% female, their average age is 33 years, and their average tenure is 2.3 years (the median tenure is 1.8 years). 95% of the cashiers are employed full-time, almost all of them have the same

permanent-employment contract, and they never move between stores. In addition to operating cash registers, they fill the shelves and clean the store, working in shifts throughout the day. Cashiers earn minimum wage or close to it; their average monthly earnings, including bonuses, are just under 360 Euros. The bonus pools for stores are determined by regional managers who also heavily influence the allocation between cashiers; cashiers also receive loyalty bonuses.

Many cashiers are dissatisfied with their working conditions.[6] Yet, their conditions are similar to competitors', and to the ones observed on the retail market in Eastern EU countries in general (Giaccone and Di Nunzio 2012).

2.2. The Problem of Cashier Turnover

In our study firm, cashier turnover is high: The average ratio of the number of cashier quits to cashier headcount is around 6% per month in the period between February 2014 and August 2015.[7] (For comparison, the quit rate of store managers is 1.5% per month over the same period, and the one of other store employees is 3%.) This average disguises significant variations in the cashier quit rate by season of the year, ranging from a low of 3% in January to a high of 10% in August. Newly hired cashiers are particularly likely to quit: In fact, 50% of the cashiers who left did so within five months of being hired, similar to the numbers Burks et al. (2015) report in a U.S. call center.[8]

The Cashier Exit Interviews carried out by the firm (see Section 4.2) revealed that less than 5% of the cashiers left the company "involuntarily". Cashiers quit the firm often from one day to the next (less than 10% of the workers quit the company on the last day of a month), despite the fact that more than 50% of quitting cashiers were unemployed three months after they left the firm, while most of the other cashiers work in similar jobs.

Top management's ambition is to halve the quit rate. This target (not accompanied by incentives for middle managers) reflects top management's conviction that some turnover is helpful in adjusting labor input to changes in demand (Abelson and Baysinger 1984, Siebert and Zubanov 2009, Hancock et al. 2013), but that the current high quit rate among cashiers is costly to the firm.

To quantify the quit rate problem that besets our study firm and to inform deliberations with top management, we attempted to estimate the costs of quits. While some of the components of the cost cannot be quantified (such as the damage to the firm's reputation, diminished incentives to train workers, and drain to the talent pool

from which store managers are selected), we can estimate the costs of resources spent on managing quits and the implied costs of turnover due to lost productivity. First, there are costs that accrue on the level of the central administration, in particular the cost of HR personnel who update personnel records, run exit interviews, place job ads, collect applications and forward them to store managers. Second, in the stores, there are the costs of training new workers. Training is of particular importance for the firm. For instance, workers learn how to position goods in shelves such that the highest margin goods attract most attention, and how to position goods that are closer to the expiry date in a way that customers are more likely to buy them. We conservatively estimate that the costs of time for dealing with quits on the firm- and store-level amount to about 250 Euros per quit (for more details, see Appendix I).

Next, there are potential costs of quits in terms of store performance. Replacing experienced workers by new recruits likely leads to lower sales and higher shrinkage (goods that did not sell and expired) because the latter have less firm- and store-specific human capital and lack the social networks to collect information and coordinate on tasks within stores (Leana and Van Buren 1999).[9] Indeed, there is a large empirical literature that documents a negative link between employee turnover and various measures of economic performance (for an overview, see Hausknecht and Trevor 2011), including sales (Shaw et al. 2005) and shrinkage (Kacmar et al. 2006).

TABLE 2 ABOUT HERE

In our data, we find a similar negative link between store performance indicators and quit rates in the 19 months before the treatment. The regression results reported in Table 2 imply that an increase in the cashier quit rate from zero to 10% in a particular month is linked with a 0.167 * 0.1 = 0.0167% decrease in sales in that month. The cumulative effect is stronger: A permanent increase in the cashier quit rate from zero to 10% is linked with a 0.0362% permanent decrease in sales. For shrinkage, we find a positive but not statistically significant correlation. Our results further imply a decrease in operational profits by 0.0611% linked with a permanent increase in the quit rate from zero to 10%. Based on these regression results for operational profits, we estimate that each quit costs 1,220 Euro in terms of lost profits (see Appendix I).

Summing up, the total costs of cashier turnover amount to around 1,470 Euros per quit, which corresponds to three to four months' worth of cashier gross wages (including taxes). While our calculations of profits lost to turnover are affected by endogeneity issues, we believe our turnover costs estimate is reasonable and consistent

with the estimates produced in earlier studies (Blatter et al. 2012, Boushey and Glynn 2012).

2.3. Why the Cashier Turnover Problem Became Focal

Historically, our study firm, one of the first modern retail structures in the former Soviet Union, had paid wages well above the market level in retail. However, with the advent of the financial crisis in 2008 and the resulting drastic fall in purchasing power, the company came under pressure to cut costs. As a consequence, wages were adjusted to competitors' levels, and cashier quit rates increased to the level we witnessed at the beginning of our intervention.

Initially, high cashier turnover did not receive much attention from top managers. However, prior to our intervention, the problem gained importance for a number of reasons. First, there was a change in the top management in 2014, when the foreign owner of the firm took action against declining profitability. With this change, the firm focused on a broader set of performance measures, among others quality and cashier turnover. Second, it became public in 2014 that *Lidl*, a large international discounter, was planning to enter the market (it did actually enter in June 2016). The firm's analysts expected an 8% drop in sales as a result of the entry of *Lidl*, and top management decided to strengthen the firm's quality leadership in the market. The firm invested in numerous projects to increase the quality of goods and the appearance of the stores, but it also became clear that it had to raise operational efficiency and service quality.[10] Reducing cashier turnover became to be viewed as part of the strategy to reach these goals.

Another important factor was that between 2010 and 2014 the unemployment rate in the country decreased by more than seven percentage points, which increased hiring costs.[11] The problem gained additional importance as it became evident that because of the high cashier quit rate, the internal labor market of the firm was jeopardized. In 2014 and 2015, around half of the regional managers and 60% of the store managers were hired from within the firm (the share of managers hired from within the firm was higher in the years before). At a quit rate of more than 70% per year, the talent pool became thin, and the risk of declining quality of managers grew.

2.4. Appealing to Store Managers to Deal with Cashier Turnover

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In preparation for this RCT, we discussed with our study firm a number of possible ways to reduce quits, coming up with appealing to store managers as the most promising alternative. Engaging regional managers was believed to be ineffective because of their large span of control resulting in their insufficient involvement in HR activities in stores. Making jobs more attractive was almost impossible because the job design is determined by the organization of the value chain. Raising employees' pay to provide efficiency wages was infeasible for cost reasons, but it seemed fruitful to make information about the actual career opportunities in the firm more salient.[12] We consequently designed a separate treatment on salience of career opportunities (see Section 4.1).

As well as being our primary theoretical interest, store managers appeared to matter for cashier turnover empirically, true to the common wisdom that "people join firms but leave their boss". As an attempt to probe the potential for store managers to affect cashier turnover, we used store manager movements to estimate manager fixed effects in the observed store-month quit rates (like in Lazear et al. 2015, Janke et al. 2019, Hoffman and Tadelis 2020). We found substantial variation in manager fixed effects, exceeding the variation in store fixed effects estimated concurrently (see Appendix I), indicating that store managers matter for cashier turnover. Independently of this empirical finding, the top management agreed that store managers could be a powerful force affecting quits because they frequently interact with cashiers in our geographically dispersed firm (Wooldridge et al. 2008) and have first-hand information about individual workers' circumstances.

Face-to-face interaction across hierarchical levels is important for employee well-being (Goffman 1967) and for team productivity (Battiston et al. 2020). Retail firms generally provide good opportunities to study interactions between managers and employees: The technology is simple and standardized, tasks are clearly defined, allocation of work time can be measured (albeit with some noise) with time use surveys, and multiple outputs can be measured over a long time horizon.

3. Conceptual Framework

Figure 1 depicts a simple conceptual framework that explains how store managers are embedded in the hierarchy, what tasks they carry out, and how their performance is measured in our firm.

The study firm has four *hierarchical levels*: top managers, regional managers, store managers, and cashiers. Direct communication between our firm's top management and store managers or cashiers is rare. Store managers' activities are steered by direct orders from regional managers, bonuses, promotions, and training measures (all of which are part of the box "hierarchy"). The main *output* KPIs are sales and shrinkage, and managers are awarded with bonuses and promotions accordingly. The only other KPI that is incentivized, albeit in a non-substantial magnitude, are mystery shopper scores that are meant to ensure compliance with standard procedures.

FIGURE 1 ABOUT HERE

Measures of HR performance are not used in assessing performance, and the training of store managers focuses on their administrative work, the flow of goods, and interactions with customers, but not on HR. In our pre-treatment surveys (see Section 4.2), we found little evidence that store managers even considered HR a focal activity or that they would see themselves as responsible for employee turnover in their store. We also found no evidence in our historical data that store managers are rewarded for reducing quits with bonuses or promotions. Nonetheless, they are the only hierarchical level interacting regularly with the cashiers.

Store managers allocate their work time between four main *tasks*: (i) administrative work, such as supplying primary accounting data to the central office; (ii) interacting with customers; (iii) management and control of the flow of goods; (iv) HR activities, such as dealing with quits, managing, training, and communicating with store employees.

The time that store managers allocate to the four tasks affect the *output* in various ways. Administrative tasks have no direct impact on measurable outcomes. Time spent on customer interaction affects sales;[13] time spent with the management of goods affects shrinkage and sales. Time spent on HR tasks can be broken down into (i) dealing with quits (after the fact), and (ii) preempting quits. While much of the former is not productive, the latter would be expected to lead to more satisfied employees who would be less likely to quit and could generate more sales thanks to higher accumulated work skills (e.g. via more upselling, or working faster, as in Glover et al. 2017). Fewer quits would also mean less managerial time spent dealing with after-the-fact quits, and thus more time that could be spent on more productive activities. The analysis of pre-treatment data indicates that this is the case, as discussed in section 2.2.[14]

Our main intervention (represented by the curved arrow on the left-hand side of the hierarchy) is a direct communication from top management to store managers, asking them "to do what they can" to reduce the quit rate. Put differently, store managers receive a new goal (Staw and Boettger 1990, Ordonez et al. 2009, Dessein and Prat 2016), which is added on top of the existing KPIs. The communication neither specifies the "optimal" quit rate in the stores nor does it include explicit inventices contingent on quit rates. We did so in order to avoid opportunities for gaming, unethical behavior to reach a goal (Schweitzer et al. 2004), or a narrow focus on one single goal (Ordonez et al. 2009); managers could, for instance, deliberately keep unproductive workers to reduce quits.

Store managers' beliefs about how the new goal "reduce quit rate" changes the relative importance of different tasks will be reflected in changes in their time use, but within the constraints imposed by other work activities. In particular, all of the store managers' activities have to be carried out within limited time budget because no extra pay or other allowances were offered for dealing with employee turnover. Thus, the new goal should affect personnel turnover through changing time allocation, but its effect on sales and other outcomes is ambiguous.

4. The RCT

4.1. Treatments

The timeline of the experiment is depicted in Figure 2, which also provides an overview of the available data.

FIGURE 2 ABOUT HERE

Our *Manage* treatment began on September 1st, 2015, with a letter addressed to store managers in 60 out of the 238 stores. The letter was signed by the firm's CEO and chief HR officer, directing store managers' attention to the quit rate problem and asking them to take action:

> *We would like to ask you for your help in dealing with an important problem (...). It is about personnel turnover. We (...) have a personnel turnover of around 90% per year. (...) 50% of those leaving leave in the first few months of their employment (...). Each employee's leaving costs us on average 400 Euros – at least.* [15] *(...) We would like to bring this problem to your attention and ask you to do what you can, in order to*

bring down the quit rate. In particular, please talk to your employees and make them feel fully integrated in your team (...) note also the importance of training new hires (...) and having an open ear for problems they may experience (...).

In line with the framework in Figure 1, the letter from the top management provides a signal to the store managers that reducing quits is an important goal for the firm ("bring this problem to your attention (…) do what you can, in order to bring down the quit rate"). The letter asks store managers to invest more time in HR ("please talk to your employees"); in particular, concerning workers who are likely to quit ("50% of those leaving leave in the first few months of their employment (...) training new hires (…) and having an open ear for problems they may experience").[16] The message entails no precise information to store managers about their time use for different tasks.

In another 60 stores, the managers received materials to inform their workers about the career opportunities in the firm (*Career* treatment), without making reference to personnel turnover. Note that while the *Manage* treatment gave managers an active task, the *Career* treatment consisted of a more passive, information transmission, task. In another 59 stores, we combined both treatments (*Manage+Career* treatment). At the end of September 2016, we sent a reminder to 30 stores each in the *Manage* and *Manage+Career* treatments.

Additional details about the experimental procedures are provided in Appendix I. Our RCT was registered on the *AEA* homepage (registration ID: *AEARCTR-0000826*); the description we posted is in Appendix III (together with the posters and letters used in our treatments). The main registered outcome variable was the quit rate; others were sales and absenteeism. Initially, we were unsure for how long the firm would allow us to collect data. The minimum time they agreed on was six months, which is the time span registered. It turned out that we were allowed to collect data for 16 post-treatment months, which provided us the unique opportunity to obtain insights into the long-term effects of the interventions.

4.2. Surveys

To explore the mechanisms that are underlying the treatment effects, we use data from ten different surveys conducted at different points in time, and among different target groups (regional managers, store managers, cashiers). Figure 2 provides a timeline of

all surveys, the group of employees surveyed, the main goal of each survey, and the response rates. For simplicity, we will use the following labels for the different surveys in the paper:

- Surveys of cashiers: *Cashier Survey Oct 2015, Cashier Survey Sep 2016, Cashier Exit Interviews*

- Surveys of store managers: *Store Manager Survey Jul 2015*, *Store Manager Survey Oct 2015*, *Store Manager Survey Jan 2016*, *Store Manager Survey Sep 2016*

- Surveys of regional managers: *Regional Manager Survey Oct 2015*, *Regional Manager Survey Mar 2016*, *Regional Manager Survey Nov 2016*

The questions asked in our surveys reflect our conceptual framework. In particular, we measured store managers' time use before (*Store Manager Survey Jul 2015)* and after (*Store Manager Survey Sep 2016*) the treatment, in a way similar to Bandiera et al. (2020). We asked store managers what they did to reduce the quit rate (*Store Manager Survey Jan 2016*) and measured cashiers' job attitudes (*Cashier Survey Oct 2015*). We also measured the attention and support received by all cashiers (*Cashier Survey Oct 2015*; *Cashier Survey Sep 2016*), and by those about whom store managers believed they were most likely to quit (*Cashier Exit Interviews*).

All surveys were framed as "international surveys by Goethe University in Frankfurt" and a local business school, conducted with the purpose of supporting the "research of the professors involved". There is only one exception: the *Cashier Exit Interviews*, which were conducted by the HR office of our study firm. In the surveys we carried out, employees and managers were assured that their individual responses would only be accessible to the researchers, and not to the study firm. *Cashier Survey Oct 2015*, *Store Manager Survey Oct 2015* and the *Regional Manager Survey Oct 2015* were paper and pencil surveys. The questionnaires were placed by the employees in sealed envelopes and were collected by an employee working in the stores and sent to a professor at a local business school. All other surveys were phone surveys conducted by a native-speaking research assistant who was not aware of the treatment status of the stores. The HR office informed the respective group of employees that a team of researchers would contact them over the next few weeks.

Although we did not incentivize the participation in the surveys (with the exception of the *Store Manager Survey Jan 2016*, where we gave one out of ten

managers a 25 Euro voucher), the response rates in all surveys were relatively high. The response rates were around 80-100% in the store and regional manager surveys, and around 50-65% in the cashier surveys.[17]

4.3. Estimation Issues

Our data (personnel records, financial and accounting records) span a long period of time, from February 2014 to December 2016, all of which we use for randomization. As suggested by Athey and Imbens (2017), we use stratified randomization with the strata defined in terms of store location (urban or rural), sales, headcount, and quit rate (above or below the median in all cases). Our experiment is sufficiently powered. Based on the pre-treatment distribution of the quit rate, and the number of measurement periods before and after the treatment, having 60 stores in each treatment group would detect a treatment effect on the quit rate of 2 percentage points with probability 0.9. To ascertain whether the treatment and control groups are balanced, we run the mean equality test on a number of store, manager and cashier characteristics. The results (Table 1) show that the treatment groups are balanced with respect to our main outcome variables and almost all of the other characteristics.

We have applied several treatment effect estimators to our data, all giving similar results (see Appendix II). Our preferred estimator is ANCOVA (McKenzie 2012):

$$Output_{it,POST} = treatment_i \times \beta + \delta \cdot \overline{Outcome_{i,PRE}}$$
$$+ time\ FE_t + strata\ FE_s + error_{it}, \tag{1}$$

where $Output_{it,POST}$ is the outcome in store i and month t in the post-treatment period (quit rate, log sales, shrinkage, operational profit, or days of absence); $treatment_i$ is the treatment dummy vector, $\overline{Outcome_{i,PRE}}$ is the average of the outcome in the pre-treatment period (February 2014 to August 2015) in store i, $time\ FE_t$ and $strata\ FE_s$ are time and strata fixed effects, and $error_{it}$ is the idiosyncratic error term clustered at the store level. The components in vector β are estimates of the effect of each of our treatments. The argument in favour of ANCOVA is its higher efficiency as compared to difference-in-difference estimators (Frison and Pocock 1992, McKenzie 2012), especially when the autocorrelation in the outcome variable is low. This is the case with our main outcome variable, the quit rate (first-order autocorrelation 0.2). Indeed, ANCOVA treatment effect estimates have lower variance than difference-in-

difference, and so we use this estimator throughout the paper.[18]

5. Main Results

In this section, we first report the average and heterogenuous effects of the *Manage* and *Manage+Career* treatments on the primary registered output variable, quit rate, and on the secondary registered variables. We also exploit the RCT to investigate whether our conceptual framework finds support in the data that measure the time use of the managers and their interaction with their workers. Finally, we will also discuss our empirical results in light of our conceptual framework.

5.1. Average Treatment Effects on Cashier Quit Rate

Panel A of Table 3 presents the *Manage* and *Manage+Career* treatment effect estimates in the four quarters of the treatment period starting in September 2015. In the first, second and third quarters after the treatments took place, the *Manage* treatment results in a significant reduction in the quit rate per month in the realm of a fifth to a quarter of the contemporary quit rate in the control group (i.e. 1.5-2.3 percentage points). While the treatment effect is stable and persistent in the *Manage* treatment over a period of nine months, the effect of the *Manage+Career* treatment needs some time to pick up: the effect only becomes significant after the first quarter, and then has a similar magnitude as in the *Manage* treatment. Our explanation for the different dynamics in the two treatments is that in the *Manage+Career* treatment, managers may have needed some time to inform cashiers about their career opportunities, and only later began to engage actively with them.[19] (We show in Section 6 that the *Career* treatment has little effect.)

<div align="center">TABLE 3 ABOUT HERE</div>

Trying to revive the originally observed treatment effects, at the end of September 2016, we sent a reminder letter with a plea to continue efforts to reduce personnel turnover to 30 stores in the *Manage* and 30 stores in the *Manage+Career* groups. In doing so, we were able to differentiate between the treatment effects and (potentially group-specific) time trends, while still having enough power to identify the effects. The results are in Table 4. Comparing the first with the second row, stores that received a reminder show a strong, albeit short-lived, treatment effect. The remaining stores (in which no reminder was sent) do not show any effect. The reminder treatment results confirm that the *Manage* treatment effect is replicable.

TABLE 4 ABOUT HERE

5.2. Heterogeneous Treatment Effects on Cashier Turnover

We now focus on the average effect of the *Manage* and *Manage+Career* treatments in the first nine months after the treatments started. This is the period in which the effects of both treatments were significant and comparable to each other in magnitude. We condition the average *Manage / Manage+Career* treatment effect on the following contextual characteristics: (i) pre-treatment store-average *cashier* age, share of female cashiers, and quit rate; (ii) pre-treatment *store manager* age and tenure, whether the store had a new manager between September 2015 and May 2016, and store managers' fixed effects estimated from the quit rate regression following Lazear et al. (2015) (for details, see Appendix I); (iii) *store* size in headcount, location (big town vs. countryside) and municipal unemployment rate at the beginning of the treatment period.

Interacting the characteristics listed above with our treatment dummies in ten separate regressions, we find four statistically significant heterogeneous treatment effects (see Table 5).[20] First, the treatment effect is present only in the stores in which there was no manager change between September 2015 and May 2016; it is fully offset in the stores that saw manager change. Second, managers with a longer tenure achieve a larger reduction in quits in their stores after the treatment. Third, the treatment effect is significantly larger in smaller stores, even accounting for span of control measured as the number of non-managerial employees per store divided by the number of store and department managers in each store. Finally, we find a larger treatment effect in stores with a higher manager fixed effect in the quit rate, that is, in stores whose managers were less good at avoiding quits pre-treatment.

TABLE 5 ABOUT HERE

We would carefully interpret the finding that most of the treatment effect heterogeneity is associated with store managers as a sign that the treatment indeed works through them. In stores in which managers changed after the treatment, the treatment is not effective because these managers were not or less aware of the CEO's appeal. The finding that managers with longer tenure have larger treatment effects is compatible with the idea that more experienced managers and those that have more information about the team members are more effective in reducing turnover. The results for the third significant heterogeneity dimension (store size) suggest the importance of personal attention to employees in managing turnover, the point we

further develop in sections 5.4 and 5.5 below. The treatment effect being larger for managers with a higher baseline quit fixed effects is consistent with the above interpretation: Managers with a lower quit fixed effects are better at managing quits, and larger stores tend to have better managers (see Appendix I for more detail on store manager career paths, obtained from interviews with the firm's COO and the *Regional Manager Survey Nov 2016*). Alternatively, these managers may simply have had more room to reduce turnover. Note, however, that the heterogeneous effects related to managers must be taken with care, as manager-store matching is endogenous.

We find no heterogeneous treatment effects for the municipal unemployment rate, our proxy for the local labor market tightness. Because the costs of hiring workers are arguably higher in tight labor markets, the firm could potentially increase its profits by moving better managers to stores in tighter labor markets or investing more in the training of managers in those stores, but we find no evidence for such a policy.

5.3. Average Treatment Effects on Secondary Variables

We find no statistically or economically significant effects for sales (Table 3, panel B), shrinkage (Table 3, panel C), and absenteeism (see Appendix II)[21] during the entire treatment period. At first glance, it seems to be surprising that we find no effect for sales and shrinkage, given the large reduction in quit rates and the strong negative correlation between quit rates and sales in previous studies and in the regressions we carried out on historical data from our study firm (see Table 2). However, as explained in our conceptual framework, we should expect that – upon receiving the letters about reducing cashier turnover – store managers would change their allocation of time between different tasks. In particular, we should expect more time to be used for HR activities, on the assumption that workers value increased attention and interaction with their managers, and stay longer as a result. Consequently, the time remaining for other activities, such as sales, should decrease.

5.4. How Is Store Managers' Time Use Affected by the Treatments?

Store managers may have reacted to our treatments by increasing their overall time input or by reallocating their time between different uses. We do not find any increase in the actual hours worked from managers' time sheets. We then look at whether or not managers have reallocated work time from other activities to HR activities in order to try to reduce cashier turnover. We measured time use for each of the four tasks (admin,

flow of goods, interaction with customers, HR) before and after the treatment (in the *Store Manager Survey Jul 2015* and the *Store Manager Survey Sep 2016*).[22]

As shown in Table 6, we find that our *Manage* treatment causes store managers to spend about 20 minutes more per day on dealing with HR activities. In the *Manage+Career* treatment, the effect is smaller in magnitude, and statistically insignifcant. The additional time spent on HR is compensated for by less time spent on customers. This could rationalize why, despite lower quit rates, we do not find higher sales in our main treatments. The new goal that managers receive rationally changes their allocation of time, but because the time budget is fixed, some other task will receive less attention. These effects seem to cancel each other out.

TABLE 6 ABOUT HERE

Note that we are likely to *under*estimate the total effect of the treatment on time used for HR activities. Given that quit rates go down, store managers already have more time for pro-active HR activities (that are likely to reduce quits) because they spend less time on hiring and doing the paperwork associated with quits, rescheduling of work shifts etc. The observed re-allocation of time hence masks substantial additional managerial time spent on HR.[23]

5.5. Interactions between Store Managers and Cashiers

To find out what store managers did in the additional time that they invested into HR, we conducted a number of different surveys. Four months after the start of the treatment, an assistant phone-interviewed all store managers in the *Manage, Manage+Career,* and control treatment (*Store Manager Survey Jan 2016*). She took detailed notes about managers' responses to the following question: *Since last Summer/Autumn, have you done anything in particular that you think may have reduced the quit rate in your store?* Managers' responses provide some clues about a wide range of managerial behavior from very active to passive attitudes.[24] In a first step, we counted words that relate to the social interaction (as discussed by Ellingsen and Johannesson 2007) between store managers and employees: "attention", "care", "talk", "paying respect". 56.3% of the store managers in the *Manage* treatment (*Manage+Career*: 32.5%) use at least one of the words in their response, compared to 27.5% in the control group.

We externally validated these results (for details, see Appendix I). We showed our assistant's interview notes to subjects in a lab and asked them to rate the notes along

various dimensions. Store managers in the *Manage* group (compared to the control group) are perceived to have stronger beliefs that they can affect quit rates (4.6 vs. 3.2, on a scale between 1 and 5), to exert more effort to reduce the quit rate (0.47 vs. 0.29; yes = 1, no = 0), and to talk more to their employees (0.51 vs. 0.27). They also are perceived to focus their attention on "particular groups of workers" (0.28 vs. 0.16). These differences are statistically significant (cf. Table 7, panel A). Ratings in the *Manage+Career* treatment are somewhat lower than in the *Manage* treatment but on average still higher than in the control group.

TABLE 7 ABOUT HERE

A second survey is the *Cashier Exit Interviews* of the firm, available for the period from July 1st, 2015 (i.e., before the treatment) to February 15th, 2016.[25] Cashiers were asked in the interviews how much attention and support they received from their (i) supervisor and (ii) colleagues when they arrived in the store. In panel B of Table 7, we report the results from a difference-in-difference ordered logit regression, in which the dependent variables are the responses to the above questions. We find a statistically significant effect in the *Manage* treatment in terms of managerial attention, but no effect in terms of colleagues' attention.

Responses from a third survey (*Cashier Survey Sep 2016*) in which two randomly selected cashiers per store were interviewed about the amount of time per week supervisors spend on talking to them personally, are in panel C of Table 7. We do not find significant effects for the entire sample. However, the effect in our *Manage* and *Manage+Career* treatment is significant for stores in which managers did not change since the beginning of the treatment, indicating that, upon a change of manager, the effects disappear (arguably because the new manager was not sufficiently aware of the initial communication). This is in line with our quit rate regressions, in which we only find significant treatment effects in stores where managers did not change (Section 5.2).

As suggested by Bloom and van Reenen (2010), we have thus combined different surveys among different groups of employees using different questions to get a rather complete picture of store managers' reactions in response to the intervention. We are aware of the specific advantages and drawbacks of each survey instrument. For example, an advantage of the *Cashier Exit Interviews* is that the survey participants had no career concerns in our study firm. A disadvantage is that the interviews were conducted among a very specific group of cashiers.[26]

Taken together, the qualitative evidence indicates that the intervention encouraged store managers to intensify their interactions with cashiers, in particular on the cashiers they believe have the highest risk of quitting, for instance, in the early stages of employment or those with private problems.

5.6. Findings and the Framework

We argue that the observations of a large decrease in the quit rate, no effect on sales or shrinkage, and shifting managerial time use from customers to HR are consistent with the framework we suggested in Section 3. The top-down skip-level communication (Friebel and Raith 2004) about the importance of reducing the quit rate affects managers' beliefs about the goals of the firm. Managers re-allocate effort towards the new goal, i.e. they invest more time in interacting with workers to reduce the quit rate. The reduction of the quit rate may have a positive effect on the productivity of the workforce, and this should increase sales in the treatment group. However, there is also the direct effect of the reallocation of managers' effort from customers to cashiers, which reduces sales. What we pick up is the composite of the two effects.

Why did the effect vanish and was short-lived after the reminder? Our answer relates to the absence of rewards for managers. As discussed in our framework, the firm could use bonuses and promotions to reward managers. We find no significant treatment effect on manager bonuses. To study whether managers are rewarded with promotions, we collected data on all manager movements between September 2015 and June 2016, the month after the treatment effect vanished. In this period of time, 52 store managers and three regional managers were replaced. This gives the firm scope for promoting store managers to a larger store[27], or to regional manager, but we find no link between the quit rate in a manager's store and promotions. All three regional managers and 13 store managers were replaced by external hires. 21 store managers were replaced by store employees who were promoted, and 18 store managers were replaced by other store managers who moved between stores. Out of these 18 store managers – the only moves that could have been a promotion for store managers who had reduced their quit rates – ten were from our main treatment stores. According to the *Regional Manager Survey Nov 2016* (see Appendix I), only one of the ten managers was promoted, and four were actually demoted, i.e., they moved to smaller stores.

In line with our observations is an interpretation according to which, prior to the intervention, stores may have been run efficiently given the incentivized KPIs, and

that there was little scope of improving stores' business performance. On the level of the firm, however, the high quit rate created substantial costs. The most tangible of these costs are the administrative costs associated with recruitment, training, and workers' quits. The firm employed 24 HR officers for these tasks, many of whom could be reallocated to different tasks because of our treatment. Less tangible, but likely more important, were the risks that at excessively high quit rates, the firm's reputation was damaged, and that the quit rate problem would keep top management from dealing with strategies and their implementation.

6. Results of the *Career* Treatment

Our conceptual framework is not suited to incorporate the results of the *Career* treatment because the focus of the treatment were workers, not store managers. While managers play some role, it is less active than in the *Manage* treatments. They simply inform *all* workers, rather than playing an active role in interacting with the workers most likely to quit as in the other treatments.

The effects we find in the *Career* treatment are weak, in the realm of 10-20% of the contemporaneous quit rate in the control group, and are statistically insignificant at the conventional levels in all quarters and for all the outcomes we investigate (see Appendix II). While we cannot reject the null hypothesis of equality of the effects of the *Manage*, *Manage+Career* and *Career* treatments in every given quarter during the treatment period (p-values of 0.3 or higher), the cumulative effects of those treatments, observed over the period from September 2015 to May 2016, differ more strongly. As shown in Appendix II, the implied probability of "survival" for an average cashier over the above period is about 0.58 in the *Manage* and *Manage+Career* stores, and 0.55 for the *Career* stores, a difference significant at the 10% level.

What makes the *Career* treatment less effective? In our surveys, we find that managers in the *Career* treatment invest more time in HR compared to the control treatment (*Store Manager Survey Jul 2015*; *Store Manager Survey Sep 2016*). Cashiers did not report that they receive more managerial attention (*Cashier Exit Interviews, Cashier Survey Sep 2016*); however, they feel better informed about career opportunities within the firm (*Cashier Survey Oct 2015*).[28] This indicates that the managers in the *Career* treatment have used the additional time invested in HR in different ways than in the *Manage* treatment: They used the time to inform all workers about career opportunities.

A likely explanation why information about career opportunities did not reduce quits as much as other treatments could be that the cashier jobs in the firm are perceived as unattractive, which may also limit the desirability of making a career in the firm. In another project with the same firm, the effects of a randomized employee referral program were investigated (Friebel et al. 2019). Although the firm paid high bonuses for successful referrals, the number of referrals was low. Worker surveys show that the main reason for the low number of referrals was the low attractiveness of cashier jobs.

The difference in the attractiveness of jobs could also provide an explanation why Ashraf et al. (2020) find self-selection when career opportunities are highlighted in job ads, while we find only limited effects on quits. The health care jobs in Ashraf et al.'s (2020) setup are arguably more attractive than the retail jobs in our study firm, not only because of the nature of the job, but also because they are well-paid jobs in the formal sector.

7. Alternative Mechanisms

We can rule out a number of alternative explanations for the treatment effects on the quit rate in our *Manage* and *Manage+Career* groups. First, the fact of receiving *some* communication from the top management, independent from the contents of it, fails to account for the treatment effects we observe, as we find no significant effect in the *Career* treatment.

Second, regional or store managers may change bonus payments. However, in the personnel data, we find neither differences in the averages nor in the distribution of bonuses between September 2015 and June 2016. Also note that at the time of our treatments, store managers had very little say on the distribution of bonuses (a subject of an ongoing project of ours). In our *Store Manager Survey Jan 2016,* only three managers from our *Manage / Manage+Career* treatments mentioned that they had changed the allocation of bonuses.

Third, there may be undesired consequences of setting new goals, like the goal to reduce the quit rate (Schweitzer et al. 2004). Store managers may refrain from firing incompetent cashiers in order to bring the quit rate down. In our *Cashier Exit Interviews*, less than 5% of the cashiers report that they left the company "involuntarily". Performing a difference-in-difference analysis on involuntary quit rates, we find no effect in any treatment. Moreover, none of the store managers

interviewed in the *Store Manager Survey Jan 2016* who belonged to the *Manage* or *Manage+Career* group mentioned that they had changed their firing policies.

Fourth, store managers may change their hiring practices, resulting in differential selection effects of treated stores. We have only a small set of observable cashier characteristics and new hires do not differ between treatment groups. We investigated among managers interviewed in the *Store Manager Survey Jan 2016* whether hiring practices had been affected. Only three of the managers in *Manage / Manage+Career* treatments mentioned that they had changed their hiring processes. Most importantly, implementing changes in hiring would only be possible with a certain lag, but we observe immediate changes in the quit rate after the main intervention and the reminder.

Fifth, it could be possible that managers reorganized the shift planning to provide benefits to the workers most likely to quit. In the *Store Manager Survey Jan 2016*, only three managers who belong to the *Manage* or *Manage+Career* (and two in the control) group mentioned that they had reorganized the shift planning.

Finally, as shown in the Appendix I, our main results are hardly explainable by contamination between stores that are treated in different ways.

8. Concluding Discussion

With flattening firm structures (Guadalupe and Wulf 2003, Ryan and Wulf 2016) and new technologies facilitating coordination, middle managers' importance in firms is expected to decrease. Hierarchical order, though, seems persistent (Diefenbach and Sillince 2011), and so is the role of middle managers in designing strategies, balancing conflict, managing emotions, and other people-related issues (in many studies, reviewed in Wooldridge et al. 2008). Recently, complementary evidence about middle managers' HR role from a high-tech firm has been provided by Hoffman and Tadelis (2020).

Our RCT provides causal evidence that the HR function of middle managers has substantial impact on the quit rate, but it also shows that the reactions to top-down goal-setting are subtle and multi-dimensional. While the enhanced managerial attention reduces quit rates, we find no effect on store business performance, in particular sales.

The intervention was also beneficial for workers as it reduced workers' quits. Pre-treatment exit interviews document that more than 50% of the quitting employees were unemployed three months after they left the firm, while most of the other

employees work in similar jobs. Hence, many workers may leave because of their managers' behavior, and our treatment shows that a manager's behavior can reduce the quit rate substantially. This reduces the incidence of unemployment, and the treatment hence also has positive social externalities.

Despite these good news for both workers and the firm, the treatment effect ultimately faded away. When incentives did not materialize, leadership style may have reversed making our treatment effect vanish. Simple communication from top managers to middle managers may change managerial behavior – an idea going back to Barnard (1938) and reflected in recent papers on strategic focus (Dessein and Santos 2016) – but this may not suffice to reach a stable equilibrium. This opens a number of interesting avenues for future research, in particular in line with the idea that instruments are complementary in establishing new equilibria (Ichniowski et al. 1997): Which instruments when combined would suffice a permanent change of managerial behavior? How would the frequency and contents of top management communication matter, and would it need to be accompanied by providing extrinsic sources of motivation such as bonuses and careers?

RCTs in firms (and elsewhere) have been criticized for reasons of external validity. We believe, however, that the method used in this paper is valuable to study the role of managers and goal-setting in firms in more general terms. Not only does the RCT allow for measuring the causal effects of new goals on the quit rate in an on-going organization in a clean way. The method also allows us to measure the multiple outcomes that are relevant on the store and on the firm level. Furthermore, the multi-source surveys we employed measure – albeit with lower precision – the behavior of those who receive new goals, and complement the experimental approach. We thus add to an influential debate some first causal evidence about the intricacies of goal setting in a hierarchy.

We would also like to highlight that, despite the rise of e-commerce, the type of work we have looked at is representative for the work of many people around the globe. In retailing – one of the largest sectors worldwide in terms of employment (Cardiff-Hicks et al. 2015, Friebel et al. 2017, Hortaçsu and Syverson 2015) – and many other industries, such as call centers, restaurants, and tourism, employees interact frequently with "their" manager. Given limited resources of top managers, it is the middle managers who connect top managers with the operational level, supervisors and workers (Bunderson et al. 2016). Learning more about how middle managers can be

influenced to use their time in a profitable way that also benefits workers may hence be of greater importance than realized in this and in other settings.

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Figures and Tables

Figure 1. Conceptual framework
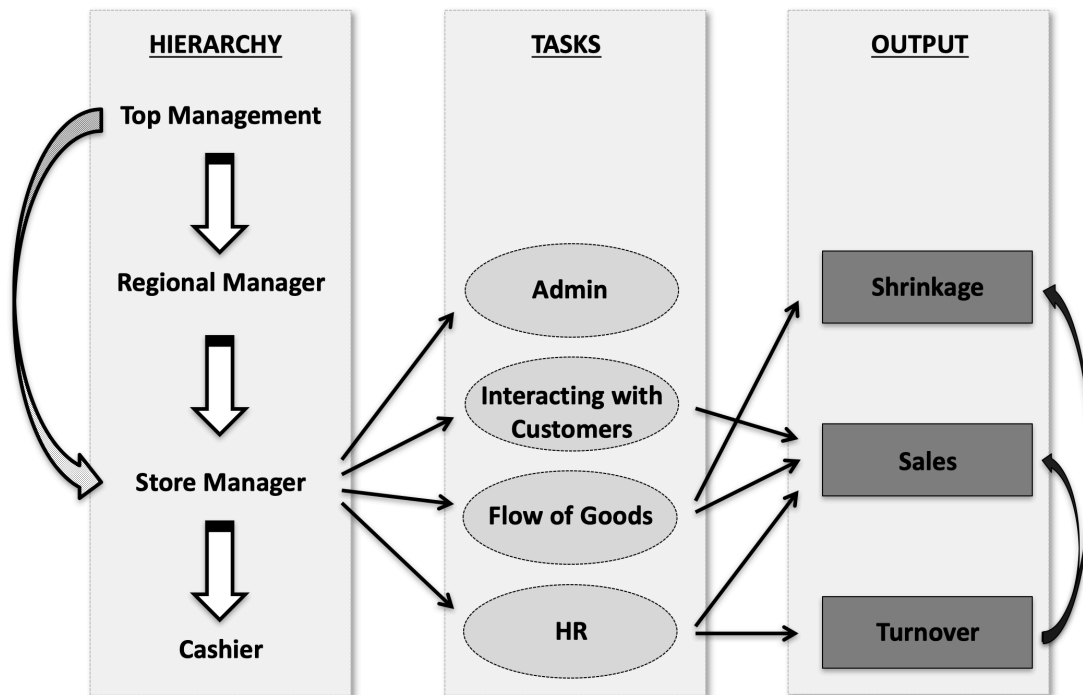
Figure 2. Data sets used in the paper
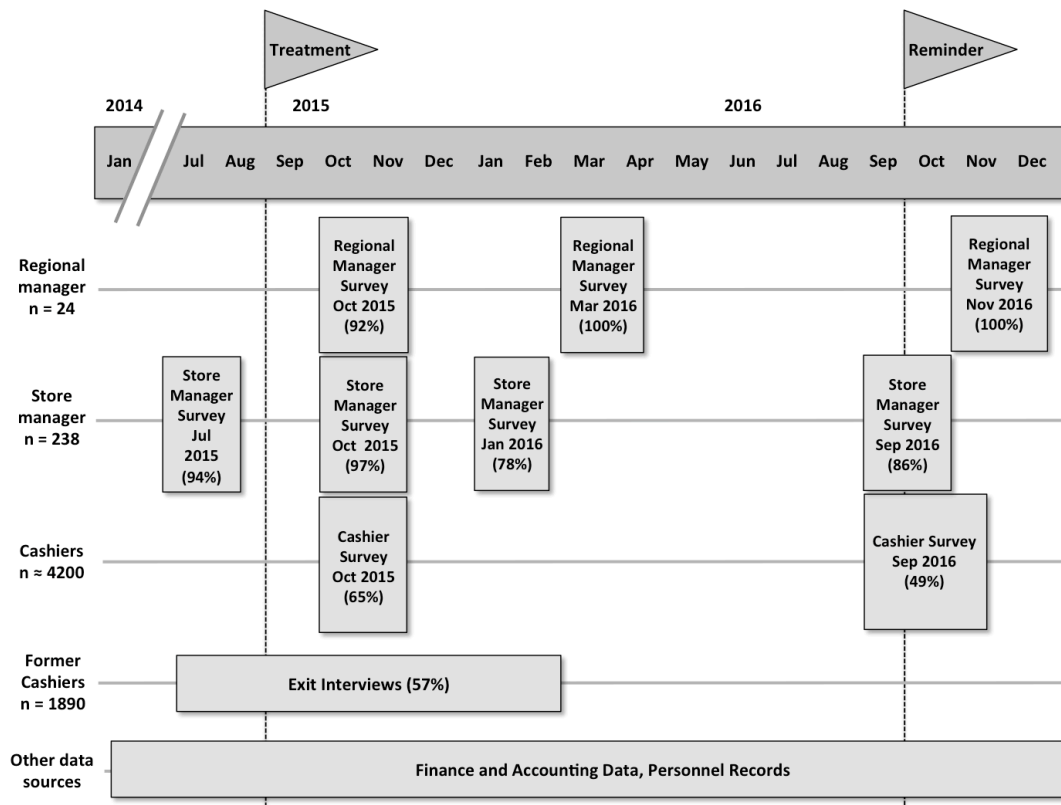
Notes. Response rates in the surveys are in parentheses. Store manager and cashier surveys were framed as "international surveys in the retail industry". *Cashier Exit Interviews*: We only use data for cashiers who quit in the first three months in the paper (n = 535). *Store Manager Survey Jan 2016*: Eleven store managers were not interviewed as they only recently moved to the store.

Table 1. Descriptive statistics in the pre-treatment period (Feb. 2014 to Aug. 2015)

	Panel A: Characteristics of stores					
	All stores (n = 238)	**Control** (n = 59)	**Manage** (n = 60)	**Manage + Career** (n = 59)	**Career** (n = 60)	**Mean equality p-value**
Mean monthly sales	206,120 (154,378)	190,724 (126,991)	203,065 (145,426)	221.212 (183.959)	209,503 (154,342)	0.736
Mean store size (in square meters)	638.78 (369.70)	584.63 (307.07)	642.35 (357.89)	682.06 (417.07)	646.05 (381.88)	0.499
Mean number of employees (incl. store managers)	25.01 (18.39)	22.85 (15.20)	24.26 (17.03)	26.74 (21.29)	26.18 (19.24)	0.611
Mean monthly shrinkage	5,752 (4,276)	5,340 (3,542)	5,431 (3,718)	6,368 (4,970)	5,860 (4,626)	0.543
Span of control (non-managerial employees per manager)	3.38 (1.56)	3.17 (1.45)	3.45 (1.54)	3.43 (1.68)	3.46 (1.56)	0.551
Location: Town	53.57%	52.73%	56.90%	55.89%	48.71%	0.810
Regional unemployment rate	7.73% (2.33%)	7.44% (2.20%)	7.64% (1.91%)	7.96% (2.85%)	7.89% (2.29%)	0.559
	Panel B: Characteristics of store managers					
Mean monthly earnings	933.01 (276.92)	932.02 (260.69)	925.45 (268.60)	936.59 (288.07)	937.94 (289.36)	0.962
Mean age (in years)	40.94 (8.46)	41.68 (6.63)	39.21 (9.27)	42.1 (9.03)	40.67 (8.30)	0.629
Mean tenure (in years)	6.87 (4.37)	7.23 (4.29)	6.39 (4.42)	7.5 (4.59)	6.4 (4.11)	0.683
Share of females	91.11%	87.36%	96.24%	87.07%	93.73%	0.057
Share of work time allocated to HR (self-reported)	38.58% (13.10)	40.09% (12.49)	36.78% (13.38)	39.38% (13.00)	37.98% (13.65)	0.553
Mean monthly quit rate	1.48% (1.21%)	1.30% (1.13%)	1.12% (1.05%)	1.78% (1.32%)	1.74% (1.31%)	0.515
	Panel C: Characteristics of cashiers					
Mean monthly quit rate	5.45% (6.86)	5.64% (7.14)	5.47% (7.14)	5.07% (6.34)	5.63% (6.79)	0.639
Mean number of cashiers	19.05 (12.84)	17.67 (10.88)	18.69 (12.07)	20.26 (14.92)	19.58 (13.03	0.694
Mean total monthly earnings	355.89 (116.21)	352.04 (115.51)	358.52 (117.07)	358.05 (114.93)	354.63 (117.23)	0.563
Mean age (in years)	33.34 (12.59)	32.46 (12.53)	33.57 (12.51)	32.57 (12.50)	34.65 (12.68)	0.036
Mean tenure (in years)	2.62 (2.78)	2.57 (2.85)	2.68 (2.82)	2.51 (2.57)	2.72 (2.87)	0.731
Share of females	89.71%	89.03%	88.87%	90.09%	90.74%	0.593

Notes. Panel A and C: Data are from February 2014 to August 2015; panel B: Earnings, age, tenure and share of female employees are from August 2015, percentage of work time allocated to HR is from the *Store Manager Survey Jul 2015*.

Table 2. Cashier quit rate and business performance outcomes

Quit rate by period	Outcome measure		
	Log monthly sales	Log share of shrinkage in monthly sales	Log monthly operational profit
Current month	-0.167***	0.060	-0.252***
	(0.056)	(0.059)	(0.074)
1 month before	-0.063	0.074	-0.156
	(0.045)	(0.061)	(0.106)
2 months before	-0.101**	0.037	-0.165***
	(0.047)	(0.068)	(0.073)
3 months before	-0.031	0.090*	-0.038
	(0.031)	(0.054)	(0.066)
Cumulative over 3 months	-0.362**	0.262	-0.611**
	(0.153)	(0.171)	(0.244)
Observations	3523	1654	1644
Stores	238	238	238

Notes. For each store performance outcome, this table reports the coefficients from the regression of its growth rate on changes in the quit rate lagged up to three months. Control variables are: lagged dependent variable, growth rate of labor input, and time period dummies. Errors are clustered at the store level. Lower number of observations for shrinkage and operational profit reflects the fact that we have these data from January 2015 on. Coefficients marked with *, ** and *** are statistically significant at 10%, 5% and 1% level, respectively.

Table 3. Treatment effects of the *Manage* and *Manage+Career* treatments on the quit rate, sales and shrinkage, by time period

	Sep 2015 to Nov 2015	Dec 2015 to Feb 2016	Mar 2016 to May 2016	Jun 2016 to Sep 2016
Panel A: Monthly quit rates				
Manage	-0.015*	-0.023**	-0.016*	-0.001
	(0.008)	(0.012)	(0.008)	(0.009)
Manage+Career	-0.006	-0.020**	-0.020**	0.006
	(0.008)	(0.010)	(0.009)	(0.010)
Control group average quit rate in the corresponding period	0.067	0.071	0.077	0.085
	(0.076)	(0.129)	(0.078)	(0.089)
Observations	714	711	695	922
Panel B: Log monthly sales				
Manage	0.003	-0.007	-0.006	0.025
	(0.019)	(0.020)	(0.018)	(0.020)
Manage+Career	-0.000	-0.012	-0.001	-0.013
	(0.014)	(0.017)	(0.017)	(0.018)
Observations	681	687	674	905
Panel C: Log share of shrinkage in monthly sales				
Manage	0.008	0.016	0.023	-0.005
	(0.031)	(0.034)	(0.031)	(0.033)
Manage+Career	0.024	0.005	0.016	0.019
	(0.028)	(0.032)	(0.030)	(0.029)
Observations	681	687	674	905

Notes. Estimates are based on the ANCOVA estimator (equation 1). For the regressions with log sales and log shrinkage in sales, we use store headcount, physical size and location as additional controls. Errors are clustered at the store level. The number of stores are 238; as the coeffiicents are based on monthly data, the number of observations in column 1-3 is three months * 238 stores (colument 4: four months * 238 stores). As business performance data are not available in a minor number of stores and as a small number of stores were closed permanently or temporary (e.g. because of renovations), the number of observations differs slightly between specifications. Coefficients marked with *, ** and *** are statistically significant at 10%, 5% and 1% level, respectively.

Table 4. Treatment effects on the quit rate after the reminder sent to a random subsample of *Manage* and *Manage+Career* treatment stores

	Oct 2016	Nov 2016	Dec 2016
Manage / Manage+Career, reminder sent	-0.025**	-0.010	0.015
	(0.012)	(0.013)	(0.011)
Manage / Manage+Career, reminder NOT sent	0.006	0.009	-0.013
	(0.015)	(0.014)	(0.012)
Control group average quit rate in the corresponding period	0.061	0.054	0.047
	(0.080)	(0.065)	(0.062)
Observations	687	687	687

Notes. Number of stores: 229. Estimates are based on the same estimator as in Table 3 (ANCOVA, equation 1). Errors are clustered at the store level. Coefficients marked with *, ** and *** are statistically significant at 10%, 5% and 1% level, respectively.

Table 5. Heterogeneous treatment effects of the *Manage* and *Manage+Career* treatments on the quit rate

	Standardized Coefficient
Average Manage/Manage+Career effect in the period Sep 2015 to May 2016	-0.016*** (0.006)
Interactions with contextual characteristics:	
Store-average cashier age	-0.002 (0.006)
Share of female cashiers	-0.005 (0.006)
Baseline cashier quit rate	0.005 (0.008)
Store manager age	-0.001 (0.010)
Store manager tenure	-0.012* (0.007)
New store manager in Sep 2015 to May 2016	0.022** (0.010)
Store manager fixed effect	-0.024* (0.014)
Store size in headcount	0.015** (0.006)
Store located in big town	0.015 (0.009)
Local unemployment rate as of Sep 2015	-0.006 (0.006)

Notes. Estimates are based on the ANCOVA estimator (equation 1). Standard errors are clustered at the store level. Coefficients marked with *, ** and *** are statistically significant at 10%, 5% and 1% level, respectively.

Table 6. Treatment effects on store manager time use

	Admin	Interaction with customers	Flow of goods	HR
Manage	-6.543	-18.519*	-3.471	26.487*
	(10.619)	(9.699)	(14.219)	(14.880)
Manage+Career	13.854	-7.921	-21.451	9.199
	(11.092)	(8.467)	(14.342)	(14.288)
Observations	419	419	419	419

Notes. Managers' time use for admin, flow of goods, interaction with customers, and HR is measured in before (*Store Manager Survey Jul 2015*) and after (*Store Manager Survey Sep 2016*) the treatment, and is expressed in minutes per working day. The estimates show the difference-in-difference effects; the baseline is the control group. Standard errors are clustered at the store level. Coefficients marked with *, ** and *** are statistically significant at 10%, 5% and 1% level, respectively.

Table 7. Responses in our store manager survey (panel A), cashier exit interviews (panel B) and cashier survey (panel C)

	Mean (SD) response Control	Estimated ologit coefficients		
		Manage	Manage + Career	Career
Panel A (Store Manager Survey Jan 2016): Differences in free text responses of store managers evaluated by ten external evaluators				
According to the store manager, to what extent is it possible for her/him to reduce employee turnover? (Scale: 1 (not possible) to 10 (possible))	3.191 (1.551)	1.233*** (0.383)	0.516 (0.353)	*NOT SURVEYED*
Has the store manager increased effort to reduce the turnover in the last months compared to the time before? (Scale: 1 (yes) or 0 (no))	0.293 (0.375)	0.948** (0.393)	0.716* (0.406)	
Has the store manager talked to workers more over the last few months compared to the time before? (Scale: 1 (yes) or 0 (no))	0.271 (0.340)	1.023** (0.416)	0.353 (0.365)	
Has the store manager talked to particular groups of workers more over the last few months compared to the time before? (Scale: 1 (yes) or 0 (no))	0.165 (0.234)	0.745* (0.396)	0.651* (0.380)	
. 2016): Diff.-in-Diff. in the responses of former cashiers who quit in the first three months after being hired				
How much attention and support did you receive from your supervisor in the first weeks or months? (Scale: 1 (no attention) to 5 (a lot of attention))	4.098 (1.036)	0.688* (0.406)	0.452 (0.417)	0.393 (0.412)
How much attention and support did you receive from your colleagues in the first weeks or months? (Scale: 1 (no attention) to 5 (a lot of attention))	4.301 (0.913)	-0.060 (0.399)	0.042 (0.444)	0.240 (0.483)
Panel C (Cashier Survey Sep 2016): Differences in the responses of randomly selected cashiers				
How many minutes per week on average does your store manager talk to you personally about work or other issues? (Scale: 1 (0 min), 2 (1-5 min), 3 (6-10 min), 4 (11-30 min), 5 (31-60 min), 6 (61-120 min), 7 (>120 min))				
Responses: all cashiers	4.322 (1.596)	0.331 (0.347)	0.417 (0.326)	0.085 (0.281)
Responses: cashiers where the store manager is the same since the beginnig of the treatment	4.228 (1.648)	0.772* (0.415)	0.752* (0.401)	0.041 (0.349)

Notes. LHS variable question 2-4 in panel A: Share of "yes" responses. Ologit standard errors (in parentheses): Robust standard errors in panel A, standard errors clustered at the store level in panel B and C. Panel A: We did not interview the store managers in the *Career* treatment because of time constraints of our student assistants. In panel C we include a dummy as a control that captures whether a store received a reminder. Number of observations: panel A: 129 (*Control*: n=40; *Manage*: n=49; *Manage+Career*: n=40); panel B: 535 (*Control*: n=133; *Manage*: n=131; *Manage+Career*: n=137; *Career*: 134); panel C, question 1: 334 *(Control*: n=87; *Manage*: n=77; *Manage+Career*: n=81; *Career*: n=89); panel C, question 2: 223 (*Control*: n=57; *Manage*: n=51; *Manage+Career*: 57; *Career*: 58). Coefficients marked with *, ** and *** are statistically significant at 10%, 5% and 1% level, respective.

[1] This makes the focus of our paper different from the one of the Strategic Human Capital literature. See Wright et al. (2014), who discuss differences and similarities between the Strategic Human Resource and the Strategic Human Capital literatures.

[2] For the effects of monetary incentives for middle managers and supervisors, see Bandiera et al. (2007) and Manthei et al. (2020).

[3] The main focus of our intervention were store managers, their role and their effects. We also conducted an additional treatment in which the focus was on cashiers, and in which managers played a more passive, information transmission role. Here, store managers simply informed their cashiers about career opportunities. We find only weak effects of the treatment on quits. A likely explanation why the treatment had only limited effects is that the jobs in the firm are perceived as unattractive, which may limit the desirability of making a career in the firm.

[4] Whether the goal "do what you can" to reduce the quit rate in our study is specific or unspecific in the sense of the debate in the goal-setting literature is not that clear. On the one hand the main *outcome* variable is well specified; on the other hand, we do not specify the "optimal" level of the quit rate in the stores or give precise instructions how to reduce it.

[5] Besides cashiers, stores employ specialists such as bakers or butchers, and (in larger stores) department managers who assist the store managers. These groups of employees have more of a career job, are better paid (their average monthly earnings, including bonuses, are 566 Euros) and tend to stay with the firm longer (average tenure 5.2 years).

[6] In surveys, the majority of store managers and cashiers mentioned "unpleasant working conditions".

[7] We also considered alternative definitions of quit rate, namely, the ratio of the number of quits to the average of the headcount at the beginning and end of each month, and the store-month average frequency of quits. Both the calculated quit rates and estimated main results are similar under all definitions.

[8] In general, high quit rates are a substantial problem in sectors with low-wage workers; Manning's (2011) survey provides estimates on the elasticity of quit rates with respect to wages in the realm of 0.5-1.5.

[9] Blatter et al. (2012) estimate that newly hired skilled workers are about 30% less productive compared to averaged skilled workers within a firm for a period of about 80 days. Manning (2011) also concludes in his literature survey that the bulk of hiring costs are the costs associated with training newly hired workers.

[10] Bloom et al. (2012) show that firms in Central European transition countries operate with management practices that are moderately worse than those of Western European countries. They also find that stronger product market competition and higher levels of multinational ownership in those countries is strongly correlated with better management, a finding confirmed by Friebel and Schweiger (2013), who report similar results for different regions in Russia. In line with this, we find that intensified product market competition encouraged our firm to rethink its management practices, and that the foreign owner installed a new top management aiming to increase the firm's performance by improving management practices.

[11] Blatter et al. (2012) estimate that a one-percentage-point reduction in the unemployment rate increases hiring costs by 5% on average.

[12] The treatment is related to Ashraf et al. (2020), who study the effects of salience of career opportunities on the quantity and quality of applications. For effects of saliency of incentives on the performance of workers, see Englmaier et al. (2017).

[13] Potentially, it also affects shrinkage of perishable goods; we omit this relationship from the graph because it is – according to the firm's top management – much weaker and indirect.

[14] We are grateful to an anonymous referee helping us to develop these links.

[15] In the letter, we talked about 400 Euros, based on the administrative cost's estimation, and an – arguably – too small estimate of forgone profits, based on correlations of quit rates and profits in the pre-treatment data. At the time, we had not yet carried out regressions on the full sample (see Section 2.2), which lead to higher estimates. Also note that we talked in the letter

about a quit rate of 90%, which represents the firm-wide average over the last six months before the treatment (the long-run quit rate rate is slightly lower). This was the figure the firm used internally at that time.

[16] Top management told us that store managers rarely engaged in face-to-face interaction with employees. Indeed, in our *Cashier Survey Oct 2015,* among control group stores, we found that 30% of the store managers had one or no meeting with employees per quarter, and another 30% held only one meeting per month.

[17] In the *Cashier Survey Sep 2016* and *Cashier Exit Interviews,* around 20% of the participants refused to answer the surveys. The other reasons for non-responses were that the phone numbers were incorrect, the HR office had no longer any contact information, or that the cashiers did not pick up the phone after we rang them at least three times. We do not find significant treatment difference in our response rates for any of our surveys.

[18] An alternative to the ANCOVA estimator in (1) would be to estimate the treatment effects on the individual decisions to stay or leave with a duration or logit regression; however, since the treatment was at the store level, clustering the individual observations at the store level produces similar estimates and significance statistics.

[19] The cumulative effects of the *Manage* and *Manage+Career* treatments over the entire treatment period are very similar (Appendix II).

[20] Using machine-learning based methods of estimating heterogeneous treatment effects (Chernozhukov et al., 2018) gives qualitatively similar results (available upon request).

[21] The absenteeism data are very noisy, which might explain why we find no treatment effect for absenteeism.

[22] We are aware that the timing of the second survey is not optimal (the treatment effect had already vanished by the time). However, in both the first and the second survey, we explicitly asked managers to "think about the last months", which deals with the problem to some extent.

[23] Griffeth et al. (2000) show in a meta-analysis that employee attitudes are strongly associated with quit rates. In our *Cashier Survey Oct 2015*, we find no evidence that our *Manage* and *Manage+Career* treatments affect cashiers' commitment and job satisfaction scores, which is no surprise: Store managers seem to focus on cashiers who have the highest risk of quitting; in our survey, we only measure average scores, and we do not know which particular cashiers have the highest risk of quitting. For subgroups of cashiers for whom we know that they have a high risk of quitting (i.e. cashiers who arrived in September 2015) the number of observations is rather low.

[24] One store manager said "I became worried about an employee's alcohol problem, visited him at home, suggested a medical treatment"; another store manager implemented "more team-building, meetings over coffee/sweets". In the control group, one manager said about the quit rate problem "I can't do anything. The quit rate is the workers' fault, not mine".

[25] To deal with truncation problems, we only look at those cashiers who left during the first months of their tenure. This is in line with the top-down communication to the managers that stressed the importance of engaging with newly hired workers. We exclude from our analysis cashiers who entered before but left after the treatment began.

[26] Another advantage is that store managers' descriptions what they did to reduce the quit rate allows to measure a variety of different actions, without nudging managers to provide a specific response. A potential disadvantage is that our assistants' notes could be biased as she learned about the treatment status of the stores during the conversation from managers' responses. However, our assistant asked the question what managers did to reduce the quit rate at the beginning of each phone call, before there was a chance to reveal the treatment status.

[27] According to the COO, store managers who successfully manage small stores get promoted to larger ones. Indeed, in our *Regional Manager Survey Nov 2016*, we study the career paths in detail and find evidence that the firm promotes managers who successfully managed small stores to larger ones. For details, see Appendix I.

[28] Cashiers in the *Manage+Career* treatment also report that they are better informed about career opportunities compared to cashiers in the control group.