# Is This Really Kneaded? Ask the Manager! A Large-scale Trial on the Effects of Paperwork Reduction*

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October 2022

**Abstract**

In a large German bakery chain, many workers report negative perceptions of paperwork. Randomly removing two of the most onerous paperwork duties (one checklist and one non-checklist duty) in half of stores, sales increase by 2-3% and store manager attrition is substantially reduced. Beneficial effects are fully concentrated in stores where regional managers predict that the treatment will be effective, reflecting substantial heterogeneity in returns that is well-understood by these upper managers. Sales impacts are also smaller in larger stores, reflecting that some paperwork helps coordinate production. Effects appear not to come from workers having more time for production. Rather, most effects are indirect, with employees intrinsically valuing that the firm reduced their paperwork. As a result of the RCT, the firm implemented firmwide reductions in paperwork, eliminating paperwork that employees regard as demeaning, but keeping paperwork that helps coordinate production.

*JEL Classifications*: M51, M52
*Keywords*: Management practices; monitoring; checklists; time use; respect

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*PRELIMINARY AND INCOMPLETE. We thank the study firm and its management for their enthusiastic participation in this collaboration. We thank Charlie Brown, Axel Ockenfels, Andrea Prat, Kathryn Shaw, and Melanie Wasserman, as well as seminar participants at Barcelona, Kellogg, Rotman, and WashU Olin for their comments and suggestions. Financial support from the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) under Germany's Excellence Strategy (EXC 2126/1– 390838866) and SSHRC is gratefully acknowledged. The experiment was pre-registered on 04/14/2021 with the AEA RCT registry under ID AEARCTR-0007550. IRB approval was received from the University of Cologne. The Worker Council approved the project and was involved in all steps.

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Firms differ markedly in their management practices and such differences help explain variation in firm performance (Ichniowski *et al.*, 1997; Syverson, 2011). One key aspect of management is monitoring, broadly defined as keeping a close watch on the production process. Growing research, including randomized controlled trials (RCTs), emphasizes that improving monitoring can enhance performance (Duflo *et al.*, 2012; Jackson & Schneider, 2015; Bandiera *et al.*, 2021), and aspects of monitoring are scored in the World Management Survey (Bloom & Van Reenen, 2007). However, increased monitoring need not always be beneficial. Separate from the direct cost of monitoring technology, monitoring often takes time, both for monitors and the people being monitored. Furthermore, employees may dislike being monitored, not only because it prevents them from slacking off, but also because it may be a signal of mistrust (Falk & Kosfeld, 2006). Indeed, excessive use of monitoring could even lead to a negative company culture based on fear and mistrust.

A very common form of monitoring is paperwork. Paperwork is pervasive at work, though often disliked (Strausz, 2006), and the degree of paperwork varies substantially across organizations.[1] Take the example of small-scale travel expenses for professors. Some universities issue credit cards so that people can pay for small expenses with no receipts. Many universities require receipts, and some often require both receipts and credit card statements to corroborate payment. Of course, firms' intended goal of paperwork is not to create pointless work, but to achieve beneficial ends, such as preventing employee malfeasance, to help coordinate production, or to help workers remember to do things (Gawande, 2010).

As far as we know, we provide the first RCT on paperwork reduction in any field. Our research partner is a major German bakery chain with 145 stores, over 2,000 workers, and over €100m of annual revenue. The firm is family-run and prior to our intervention was using extensive paperwork in many aspects of production. Workers needed to record extensive information, not only about their products (e.g., when they took bread out of the oven), but also on interactions with customers, such as whether they smiled. Drawing on a deep collaboration with the firm and top management, we conducted extensive pre-RCT interviews and surveys within the firm, and discovered that several paperwork tasks were particularly resented by workers. Management agreed to randomly remove two of the most onerous paperwork duties, the operational checklist and daily protocol, in half of stores.

The RCT is grounded in a simple conceptual framework of monitoring, as laid out in Section 1. Paperwork helps firms address moral hazard problems, coordinate production, and remind workers of tasks. However, paperwork also entails costs, both directly in terms

[1] Dislike of paperwork is common in popular culture. A famous example is the 1999 movie *Office Space*, where the main character, a software engineer, spends substantial time on TPS reports. For recent general discussion on aversion to monitoring, see https://www.nytimes.com/interactive/2022/08/14/business/worker-productivity-tracking.html?smid=nytcore-ios-share&referringSource=articleShare.

of time and indirectly in terms of other factors, such as by reducing worker happiness or signaling mistrust. The framework helps ground what paperwork tasks are best to remove and what stores may benefit most from paperwork reduction.

As detailed in Section 2, the bakery chain we study represents an ideal setting for our RCT. First, the sample is large, with 145 stores and thousands of workers. Second, we have access to highly granular administrative data, coupled with the ability to conduct high-quality, detailed surveys. The administrative data cover detailed aspects of sales, customers, and orders hour by hour, which is critical for examining how workers and managers are using their time and how they substitute time on paperwork to other tasks. Because of our deep collaboration, the surveys we conduct have very high response rates, as well as in-depth open-ended questions, which are critical for understanding mechanisms. Unusually, we survey not only store employees and managers, but also regional managers (the bosses of store managers) in detail and have them make predictions about in what stores the RCT will be most successful.

In Section 3, focusing first on the overall effects of the RCT, we estimate that removing paperwork increases sales by 2.6%. The impact on sales is similar during busy and less busy times. While one may be concerned that removing monitoring would lead to wasted food, increases in employee misbehavior, or coordination failures, we observe no negative impact on shrinkage (a joint measure of food waste and worker stealing). We also observe no negative impact on mystery shopping scores. Our bakery firm has relatively low attrition, and there is no overall impact of the treatment on attrition. Still, there is a strong negative effect on the attrition of store managers, who do a lot of the paperwork and who are naturally likely to appreciate having less of it. In contrast, the treatment has a positive, though statistically insignificant, effect on the attrition of mini-jobbers, the unskilled part-time workers who may benefit from structure and checklists.

Our initial discussions with regional managers highlighted that the impacts of the RCT on outcomes would likely be highly heterogeneous across stores. In our pre-RCT survey of regional managers, managers predicted that in about half of their stores the treatment would be effective, and in the other half they would not. Thus, in our RCT pre-registration, we focused strongly on this aspect of heterogeneity. Splitting the sample based on whether regional managers predicted the store would work, we observe vast differences in the results. Among stores where the RCT was predicted to be successful, we find that removing paperwork increases sales by 5%. There are broad-based improvements in store operations, with round-the-clock improvements in sales, statistically increases in customers, and a decrease in shrinkage. In contrast, in stores where the treatment was not predicted to work, the impact on both store-level outcomes and employee attrition is zero. If anything, mystery shopping

scores are slightly down, though the impact is not statistically significant.

To better understand these effects, we dig into the free text of regional managers' responses on why the treatment would work in particular stores. Among stores where regional managers predicted the treatment will work, in about one-third of cases, regional managers explicitly mention something about workers enjoying the reduction in paperwork, consistent with a utility cost to excessive paperwork. In about two-thirds of cases, regional managers mention something about the absence of problems, consistent with traditional views of monitoring to help detect and avoid problems.

The firm was quite satisfied with the results of the RCT. Unlike past interventions in the literature, our treatment was taking something away instead of adding something, so the direct cost to implement the RCT was very low. For minimal cost, the firm received a sustained increase in sales, as well as a reduction in manager turnover. Therefore, the firm decided to implement paperwork reduction firmwide. However, while the RCT involved eliminating two paperwork duties, the firm decided to restore the daily protocol in the firmwide rollout even though the operational checklist was eliminated.

Our paper contributes to several literatures. First, it contributes to work in personnel and organizational economics, as well as social science more general, on the returns to checklists and monitoring.[2] Most influentially, the physician Atul Gawande (2010) summarizes studies and in-person observations from a number of domains, including those of surgeons (see Ko *et al.* (2011) for a review), airline pilots (Boorman, 2001), and investors, to argue that checklists can have profound positive organizational consequences. Our findings show that the returns to monitoring need not be positive, as we estimate sizable positive benefits of removing checklists. The central reason, we believe, is the presence of indirect costs of monitoring. Using lab experiments with assigned roles, Falk & Kosfeld (2006) show that workers react negatively and often choose low effort when being controlled by the manager. Our paper suggests that such insights extend into the field as well, and we offer a framework that rationalizes why paperwork may be good for some tasks, but bad for others.

In economics field experiments on monitoring, most related to ours is a seminal paper by Nagin *et al.* (2002), who consider a field experiment where a call-center company exogenously varies its monitoring rate in some call-centers. They show that increasing the declared monitoring rate leads to a decrease in suspected bad calls, but that a certain share of workers do not appear to respond to the additional monitoring, due to a belief that workers should behave in an appropriate manner. Despite key differences in the nature of the

[2]In economics, experiments (lab and field) showing impacts of monitoring include Duflo *et al.* (2012); Jackson & Schneider (2015); Dickinson & Villeval (2008); Falk & Kosfeld (2006); Bandiera *et al.* (2021); Kelley *et al.* (2021). In most of these studies, monitoring is added instead of taken away. There are also many observational studies, especially in the trucking industry (Hubbard, 2000, 2003).

RCTs,[3] we believe both papers are highly complementary and point to broader conceptions of how monitoring affects workplace behavior beyond the classic contract theory perspective (Holmstrom, 1979), both why some workers behave well despite limited monitoring (Nagin *et al.*, 2002) and why some workers and teams perform poorly while monitored (our paper).[4]

Second, our paper contributes to work in personnel economics on the heterogeneous returns to management practices and on the impact of managers. In the midst of substantial work on the general importance of management practices (Bloom *et al.*, 2012, 2019), growing research emphasizes that management practices are complementary to one another (Milgrom & Roberts, 1990; Ichniowski *et al.*, 1997), and that their impact may be contingent on other factors within an organization (Blader *et al.*, 2020). We show that there is substantial heterogeneity in the return to a management practice, namely, paperwork reduction, based on regional manager beliefs. Manager beliefs are somewhat correlated with some observable traits of stores, e.g., managers correctly predict that the treatment will be larger in smaller stores, but there is substantial predictiveness of manager beliefs beyond observable characteristics. A rich and growing literature examines what do non-CEO managers do and their impact (Lazear *et al.*, 2015; Friebel *et al.*, 2022; Frederiksen *et al.*, 2020; Hoffman & Tadelis, 2021), often emphasizing the role of managers in motivating and teaching employees. Our results suggest that an important value of managers is their private information about their teams.

Third, our paper makes a methodological contribution to RCTs. Beginning with DellaVigna & Pope (2018), growing work uses expert predictions for the purpose of examining how the results of an RCT compared to priors of experts, that is, to see to what extent a result is surprising or not (DellaVigna *et al.*, 2019). Rather than having experts predict the average results of the RCT (e.g., that the treatment will increase or decrease sales by a certain amount), our RCT has experts predict store by store whether the treatment will be effective in that particular store. We are of very limited other work that uses expert predictions in RCTs in this manner, but we believe that this is a methodology that may be useful in other contexts.[5] We show that experts in our context have substantial knowledge

[3]First, Nagin *et al.* (2002) examine audit rates, a non-paperwork form of monitoring. Second, Nagin *et al.* (2002) study intensive margin changes in monitoring, whereas we study extensive margin changes (i.e., eliminating monitoring). Third, in Nagin *et al.* (2002), production is individual, whereas our workers work in teams, and this matters for coordination benefits of monitoring. Fourth, our study is about workers reacting negatively to excessive monitoring, whereas Nagin *et al.* (2002) is about some workers behaving well despite a lack of monitoring. Fifth, the metrics studied in Nagin *et al.* (2002) suggest that less monitoring is bad in their context, whereas our results suggest that less monitoring is good on average.

[4]de Rochambeau (2020) shows that randomly monitoring Liberian truckers increases their effort, though there are some workers who reduce their output after being monitored. Hiring students to identify coins, Belot & Schröder (2016) show that randomly added monitoring can backfire on some dimensions of performance.

[5]For example, one could imagine asking doctors or patients to predict which individual patients will be

about which units will be most affected.

# 1 Conceptual Framework

What is the average impact of monitoring such as checklists on performance, and how would the impact of monitoring vary across stores within a firm? To address these questions, we model the impact of implementing a binary monitoring technology (monitor or not) in a store. In addition to shedding light on these two key questions, our framework helps motivate which paperwork duties are best to remove and also models the implications of treatment effect heterogeneity according to regional manager expectations. Monitoring is randomized in our RCT, so we focus on the causal impact of monitoring instead of the decision to monitor.

As in Garicano (2000), the firm faces *problems*, though we think of problems in a very broad sense, covering issues of information and agency. First, problems can be memory problems, such as where people on a surgery team forget to take certain steps (Gawande, 2010) or where bakery workers forget to put doughnuts at the correct angle. Second, and very importantly for us, these can be coordination problems, e.g., a bakery worker forgets to pass along to the next shift at what time the bread was made. Finally, these can also be problems of moral hazard where workers behave opportunistically (Nagin *et al.*, 2002). To keep things as simple as possible, we assume that problems occur exogenously with probability $p$, but the logic of our model can be easily extended to having workers choosing whether to behave opportunistically. When a problem occurs, the cost to the firm is $k$. Thus, without monitoring, firm profits are $-pk$.[6]

Monitoring such as paperwork (and, in particular, checklists) helps the firm identify problems.[7] The quality of monitoring is given by $m$, and represents the probability that a problem is detected and solved in full. Equally, one can assume that monitoring detects problems with 100% probability, but that only a share $m$ of costs are recuperated. Using monitoring also involves direct cost, $c$, which can include the technology itself, but in our setting is primarily the time cost of filling out paperwork.

In addition, monitoring entails an indirect cost $\theta$ to firm performance. Many people

responsive to a new drug. The only other RCT we are aware that does something similar is Bryan *et al.* (2021), who ask loan officers to predict how individual microfinance clients will fare under various treatments. Our prediction setup differs in that we focus on the predictions of higher-up experts in a private-sector firm.

[6] In line with Garicano (2000), one can imagine that stores differ not in the frequency of problems face, but rather in their ability to solve them. Thus, one can alternatively define $p$ as the share of problems that a store cannot solve on its own without firm monitoring.

[7] A checklist is a type of paperwork where workers check off items in a list. A paperwork duty can be defined as a task where workers fill in the information in a form, and can be done with pen-and-paper, electronically, or verbally. Thus, a checklist is still paperwork even if done verbally.

seem to dislike being monitored, perhaps because it is intrinsically unpleasant to fill out paperwork but also because monitoring can be viewed as a sign of disrespect (Ellingsen & Johannesson, 2007, 2008). Ellingsen & Johannesson (2008) argue that workplace respect can be thought of in terms of second-order beliefs, i.e., a worker's belief about the firm's belief about whether she is altruistic or competent. Being respected can be important for firm performance, both because it makes workers more likely to stay with the firm (Friebel *et al.*, 2023) but also because it motivates them to work harder (Cai & Wang, 2022). Alternatively, being monitored could crowd out intrinsic motivation to work hard (Benabou & Tirole, 2003; Rebitzer & Taylor, 2011).

Therefore, the profits from monitoring are $-(1-m)pk-c-\theta$, and the returns from our treatment of removing paperwork are $c+\theta-mpk$. This expression allows us to characterize whether the treatment is likely to be positive or negative, as well as to predict what are the stores where the treatment will have the largest benefit. Specifically, our treatment is likely to be positive when there are important direct and indirect costs of monitoring, as well as when a firm faces infrequent problems, when the memory technology can less reliably identify problems, and where the cost of those problems is lower.

This framework also raises the possibility that there could be substantial heterogeneity across stores within a firm in the returns to monitoring. Regional managers may know that some stores experience frequent coordination problems and thus likely benefit from monitoring. Stores may also vary in the production costs of monitoring, such as if some workers dislike paperwork more than others (e.g., if some workers find monitoring more disrespectful or wasteful than others), and stores may differentially complain about these costs to regional managers. Given that there are multiple factors affecting whether monitoring has positive effects, as well as that some factors (like frequency of coordination problems) are very difficult to observe in data, it is natural to ask regional managers to make predictions about whether a treatment will work in a store.

Formally, let the performance impact of the treatment be $z = c + \theta - mpk$. Regional managers observe a private signal $\hat{z} = z + \epsilon$ of treatment implications in a store, and state a subjective belief $B$ about whether the treatment will work in a store. The private information a manager has is represented by the precision of the signal, $h_\epsilon = \frac{1}{\sigma_\epsilon^2}$. Managers believe the treatment will work when the treatment effect is above a threshold. Thus, the more private information that regional managers have about the components of $z$, the greater is $E(z|B = 1)$, i.e., the average effect of the treatment among stores where the regional manager predicts the treatment will work. Likewise, the more private information that regional managers have, the greater is $E(z|B = 1) - E(z|B = 0)$, i.e., the difference in treatment effects between stores where managers think the treatment will work relative to

stores where managers think the treatment will not work.

Our framework focuses on store performance, in line with our RCT pre-registration, but is easily extended to cover worker attrition. It is natural that the direct and indirect costs of monitoring are not only costs to performance, but also to worker utility from the job. Our treatment is likely to reduce attrition most for workers with higher costs of paperwork.

# 2 Study Background

**The firm.** The firm is one of the largest bakery chains in one densely populated region of Germany.[8] The firm is family-owned, as is typical for most bakery chains. The CEO is also the founder of the modern version of the bakery chain. The company has roughly 2,000 employees. Many of the top executives helped set up the chain with the CEO over the last 40 years. The firm has 145 stores, as well as one plant which produces raw products for the stores (e.g., unbaked bread which is baked in store ovens). About 90% of the bakery stores are located adjacent to grocery stores, with hours fixed by the rental contract with the grocery store chain.[9] The firm has a reputation for quality products, and this can be seen informally by looking at online reviews. Such reviews also show that some customers take issue with how friendly the staff are and the speed of the line.

**Why the firm did the RCT and employee attitudes toward paperwork duties.** Our collaboration with the firm arose at the beginning of 2020 when the firm became aware of a successful intervention in a Germany bakery chain involving three of this paper's coauthors (Friebel *et al.*, 2017). In initial exploration about potential projects, the authors came across a 2019 employee survey which showed widespread general dissatisfaction with paperwork at the firm. Based on this, we thought it would be promising to examine this issue in greater detail and rigor. The authors and firm formed a project team consisting of two of paper's authors, the head of the HR department, the head of the accounting/controlling department, multiple employees from those two departments, one sales director, and the head of the worker's council.

The project team identified all the 22 existing documentation duties in stores. In-depth in-person surveys by RAs were then conducted with 21 store managers and 18 workers in 22 randomly selected shops about beliefs regarding time use duties. Because of the control-oriented culture, the researchers were concerned that there would be issues of trust, so we

[8] In Germany, most bakery chains operate in particular regions.

[9] A typical position for a bakery store from our firm is located in the same building as a grocery store, but outside the layout of the grocery store. The bakery has its own separate entrance and is open on different days and times (e.g., Germany grocery stores are closed on Sunday, but bakeries are open).

pushed for the surveys to be done in-person, as we believed that we would get more truthful and accurate information this way compared to online surveys. To further cement trust, the RAs were driven to the stores by the head of the worker's council. The head introduced the RAs to the survey respondents, emphasizing that they could trust the RAs. For 21 of the documentations duties, respondents were asked the following questions:[10]

1. to what extent the duty helps the company achieve its goals (1-10 scale)?
2. to what extent the duty helps avoid making mistakes (1-10 scale)?
3. how often do you fill out the paperwork duty each week?
4. how many minutes do you spend each time filling out the paperwork?

Results on the survey are provided in Figure 1. As can be seen, 5 duties stood out for having an unfortunate combination of relatively low value and higher time cost. 3 of these were seen as "holy cows" and not possible to remove either for political reasons or because they were seen as related to the unique selling proposition of the firm.[11] The remaining two duties were the **operational checklist** (*Operative Liste*) and the **daily protocol** (*Tagesprotocol*). In a meeting in October 2020, the researchers presented analysis on these surveys and recommended removing these two duties.

We also observe that workers and managers in the in-depth interviews have similar average beliefs about how much time the paperwork duties take; these beliefs are correlated (correlation coefficient: 0.77) with the beliefs of the top management members from our project team, which we elicited in a project team meeting before conducting the in-dept interviews. This suggests that the data in the in-dept interviews are high quality and that people took the questions seriously. It also indicates that the top management was well aware of the time for paperwork duties.

Given the extensive preparation by the research team into locating the least useful and most onerous paperwork duties, the company was very interested in running an RCT, and consider making a change. The company is no stranger to experimentation, and frequently engages in "pilots" with some of the shops (e.g., new products, marketing campaigns, shop design). Thus, the fact that there were significant changes in some shops would not have been as anomalous or bizarre, with no one thinking that the company never makes changes.

[10] One of the 22 duties was omitted from interviews. The "missing" documentation duty is the declaration of consent for working on Sundays. According to the workers' council, it is legally and politically impossible to drop this duty, so it was not asked about. Appendix B gives details.

[11] For example, one duty seen as having lower value and higher time is the so-called *goldbroetchen* or "golden roll," where every time a bakery bakes a load of rolls they need to send 5 rolls to the headquarters for potential examination or testing by top management. However, baked rolls and roll quality are considered essential to the company's unique selling proposition, so the golden roll duty could not be removed.

Broadly speaking, within top management, there were two broad "schools of thought" regarding the company's paperwork duties. One group emphasized the benefits of monitoring, pointing out the importance of *Struktur* (or structure) for workers, especially given the firm has 145 stores, and stores cannot be monitored personally by top management all the time. The other group emphasized the costs of paperwork duties, both the time involved and the idea that monitoring is a signal of disrespect. Thus, the firm's pre-RCT debates on paperwork paralleled the tradeoffs emphasized in the academic literature. The executives in the pro-structure school of thought were the ones who initially introduced all the documentation duties to the firm, including the operational checklist and the daily protocol. Thus, these executives have much longer tenure than the executives emphasizing the costs of paperwork duties.

**Operational checklist.** The operational checklist is a form with a detailed list of things to be done, such as, I smiled at the customers, I put the rolls at the right place in the shelves, I put the cinnamon sweets in the right way on the counter, I put the sugar on the Berliner doughnut in the right shape, I finished the old package of coffee beans before starting a new package of coffee beans, I know about the covid restrictions. As seen in Figure 2, which provides the operational checklist from right before the RCT, it is a constant reminder for workers about how they are supposed to do their jobs. In our initial focus groups, many workers view the list as somewhat insulting. Employees are required to sign each item of the operational checklist every day. Workers do the checklist at different points during the day.

The operational checklist changes every couple weeks, and most of the points are changed each month. Thus, it is natural that employees spend some time reading it each day, so they are aware of what they are signing. Managers initially thought that without the operational checklist, stores would experience significant operational problems, and that workers would not follow the guidelines of the company (e.g., employees would forget to keep the shelves clean and to smile at customers).

A key point about the operational checklist is that stores are provided the same information in the operational checklist in the form of a weekly newsletter. For example, the newsletter already tells the stores about the correct placement of Berliner doughnuts. Thus, the operational checklist is reminding workers and requesting signatures on behavior that they have already been reminded about. In short, workers are constantly being reminded how to do their daily job, including in the newsletter, and then the operational checklist reminds them of what they have already been reminded of.

**Daily protocol.** The second duty we study is the daily protocol, where you write down all the things that happened during the day (see Figure 3 for the form). This includes how much money is in the cash register, how much sales taken in, and whether workers

would like to pass along this information to the daily shift (this last point seemed especially appealing in bigger stores). In contrast to the operational checklist, some workers find value in the daily protocol. In our survey data, employees report varying amounts of time to do the daily protocol. Some report doing it in 5 minutes, whereas others take as much as 60 minutes. Unlike the operational checklist, the daily protocol does not change over time, but it still requires significant time to provide the required information. Employees do the daily protocol at the end of their shifts.

Once the operational checklist and daily protocol are completed, the documents are rarely examined by corporate headquarters, and workers perceive that they are never looked at by headquarters. This may heighten aversion that employees feel toward the paperwork duties.

**RCT setup with regional managers.** The RCT treatment consists of removing two forms of paperwork in treatment stores. Regional managers and the sales managers were invited to a meeting on February 16, 2021 with top executives and the research team. Regional managers were informed that there would be a 6-month RCT and were provided detailed guidelines about the RCT. Regional managers were also informed that surveys would be administered, and were given the opportunity to ask questions.

In the meeting, several regional managers immediately expressed strong opinions on in which of their stores the treatment would be effective. This suggested the importance to us of understanding heterogeneous treatment effects, and it seemed that regional managers may possess some strong local knowledge on this heterogeneity. Thus, in March 2021, before knowing which stores were in control or treatment, regional managers also made predictions by phone about in which stores the treatment would be effective (exact wording in Appendix C.1). We interviewed all 15 regional managers (100% response rate), with all interviews conducted over the phone by one coauthor.[12] We motivated the phone call to regional managers using the fact that there was significant heterogeneity in managers' informal predictions (and rationales) for whether the treatment would work during the February 2021 meeting with regional managers. To make the predictions as natural as possible, we asked regional managers for verbal responses, which we then translate on our own into a numerical response of whether it will work. For almost all of the responses, there is little ambiguity about opinions, as we detail in the Appendix. No incentives are used for this prediction because it is a subjective one.[13]

[12]We thought it was important to have the interviews done by a coauthor (a chaired German professor), as it would not be respectful to have senior managers interviewed by a research assistant. We also thought that a coauthor interviewer would yield more serious and complete responses relative to a research assistant.

[13]Even if it were possible to incentivize predictions, there are four advantages of not using incentives. First, not using incentives avoids any "incentive effects" for regional managers to influence or manipulate

The three sales directors did not make formal predictions, but we learned in the course of our discussions about which of the sales directors were most optimistic about the treatment. One sales director was optimistic, one was pessimistic, and one was in between.

**RCT setup with store managers and workers.** Store managers and workers were informed about the RCT via the firm's weekly newsletter. The information came to a message on the store intranet on Tuesday April 6, 2021 (after the Easter holiday) and also on paper form in the bundle of papers for the weekly documentation duties. In contrast to regional managers, workers and managers were not informed that there was an RCT or that the change would last for a certain period of time. Workers and managers in the treatment group indicated full awareness of the treatment. This is natural given that the RCT removed paperwork duties that were an important part of the normal job.

The message in the firm's weekly newsletter informing treatment stores about the change came from the firm's COO, who is the son of the CEO/owner. Having the message come from the COO gives credibility and seriousness to the change. As seen in Appendix C.2, the message emphasizes two things, paralleling our hypotheses on direct and indirect effects. First, it emphasizes how the company is trusting workers. Second, it emphasizes the extra time, and that workers should use the extra time for customers and colleagues. One reaction to this is that it might seem that workers are being "led" to think a certain way. However, it would be extremely artificial and unattractive to a company to make a large change like removing significant documentation duties without explaining why. Moreover, even if workers were led somehow, that would seem unlikely to explain the persistence of the main effects, or that effects vary substantially by regional manager expectations.

The framing of the letter is not neutral, but positive (though also not enthusiastic). It is not neutral because it would be highly artificial for the company to make a significant change like removing two paperwork duties using fully neutral language. The language used is typical for the company in discussing policy changes. For example, in 2022, the company increased pay by €1 and used similar-sounding language.

We took great pains to ensure that the RCT was carried out as planned. Store paperwork is delivered every week to stores in a bundle. We sent an RA to monitor that the paperwork bundles delivered to treatment stores did not contain the operational checklist or daily protocol, but that control stores did.[14] We also called regional managers, the head

outcomes in stores to match predictions. Second, avoiding incentives reduces prediction salience, e.g., where predictions would "stick out" mentally for regional managers in the future. Third, not using incentives seems more natural for higher-ranking managers. Fourth, reviewing the literature, Haaland *et al.* (2022) argue that incentives are not needed to accurately elicit beliefs (e.g., Hoffman & Burks, 2020) and discuss examples of how incentives can sometimes make elicitation worse.

[14] After 6 weeks, the firm asked if the RA could come only every couple weeks, and we granted this.

of HR, and one sales director in May 2021 to ensure that the treatments were being carried out as planned, and there were no issues with implementation.

**RCT timing.** The experiment began on April 6, 2021. Paperwork was removed in treatment stores. The authors presented the results to the firm in December 2021. Given the success of the RCT, the firm immediately decided to roll out the treatment to control stores, and this began at the end of January 2022. In the rollout, the operational checklist was kept removed from the company. However, the daily protocol was introduced, given that some workers found it useful and less onerous. The RCT received IRB approval from the University of Cologne, and it was also approved by the Worker Council of the study firm.

The RCT was registered on the AEA RCT Registry on April 14, 2021. Our analyses closely follow the registration. Based on theory and our interactions with the companies, we pre-registered that there would be treatment effect heterogeneity according to team size, team tenure, and regional manager predictions.

We pre-registered that the RCT would last for 6 months. However, for logistical reasons, the firm left the RCT in place for 9 months.[15]

**Data.** We use administrative data from the firm to create two main panel datasets. First, we create a store-level panel, exploiting detailed hourly data on sales by store. The store-level dataset also includes information on mystery shoppers. Second, we create a worker-month panel covering worker attrition and worker absence.

The pre-treatment store manager survey was conducted in March 2021. It was a phone survey conducted by RAs and the response rate was roughly 95%, with N=135. The pre-treatment regional manager survey was conducted after regional managers the existence of the RCT, but before the knew which stores were in the treatment group. The main purpose of this survey was to assess regional manager beliefs about in which stores the treatment would work. The during-RCT store manager survey was conducted in November 2021, also conducted by phone.

Finally, there was a during-RCT worker survey, conducted with pen and paper in the stores, in October 2021. This survey was conducted using a large number of RAs who personally visited the stores and collected the questionnaires.

**Randomization.** We conducted a stratified randomization using 4 dimensions of stratification: pre-RCT head count (above or below median), pre-RCT sales (above or below median), pre-RCT store ranking in the firm's performance league (above or below median,

[15]Specifically, the researchers had been promised that an endline survey would be conducted toward the end of the RCT. However, one of the authors had a baby and our main contact went on holiday at the same time, leading to postpone the endline survey (and end of the RCT) for 3 months. This fortuitously gives us more data and was obviously not driven by any statistical power concerns.

with this variable described more in Appendix B), and town (8 towns). This gives us 64 strata. Randomization was conducted using "randtreat" in Stata. As seen in Table 1 below, we observe strong balance across various characteristics.

# 3 Main Results: The Impact of the Treatment on Store-level Outcomes and Employee Attrition

To estimate the impact of the treatment on store-level outcomes, we consider ANCOVA specifications following Bruhn & McKenzie (2009). Using data from the RCT period, we estimate OLS models where we control for the mean of the dependent variable in the pre-RCT period ($y_{s,pre}$), as well as year-month fixed effects ($\gamma_t$) and pre-RCT store characteristics used in the stratified randomization ($X_s$):

$$y_{st} = \alpha_0 + \alpha T_s + \beta y_{s,pre} + \gamma_t + X_s + \epsilon_{st}$$

where $y_{st}$ is the outcome of store $s$ at in year-month $t$.[16] Throughout the paper, standard errors are clustered by store, reflecting the level of randomization. To estimate impacts on employee attrition, we consider linear probability models where the decision of whether to attrite is regressed on the treatment dummy, as well as individual-level and store-level controls.

As discussed above, regional managers had strong beliefs about in which stores the treatment will be successful. Therefore, we present all our main tables using all stores, and also split separately by regional manager expectations.

**Store-level outcomes.** Panel A of Table 2 shows that the treatment boosted sales. Overall sales went up by 2.6%, statistically significant at the 10% level. Sales increased both at the busiest part of the day for bakeries (7am to 2pm) and in the less-busy sections. One concern with removing paperwork is that it could lead to a decrease in product quality, a decrease in employee effort, and an increase in employee misbehavior. However, we see little evidence for that. Shrinkage and the mystery shopping score are both unchanged, and we can reject that there are significant negative effects.

Panels B and C separate the treatment effect by regional manager expectations, showing that the treatment effect is much stronger in stores where regional managers expected the treatment to be beneficial. In stores where managers expected the treatment to be beneficial, sales increase by 5%, statistically significant at the 5% level, with similar increases

[16]The randomization stratified by above/below median sales, above/below median head count, above/below median store league performance ranking, and region. All our findings are unchanged to doing simple ANCOVA where we don't control for variables used in stratification.

among busy and slow sales. The number of customers increases by 4.9%, and shrinkage—a combination of wasted product and theft—goes down 3.4%. In contrast, for stores where the treatment is not predicted to work, the effects on sales are zero and shrinkage *increases* by 2.5%, though this latter difference is not statistically significant.

The final row in Table 2 shows p-values testing the differences between stores where regional managers predict the treatment to work. We see that the difference in shrinkage effects is statistically significant, as are the differences in effects on sales and customers. We show two-sided p-values so as to be maximally conservative, though one can very easily argue that one-sided p-values are more appropriate given the explicitly one-sided prediction of store managers (i.e., dividing stores in the ones where the treatment will work and ones where it will not work).

In addition to showing ANCOVA effects for the entire RCT period, it is useful to show effects over time. Figure 4 shows the sales results from Equation (1) estimated separately by quarter. Focusing first on results using all stores in panel (a), effects are relatively constant over the three quarters of the RCT. Even in the last quarter of the RCT, coming 6-9 months after the treatment was introduced, paperwork reduction increases sales by 3%, statistically significantly different from 0 with 95% confidence. Restricting to stores where regional managers predict the treatment will work, the treatment is pronounced in the first quarter, consistent with the large distaste that many workers and managers at the firm expressed toward paperwork. However, we cannot reject that the treatment effect is constant over the RCT.

Appendix Figure A3 shows the impact of the treatment over time in stores where the treatment is predicted to work using an event study framework. In contrast to our baseline ANCOVA results, we use store fixed effects and focus on the interaction of treatment status with dummies for quarter since the start of the RCT. Here, too, one cannot reject that the treatment effect is constant throughout the RCT.

While sales increases, a natural question is whether there are important aspects of operations that suffer from our treatment. Besides analyzing the overall mystery shopping score, we also analyze individual components of the mystery shopping score. As seen in Appendix Table A2, we see no consistent evidence that the treatment harmed individual components of the mystery shopping. This is true across simple checks, like whether employees show their name badge, present free samples in the correct way, and upsell in the correct way, but also in terms of following guidelines on store appearance, interactions with customers, and quality of the rolls.

**Attrition.** Table 3 examines effects of the treatment on attrition. Results for attrition are relatively imprecise as there is not too much attrition at the firm. There is no overall effect

on attrition, but this masks substantial heterogeneity by worker type. Among minijobbers, attrition increases by a statistically insignificant 0.7 percentage points (hereafter, "pp") per month, which is an increase of roughly 15%. However, among qualified workers (i.e., workers who already did an apprentice training), attrition decreases by 0.4pp per month. The firm is much more focused on the attrition of trained workers relative to untrained workers. Among managers, attrition decreases by 1.2pp per month, a reduction of roughly 60%, and statistically significant at the 10% level. This decrease is clear in raw counts: there are 10 store manager quits in control stores, but only 4 in treatment stores.

Panels B and C show that the reduction in managerial attrition is entirely driven by stores where the treatment is predicted to be successful. In stores where the treatment is expected to work, we estimate that the treatment reduces attrition by 2.4pp per month, almost a complete reduction relative to the control group mean.[17] In contrast, in stores where the treatment is not expected to work, the effect is zero. This difference is statistically significant at the 5% level.

Why are there large effects on manager attrition but not worker attrition? One likely reason is that the costs of paperwork are especially strong for managers, particularly in the case of the daily protocol. Managers spend almost an hour per week completing the daily protocol, whereas for workers the required duration is closer to half an hour. In pre-RCT focus groups and discussion with the firm, there was a feeling that paperwork was preventing managers from doing some high-value activities, such as mentoring and teaching workers. It is also possible that utility costs of monitoring are especially bothersome for managers. Managers are supposed to act as leaders and monitors in the store. When the firm does extensive paperwork on top of this, the firm is communicating that it does not trust the manager to perform these functions by himself or herself.

Separate from treatment effects, focusing on control stores, one interesting pattern is that store manager attrition is 3 times higher in stores where the treatment is predicted to work compared not to work. There are several intuitive reasons for this, all grounded in our conceptual framework. First, regional managers may have private information about which managers are most at risk at quitting, perhaps in part due to excessive paperwork and an overly bureaucratic culture, and they predict that the treatment will be most effective for such managers. Second, stores where the treatment is predicted to work may have fewer problems, and store managers such stores exhibit positive selection in their quits.

**Magnitudes.** How should we think about the magnitudes of the estimates? In a study in another bakery chain, Friebel *et al.* (2017) find that providing a team performance

[17] In the raw data, in stores where the treatment is expected to work, there are 8 store manager quits in controls stores, but only 1 in treatment stores.

bonus led to an increase in sales and customers by 3%. Thus, the overall effect of the impact of reducing paperwork is similar to the impact of providing a team performance bonus. However, in stores where regional managers predict that the treatment will be successful, our estimated magnitude is 70% larger. Our treatment is much more cost-effective and profitable, as the treatment in Friebel *et al.* (2017) involves an increase of wages of 2.2%, whereas compensation is kept constant in our RCT. The seminal monitoring RCT by Nagin *et al.* (2002) look at effects on suspicious calls, but do not have data on sales.

Another study of a particular management practice is a seminal RCT on work from home by Bloom *et al.* (2014). This study finds that working from home led to a 4% increase in calls per minute, which is also similar to our effect on sales. Bloom *et al.* (2014) also find that work from home reduces attrition by half, which is broadly similar to the attrition effect we observe on managers. However, the effect we observe in stores in which the treatment is predicted to work is larger (though with a large standard error, meaning we cannot reject that the effect would be at half, though we can reject that the effect is zero).

An RCT by Alan *et al.* (2023) also observes reductions in attrition concentrated among managers. Working with Turkish firms, the authors examine the impact of a module by a consulting company designed to improve the relational atmosphere in the workplace. They find that this module reduces manager attrition by roughly 80% while having much smaller impacts on worker attrition. The impact of paperwork reduction on manager attrition is thus broadly similar to the effect of a workplace relational module.

In sum, the effect of removing two onerous paperwork duties in our setting leads to treatment effects on the order of some of the most promising and highly regarded past management interventions. At the same time, we believe that our effect sizes are very plausible. Some readers may be surprised that removing paperwork has such quantitatively substantial effects. It is critical to remember that workers and managers regarded the paperwork duties removed as onerous ones, with relatively low value and high time cost.

## 3.1 Mechanisms for the Regional Manager Predictions

Why are regional manager expectations predictive of the treatment effect? What is the rationale for their predictions, both positive and negative? To address this question, we use the raw text from regional managers pre-RCT predictions. The text of regional manager predictions is provided in Appendix Tables A3 and A4.

Looking through the responses, there are two salient features of text responses for stores where regional managers predicted that the treatment would work. First, in many cases, regional managers mention that workers will enjoy having less paperwork. For one store

the regional manager said that workers "Would be very happy about less bureaucracy, less work as a result, do not like to work with notes and strict rules." This explanation would fall under the utility cost of monitoring described in Section 1. Second, in many cases, regional managers talked about how teams would be unlikely to face problems, especially because the team already had good communication. An example prediction is that one store "Could live without bureaucracy, very communicative branch management." Some predictions mention both that reducing paperwork will be good for worker utility and that there are no anticipated problems. For example, one manager predicted that the "Team will be glad when operational list is gone. No problems expected. Will work out!"

Table 5 summarizes key facts about regional manager predictions. Among the stores where regional managers believe the treatment will be successful, in 37% of predictions, regional managers mention something about paperwork reduction benefiting worker utility. Likewise, in 71% of predictions, regional managers mention something related to ability to overcome problems. Thus, regional manager predictions strongly support both the traditional economic view of monitoring as a way of addressing problems (Holmstrom, 1979; Halac & Prat, 2016), as well as theories emphasizing the utility costs of monitoring (Falk & Kosfeld, 2006).

Table 6 examines correlates of regional manager predictions, showing that observable characteristics explain only a modest share of regional manager predictions ($R^2 = 0.17$). The largest predictor of regional manager predictions if a store's pre-RCT mystery shopping score, with regional managers believing that removing paperwork will be more effective in stores with higher pre-RCT mystery shopping scores. Pre-RCT Log Sales and pre-RCT mean worker tenure are not significant predictors of regional manager expectations.

A natural concern in interpreting the results on regional manager predictions is whether results could be due to managers behaving differently in treatment vs. control stores. However, in the predictions, no regional manager said anything about an intent to behave differently in treatment vs. control stores, such as by visiting treatment stores more often. A different concern is that regional managers might have private information not about the efficacy of treatment, but rather about the coming of external shocks to stores (e.g., there will be a large festival next to a store in the coming months). However, no regional managers said anything in their prediction about external shocks.

## 3.2 Direct and Indirect Effects of Paperwork Reduction

Separate from regional manager predictions, what drives the improvements in store performance that we observe, as well as the reductions in manager attrition? Are people using the

extra time that they have to perform other tasks, which we can think of as the direct effect of paperwork reduction? Or is there some other mechanism such as increased happiness, trust, or respect? The regional manager predictions indicate that at least for some stores, regional managers believe that indirect effects will be present, believing that removing paperwork will make workers happier.

Appendix Table A1 examines heterogeneity in the overall treatment effect on sales based on the amount of time that stores spend on the daily protocol in the pre-RCT period. As seen by the key interaction term, there is no evidence that the treatment effect on sales varies with time spent on the daily protocol. Rather than looking at the quantity of time, one can instead focus on when stores tend to do the daily protocol in the pre-RCT period. We find no evidence that the treatment effect is larger during the time periods when stores generally do the daily protocol. Recall that the daily protocol takes more time compared to the operational checklist.

These two pieces of evidence fail to support direct effects of the treatment, i.e., that paperwork reduction increases sales by allocating extra time to other activities. One additional piece of evidence in favor of indirect effects comes via the firmwide rollout, which we discuss shortly below.

## 3.3 Additional Analyses and Threats to Validity

**Other heterogeneity.** Beyond regional manager predictions, we also pre-registered that we would examine heterogeneity according to team size and team tenure. Table 4 shows that the treatment effect on sales is significantly larger in smaller teams, defined as having a head count that is 10 workers or below. In contrast, there is no significant heterogeneity according to team tenure.

**Control store frustration.** Could it be the case that our treatment effects are driven not by positive change in the treatment stores, but rather by something negative in control stores? Perhaps employees in control stores were frustrated they were not selected for treatment. We were very mindful of this point, and thus, in all stores, workers and store managers were not informed that they were part of an RCT, and employees in control stores were not informed about any possible reduction in paperwork. Still, people may talk to one another, and indeed, in designing the RCT, the head of HR thought that it's likely that some store managers would talk to one another.

To address and anticipate any contamination, regional managers were provided with written guidelines (see Appendix C.3) on what to say if workers or store managers asked about paperwork reduction. Specifically, people were told that there was a pilot project with

researchers from the University of Cologne in some stores, randomly selected for fairness reasons so that everyone has the same chance, and with the lottery done jointly with the research team and Workers' Council. Workers were told they could contact the Workers' Council with any questions.[18]

To measure the effect of any contamination, workers and managers were surveyed in November 2021, 8 months into the RCT, on whether they knew about a pilot project where paperwork was reduced in some stores. About 3/4 of store managers and 1/2 of worker employees in control stores knew about the pilot project (i.e., the RCT). However, they expressed essentially no annoyance about the existence of the RCT. For people who knew about the RCT, the average level of annoyance was only a very low 2 on a scale from 1 to 7. All our results are robust to dropping the small number of stores where store managers or workers expressed any level of annoyance.

That annoyance is so low is quite expected. Neither the researcher or Head of Workers' Council received any complaints. Furthermore, people at the firm are used to pilots where some things are done in some stores, but not others.[19] That people also do not care about the existence of RCT squares with other studies like Bloom *et al.* (2014) where workers are explicitly told that they are randomized into work from home or not.

**Regional manager effort.** Could the effects we observe be driven by regional managers reallocating effort between control and treatment stores (e.g., regional managers stop spending time on control stores to focus on improving performance in treatment stores)? Anecdotally, the firm believes this is very unlikely because regional managers had other key concerns during the RCT, namely, the issue of covid.[20] Finally, using the during-RCT survey of store managers, we see no impact of the treatment on how much time store managers report interacting with regional managers.

Separate from the overall treatment effect, could regional manager effort drive the fact that the treatment effect is entirely concentrated in stores where regional managers predicted that the treatment would work? As mentioned above, we avoided giving incentives for predictions precisely with this concern in mind. In addition, there was no career benefit for regional managers of predicting correctly. Finally, in the during-RCT survey of store

[18] As mentioned earlier, Germans have strong trust toward Workers' Councils. When German employees have issues at work, they contact their Workers' Council, and the Workers' Council is chosen democratically. Providing this helps establish trust. At our bakery chain, we know that the Workers' Council would be willing to contact the researchers if there were any problems because they did in contact us once when one store manager didn't their voucher for participating in a pre-RCT survey.

[19] For example, they have tried high-quality coffee in some shops and have tried reduced prices in other stores.

[20] For example, both the head of HR and a sales manager believed that the RCT was no longer especially salient to regional managers.

managers, there is no impact of the treatment on time with regional managers even when restricting to stores where regional managers expected the treatment to work.

**Hawthorne effects.** A separate concern in any RCT is whether subjects could alter their behavior in order to please the researchers (Levitt & List, 2011). As stated above, workers and store managers were not informed that they were part of an RCT, though there was some information leakage. We have two responses to this concern. First, our treatment effects persist 9 months into the future. It seems unlikely to us that Hawthorne Effects would stay for so long. Second, Hawthorne Effects cannot easily explain our key heterogeneity results by regional manager expectations.[21]

**Contemporaneous policy changes.** Another concern in any RCT is the presence of contemporaneous policy changes. However, this was not the case in our firm.

**Multiple hypothesis testing.** In a study addressing multiple outcomes and heterogeneous treatment effects, one worries that treatment effects could be spurious due to multiple hypothesis testing. The main way that we address this point is through the rigorous pre-registration of our RCT. Our main outcomes are listed in the pre-registration before the RCT began, and we explicitly say that our primary outcome is store sales. In addition, we explicitly say that our heterogeneity analysis will focus on heterogeneity according to regional manager expectations.

**Covid.** The RCT took place in April - December 2021. Is there any external validity concern from covid? The covid lockdown in Germany was almost over in March 2021 and was over by May 2021, and food retail (including bakery stores like ours) were excerpt from the lockdown. All stores were fully open during the RCT, including the coffee area of the store.[22] Both the operational checklist and daily protocol were used before, during, and after the pandemic. The operational checklist often had an item or two related to covid (see Figure 2 for an example), but these were otherwise unaffected.

**Autonomy and local information.** Separate from utility benefits of reducing paperwork, one alternative explanation for our effects could concceivably be that removing paperwork gives workers autonomy to make better decisions. That is, they are no happier or more committed to the firm, but not having rules could allow workers to exercise better judgment, whether in terms of how to speak to customers (e.g., "Good morning" vs. "Hi") or how to present or place the products.

[21] The only way that Hawthorne effects could drive heterogeneity by regional manager expectations would be if regional managers had private information about the extent of Hawthorne effects across stores. None of the regional managers said anything about Hawthorne Effects in their explanations about why the treatment would work in particular stores.

[22] The coffee areas were closed during the middle of the lockdown, but were open by the start of the RCT.

There are several pieces of evidence against this interpretation. First, the RCT did not actually change workers' autonomy. Everyone was still required to give a certain number of cookies and interact with customers in a certain way—they simply were no longer required to sign forms guaranteeing that they had behaved in a certain way. Workers were still reminded of the contents of the operational checklist in the newsletter delivered on the firma intranet. Second, aspects of the mystery shopping score are still monitored via mystery shopping. Finally, on the worker survey, we measure whether workers feel more autonomous as a result of the RCT, and we see no difference between treatment and control stores, despite observing that they are more committed and feel greater trust.

## 3.4 Firmwide Rollout

The firm was quite satisfied with the outcomes of the RCT. The research team presented preliminary results from the RCT to the study firm in December 2021. Given the success of the RCT, the firm immediately rolled out paperwork reduction to the whole firm, implemented at the end of January 2022. Beyond the quantitative results of the RCT, the firm regularly receives informal feedback from workers and managers at the stores.

However, in the firmwide rollout, only the operational checklist was removed. The daily protocol was reinstated. A key reason was that feedback from workers and managers supported some value to having the daily protocol. Some workers and managers thought that having the protocol was useful for coordinating production (Alonso *et al.*, 2008). As of September 2022, i.e., after 9 months, the firm has continued not having the operational checklist.

Given the heterogeneity by regional managers, one interesting question is why didn't the firm implement the paperwork reduction in stores where regional managers expected it to work, but remove it in stores where regional managers did not expect it to work. There are two reasons against this. First, while there are sizable positive effects of paperwork reduction in stores where regional managers expected the treatment to work, it is not the case that there are sizable negative effects of paperwork reduction. Thus, while paperwork reduction did not yield extra returns in stores where regional managers predicted it not to work, it is not the case that such reduction proved to be harmful. Second, while the firm thought it was logistically feasible to differentiate store procedures for the period of an RCT, the firm did not think that this would be feasible from a longer-run perspective. The firm often adds new stores, and would need to be surveying regional managers about whether the treatment would be effective in a new store, and regional managers would need to do this with limited information about the characteristics of the new store.

The message from the RCT and reinforced by the rollout is not that all paperwork is bad or worthless. Rather, the firm discovered that certain types of paperwork were not a good fit for the organization. The firm eliminated the paperwork that many workers regarded as annoying or demeaning. However, it kept the daily protocol, which helps coordinate production across shifts and days of the week.

# 4 Conclusion

In a large German bakery chain, we document that there is wide variation across tasks in the perceived value and time costs of paperwork. Removing two of the paperwork tasks improves average store performance as measured by sales and store manager attrition. The magnitudes of performance improvements are comparable to the effects of introducing major management practices, such as team incentive pay, but the costs are much smaller.

Of course, this does not imply that all firms should remove their most onerous paperwork duties, and we find that there is a lot of heterogeneity behind the average effects. Most importantly, significant treatment effects are observed only in stores where regional managers predicted the treatment to be effective. This latter result cannot be explained by regional managers spending more time with, or being otherwise partial to, those stores. Rather, it suggests that managers have private knowledge about which stores are most likely to benefit from a particular management practice, such as paperwork reduction in our case. The treatment works better in smaller stores, presumably because their teams can better coordinate without formal procedures involving paperwork.

Our results resonate with two classic topics in personnel and organizational economics: (1) the importance of middle managers and (2) the application of managerial discretion vs. rules across organizational units. Starting with (1), in addition to being able to engage and communicate with employees, middle managers are valuable because of the knowledge they have about the teams they oversee. This knowledge seems hard to codify, as regional manager predictions are only weakly correlated with observed store characteristics. Turning to (2), our results suggest that some discretion in waving paperwork duties can be beneficial for some but not all units. Yet, the rules are oftentimes set for all units. In deep hierarchies like ours, it seems, even top managers cannot give their subordinate units more discretion even if this were to improve their performance. Whether it would be feasible to treat units differently and control some more and others less is a fascinating question for future research.

How might our results generalize to other contexts? Like all RCTs, our results are specific to our organizational context, namely, a leading firm in the German bakery chain industry. The heterogeneity of the effects we observe suggests that in contexts where prob-

lems come up frequently and/or are expensive to deal with, checklists may play a crucial role and their elimination could be harmful. On the other hand, in contexts where having a checklist is time-consuming or is interpreted as a sign of mistrust, we believe that eliminating checklists may be beneficial.

The results are also specific to the paperwork tasks that were eliminated. As documented in Figure 1, the firm uses other paperwork duties like the expiry date checklist and the cash transfer checklist that are perceived by employees and managers as much more useful and take less time than the duties eliminated in the RCT. We suspect that the treatment effects would have been much less beneficial if these tasks were removed instead of the operational checklist and daily protocol. In our view, that the RCT focused on the operational checklist and daily protocol is primarily not an issue of external validity, but rather can be broadly thought of as evidence consistent with our conceptual framework on the costs and benefits of monitoring. Still, it would be fascinating (though organizationally difficult) for future RCTs to consider the impact of removing paperwork regarded as highly valuable.

The RCT lasted for 9 months before paperwork reduction was rolled out firmwide. This is a long period of time compared to most management practice RCTs (Bloom *et al.*, 2020), and the impact on sales is strongly present in months 7-9 of the RCT. The rapid firmwide rollout of paperwork reduction is a testament to the durability of the treatment effects.

We look forward to future RCTs examining the direct and indirect costs of monitoring. We believe that eliciting expert opinions regarding the likely effect of an RCT in particular units is a methodologically novel and useful tool to help detect treatment effect heterogeneity.

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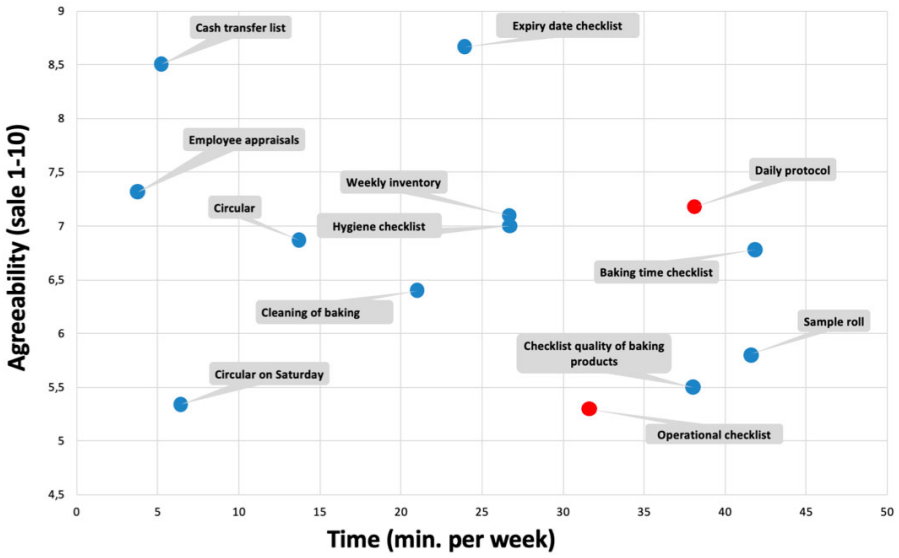
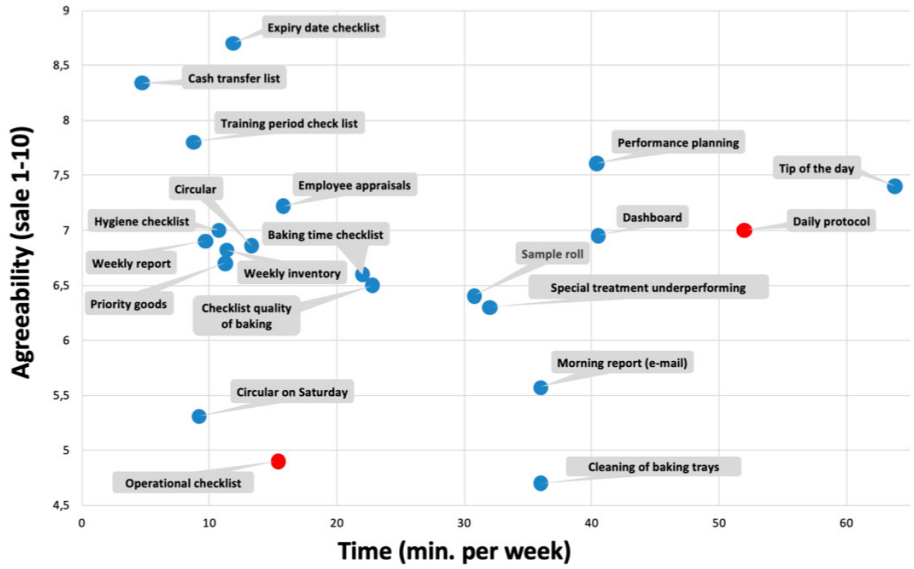
**Figure 1:** Variation Across Tasks in Value and Time per Week




(a) Workers




(b) Managers

Notes: This figure shows answers to the below question: "The documentation duty helps (FIRM) to get better and reach company goals."

**Figure 2:** Operational Checklist from December 2020 (i.e., the month when the top management decided to conduct the RCT with the research team). Bolding and highlights from the original.

| | Mo | Tue | Wed | Thu | Fr | Sat | Sun |
|---|---|---|---|---|---|---|---|
| 1. Covid | | | | | | | |
| a) Current **covid guidelines** followed!<br>Collecting customer contacts, serving customers: gloves, wearing face mask, keeping distance, airing out the shop | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. |
| **b) Covid hotline:** PHONE NUMBERS<br>All questions concerning covid, quarantine, sickness pay | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. |
| 2. Opportunities to increase sales | | | | | | | |
| **a) Spelt products initiative phase 2**<br>Hand over all new spelt flyers to all customers, but do **NOT** put them in the bread bag!<br>**Please destroy old flyers**<br>Recall: Spelt products are: LIST OF 12 DIFFERENT PRODUCTS | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. |
| **b) Bring your own cup initiative correctly implemented?**<br>For additional cups contact your regional manager | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. |
| **c) Snack of the month December**<br>Cheese-ham-cabbage → Be aware of combined offers | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. |
| d) Please be mindful of the **appearance of the Berliner doughnut**. In a recent store visited, the sugar was partly scraped off on the side of a Berliner. Carefully touch the Berliners with a cake tong on the side; never touch a Berliner with the cake tong on the top, as sugar might be scraped off; monitor other reasons why sugar is scraped off on Berliners | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. |
| e) **Roasted almonds correctly placed**<br>Loosely placed on a baking tray in the cake counter, on top of 2-4 packed, not yet closed bags of almonds | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. |
| f) **Christmas cookies**<br>**Sufficient amount of the mini spelt almond cookies?**<br>**→ If you do a free sample, put 4 mini spelt almond cookies in a 1 kg bag and hand it to the customers!**<br>Sufficient amount of Christmas bags 4 kg<br>Sufficient amount of all Christmas cookies? Follow order processes!<br>Product assortment:<br>- Cookie basket on top pf the counter: All types of almond cookies, coconut cookies, shortbread cookies (5 types)<br>- Edge of the cake counter: Tree cake, gingerbread, Christmas cake<br>- In the counter: alternating between puff cookies and shortbread cookies | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. |
| g) Product trial<br>Blueberry-pudding snack in LIST OF SHOPS | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. |
| 3. Organizational implementation tasks | | | | | | | |
| a) **New bonus system for wasted & returned goods** since Dec 1st<br>Make sure to check every day<br>If you have questions, contact your regional manager | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. |
| b) **Coffee bags**<br>When making and selling coffee, please first empty **old** coffee bags before opening new ones | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. | Sign. |

**Figure 3:** Daily Protocol from December 2020. Bolding and highlights from the original.

Date: _____ Store: _____

| | Cash register number | Cash ACTUAL | Cash TARGET | Difference | Sign. | Safe bag | |
|---|---|---|---|---|---|---|---|
| | | | | | | Banknote | Coins |
| 1. | | € | € | € | | | |
| 2. | | € | € | € | | | |
| 3. | | € | € | € | | | |
| 4. | | € | € | € | | | |
| 5. | | € | € | € | | | |
| 6. | | € | € | € | | | |
| 7. | | € | € | € | | | |
| 8. | | € | € | € | | | |
| 9. | | € | € | € | | | |
| 10. | | € | € | € | | | |
| 11. | | € | € | € | | | |
| 12. | | € | € | € | | | |

| Sales (€) | | Working hours | | Performance | |
|---|---|---|---|---|---|

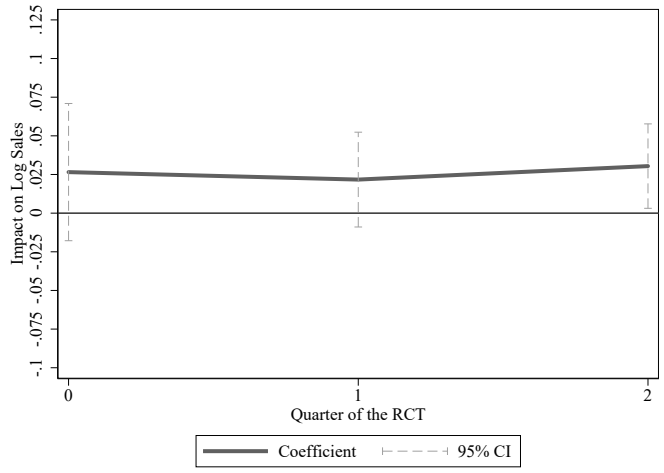
| Special orders "sold out" → should we order more? |
|---|
| |
| |
| |
| |

| Facility or IT problems, etc. |
|---|
| |
| |
| |
| |

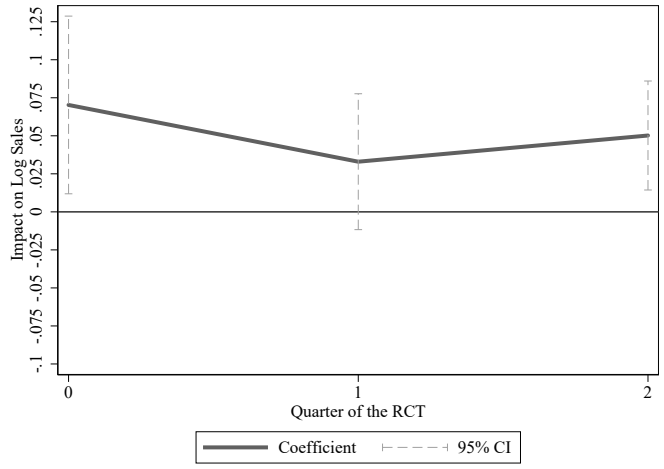
| Shift changes |
|---|
| |
| |
| |
| |

| Additional information for the next shift |
|---|
| |
| |
| |
| |
| |

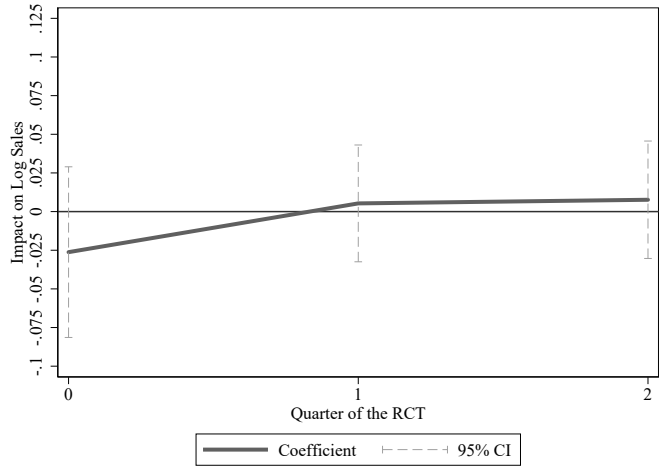
**Figure 4:** Treatment Effects on Sales Estimated Separately by Quarter, All Stores and Split By Regional Manager Prediction




(a) All Stores




(b) Stores Where RCT Predicted to Work by Regional Managers




(c) Stores Where RCT Not Predicted to Work by Regional Managers



Notes: This figure shows that impacts on sales do not vary significantly by quarter. Each regression is similar to that in column 1 of Table 2, but we split separately by quarter of the RCT. Quarter 0 of the RCT is April-June 2021, Quarter 1 is July-September 2021, and Quarter 2 is October-December 2021.

**Table 1:** Comparing Pre-Treatment Store Means across the Treatment Groups ($N = 145$ stores): Randomization Check

| | Log Sales | Log Busy Sales | Log Slow Sales | Log Customers | Shrinkage | Mystery Shopping Score | Head count | Store League Ranking |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Treatment | -0.02 | -0.02 | -0.03 | -0.00 | -0.00 | -0.05 | 0.50 | -4.98 |
| | (0.05) | (0.05) | (0.07) | (0.05) | (0.03) | (0.08) | (0.78) | (7.24) |
| Constant | 11.16*** | 10.83*** | 9.87*** | 9.85*** | -2.06*** | 18.98*** | 13.30*** | 78.46*** |
| | (0.04) | (0.03) | (0.05) | (0.03) | (0.02) | (0.06) | (0.50) | (4.86) |
| p-val | 0.72 | 0.76 | 0.69 | 0.95 | 0.91 | 0.53 | 0.52 | 0.49 |

Notes: This table compares pre-RCT store-level characteristics across treatment and control stores. Robust standard errors in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%

**Table 2:** Impact of the Treatment on Sales and Other Store Outcomes

| Dep. var.: | Log Sales | Log Busy Sales | Log Slow Sales | Log Customers | Shrink -age | Mystery Shopping Score |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| **Panel A: All Stores** | | | | | | |
| Treatment | 0.026* | 0.026* | 0.035* | 0.020 | 0.001 | -0.046 |
| | (0.015) | (0.015) | (0.020) | (0.017) | (0.016) | (0.095) |
| Mean DV if Treat=0 | 11.17 | 10.86 | 9.832 | 9.740 | -2.102 | 18.94 |
| Observations | 1,289 | 1,289 | 1,289 | 861 | 861 | 791 |
| Stores | 145 | 145 | 145 | 145 | 145 | 144 |
| **Panel B: Stores Where RCT Predicted to Work by Regional Mgrs** | | | | | | |
| Treatment | 0.052** | 0.050** | 0.059** | 0.049** | -0.025 | 0.053 |
| | (0.020) | (0.020) | (0.023) | (0.022) | (0.022) | (0.128) |
| Mean DV if Treat=0 | 11.09 | 10.77 | 9.754 | 9.660 | -2.068 | 19.01 |
| Observations | 670 | 670 | 670 | 447 | 447 | 416 |
| Stores | 76 | 76 | 76 | 76 | 76 | 75 |
| **Panel C: Stores Where RCT Predicted Not to Work by Regional Mgrs** | | | | | | |
| Treatment | -0.005 | -0.004 | 0.005 | -0.014 | 0.027 | -0.161 |
| | (0.020) | (0.019) | (0.029) | (0.022) | (0.021) | (0.146) |
| Mean DV if Treat=0 | 11.27 | 10.96 | 9.922 | 9.834 | -2.141 | 18.85 |
| Observations | 619 | 619 | 619 | 414 | 414 | 375 |
| Stores | 69 | 69 | 69 | 69 | 69 | 69 |
| p-Val on diff between Panels B and C | 0.06 | 0.07 | 0.10 | 0.05 | 0.08 | 0.36 |

Notes: An observation is a store-month during the RCT. Standard errors clustered at the store level are in parentheses. Each regression controls for the mean of the dependent variable in the pre-period, year-month fixed effects, and several pre-RCT store characteristics (above/below median sales, above/below median head count, above/below median store league performance ranking, and region). The p-value in the final row is calculated using an interactions. * significant at 10%; ** significant at 5%; *** significant at 1%

**Table 3:** Impact of the Treatment on Employee Attrition (Coefficients Multiplied by 100)

| Sample: | All | Qualified Workers | Mini-jobbers | Mgrs |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| **Panel A: All Stores** | | | | |
| Treatment | 0.21 | -0.37 | 0.67 | -1.19* |
| | (0.24) | (0.31) | (0.59) | (0.62) |
| Mean DV if Treat=0 | 2.715 | 1.773 | 4.362 | 1.669 |
| Observations | 16,646 | 7,045 | 4,667 | 1,378 |
| Workers | 2354 | 894 | 736 | 164 |
| **Panel B: Stores Where RCT Predicted to Work** | | | | |
| Treatment | 0.04 | -0.56 | 1.03 | -2.41** |
| | (0.30) | (0.48) | (0.76) | (0.94) |
| Mean DV if Treat=0 | 2.613 | 1.915 | 4.163 | 2.374 |
| Observations | 8,113 | 3,581 | 2,155 | 761 |
| Workers | 1153 | 465 | 335 | 93 |
| **Panel C: Stores Where RCT Not Predicted to Work** | | | | |
| Treatment | 0.44 | -0.27 | 0.33 | 0.44 |
| | (0.37) | (0.42) | (0.79) | (0.82) |
| Observations | 8,533 | 3,464 | 2,512 | 617 |
| Mean DV if Treat=0 | 2.814 | 1.609 | 4.534 | 0.763 |
| Workers | 1272 | 458 | 408 | 75 |
| p-Val on diff between Panels B and C | 0.54 | 0.64 | 0.59 | 0.02 |

Notes: An observation is a worker-month during the RCT. Standard errors clustered at the store level are in parentheses. All regressions control for a quadratic in worker tenure, worker gender, current year-month dummies, and the pre-RCT store characteristics listed in Table 2. * significant at 10%; ** significant at 5%; *** significant at 1%

**Table 4:** Impact of the Treatment on Log Sales: Heterogeneity by Team Size

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Sample | Small teams | Big teams | All | All |
| Treatment | 0.079** | 0.010 | 0.079** | 0.051 |
| | (0.034) | (0.016) | (0.037) | (0.047) |
| Big team at firm | | | 0.044 | 0.041 |
| | | | (0.030) | (0.030) |
| Treatment X Big team | | | -0.069* | -0.063 |
| | | | (0.041) | (0.043) |
| Treatment X Predict success | | | | 0.049 |
| | | | | (0.031) |
| Predict that treatment will work | | | | 0.005 |
| | | | | (0.018) |
| Observations | 305 | 984 | 1,289 | 1,289 |
| Mean DV if Treat=0 | 10.82 | 11.27 | 11.17 | 11.17 |
| Stores | 35 | 110 | 145 | 145 |

Notes: An observation is a store-month during the RCT. Standard errors clustered at the store level are in parentheses. A big team is defined as having a store head count above 10. Controls are the same as in Table 2. * significant at 10%; ** significant at 5%; *** significant at 1%

**Table 5:** Responses from the Regional Manager Survey: Explanations for Why the Treatment Will Work

| Explanation | Share |
|---|---|
| A Utility Explanation, Such as People Like Not Having Paperwork or Feeling Less Stressed About Paperwork | 37% |
| A Problem Explanation Such as Not Experiencing Problems or Team Having Good Communication or No Bureaucracy Needed Because People Know Procedures | 71% |
| Regional Managers Will Invest More Time if Store if it is Treated Such as Visiting or Calling More | 0% |
| Treatment Stores are Likely to Experience Outside Shocks to Performance During the RCT | 0% |

Notes: These data are from the pre-RCT regional manager prediction survey. The numbers are based on examining the free text responses of regional managers. We restrict to the 78 stores where regional managers predict that the treatment will work. For 21 of the stores, the regional manager made a prediction, but did not provide a clear explanation (e.g., the regional manager just said "Yes, will work") and the percentages are based on the 57 stores where regional managers provided explanations. Of the 21 stores with no explanations, 14 of those cases come from 2 regional managers, one of whom was picking up their kids during the survey and the other one had just arrived at an appointment. These two regional managers gave no explanation for all of their predictions, though still made yes/no predictions for all stores, and appeared to take these predictions very seriously. Given the short time window between informing regional managers about the RCT and performing the randomization, there was only of couple weeks to conduct the regional manager surveys, so it was not possible to re-schedule. The text of the explanations, translated into English, appear in Appendix Tables A3 and A4.

**Table 6:** Fairly Weak Correlates of Regional Manager Predictions

| | (1) |
|---|---|
| Treatment store | -0.025 |
| | (0.080) |
| Pre-RCT Log Sales | 0.015 |
| | (0.237) |
| Pre-RCT mystery shopping score | 0.286*** |
| | (0.094) |
| Pre-RCT mean head count | -0.026* |
| | (0.015) |
| Pre-RCT store league performance ranking | 0.000 |
| | (0.001) |
| Pre-RCT mean tenure of workers | -0.000 |
| | (0.001) |
| Observations | 144 |
| R-squared | 0.166 |

Notes: An observation is a store. Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

**Table 7:** Impact of the Treatment on Worker Survey Outcomes

| Dep. var.: | Commitment to store | Commitment to firm | Monitoring composite | Trust bwn. HQ & workers | Last new hire was well-trained | Job satisfaction | Firm has a good culture |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| **Panel A: All Stores** | | | | | | | |
| Treatment | 0.214** | -0.016 | -0.076 | 0.268* | 0.005 | 0.037 | 0.282* |
| | (0.098) | (0.094) | (0.105) | (0.138) | (0.123) | (0.101) | (0.143) |
| Observations | 390 | 390 | 394 | 394 | 368 | 390 | 354 |
| **Panel B: Stores Where RCT Predicted to Work by Regional Mgrs** | | | | | | | |
| Treatment | 0.235* | 0.079 | -0.242** | 0.033 | -0.078 | -0.028 | 0.181 |
| | (0.129) | (0.128) | (0.120) | (0.173) | (0.151) | (0.131) | (0.180) |
| Observations | 235 | 234 | 237 | 237 | 222 | 234 | 214 |
| **Panel C: Stores Where RCT Predicted Not to Work by Regional Mgrs** | | | | | | | |
| Treatment | 0.127 | -0.176 | 0.157 | 0.554** | 0.092 | 0.164 | 0.305 |
| | (0.156) | (0.138) | (0.174) | (0.212) | (0.206) | (0.159) | (0.217) |
| Observations | 155 | 156 | 157 | 157 | 146 | 156 | 140 |
| p-Val on diff between Panels B and C | 0.59 | 0.18 | 0.06 | 0.06 | 0.50 | 0.35 | 0.66 |

Notes: An observation is a worker in the employee survey. Mini-jobbers are excluded. * significant at 10%; ** significant at 5%; *** significant at 1%

**Table 8:** Impact of the Treatment on Worker Survey Outcomes

| Dep. var.: | Commitment to store | Commitment to firm | Monitoring composite | Trust bwn. HQ & workers | Last new hire was well-trained | Job satisfaction | Firm has a good culture |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| **Panel A: All Stores** | | | | | | | |
| Treatment | 0.181* | -0.008 | -0.046 | 0.226* | 0.034 | 0.038 | 0.226 |
| | (0.092) | (0.085) | (0.102) | (0.127) | (0.110) | (0.099) | (0.136) |
| Observations | 459 | 458 | 463 | 462 | 434 | 457 | 419 |
| **Panel B: Stores Where RCT Predicted to Work by Regional Mgrs** | | | | | | | |
| Treatment | 0.225* | 0.088 | -0.150 | 0.081 | -0.065 | -0.022 | 0.135 |
| | (0.122) | (0.118) | (0.125) | (0.161) | (0.138) | (0.126) | (0.174) |
| Observations | 276 | 275 | 278 | 278 | 261 | 273 | 252 |
| **Panel C: Stores Where RCT Predicted Not to Work by Regional Mgrs** | | | | | | | |
| Treatment | 0.074 | -0.158 | 0.112 | 0.398*** | 0.166 | 0.146 | 0.280* |
| | (0.148) | (0.146) | (0.146) | (0.148) | (0.155) | (0.140) | (0.160) |
| Observations | 183 | 183 | 185 | 184 | 173 | 184 | 167 |
| p-Val on diff between Panels B and C | 0.06 | 0.07 | 0.10 | 0.05 | 0.08 | 0.36 | |

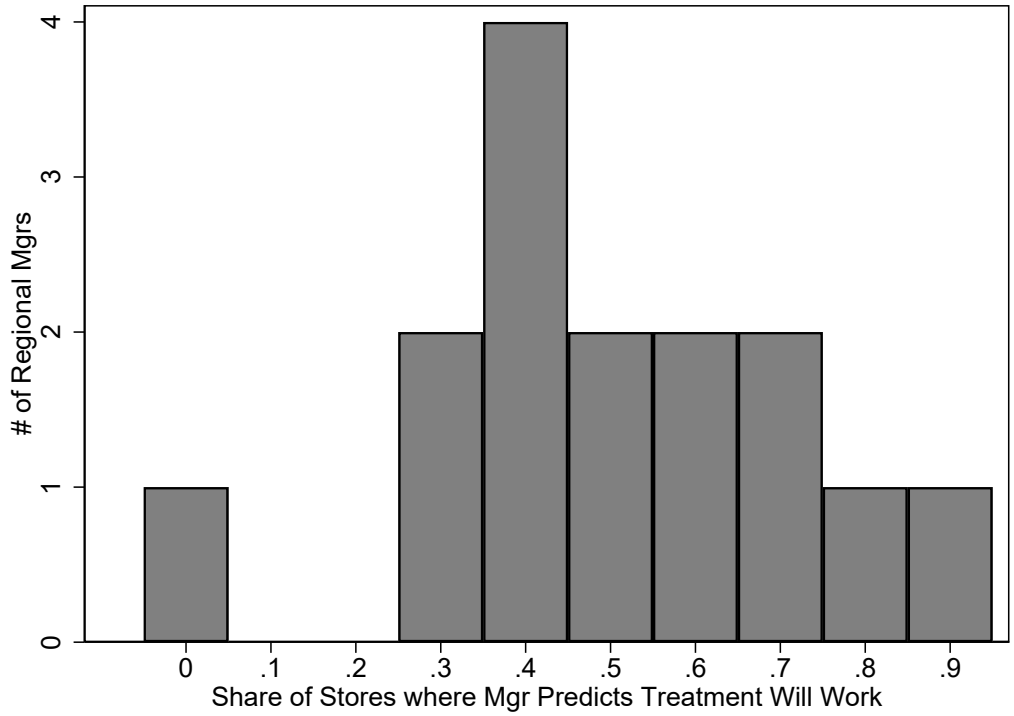
Notes: An observation is a worker in the employee survey. * significant at 10%; ** significant at 5%; *** significant at 1%

# Web Appendix, "Is This Really Kneaded? Ask the Manager! A Large-scale Trial on the Effects of Paperwork Reduction", by Friebel, Heinz, Hoffman, Kretschmer, and Zubanov

Appendix A contains additional figures and tables. Appendix B provides additional discussion on various topics. Appendix C provides materials used by the firm in the RCT.

## Appendix A Appendix Figures and Tables

**Figure A1:** Variation in Manager-Level Rates of Predicting that the Treatment Will Work




Notes: This figure shows the distribution across managers in rates of predicting that the treatment will work. There are 15 regional managers, who are responsible for roughly 10 stores each. For example, we see that there are 2 regional managers who predict that the treatment will work in between 25-35% of their stores.

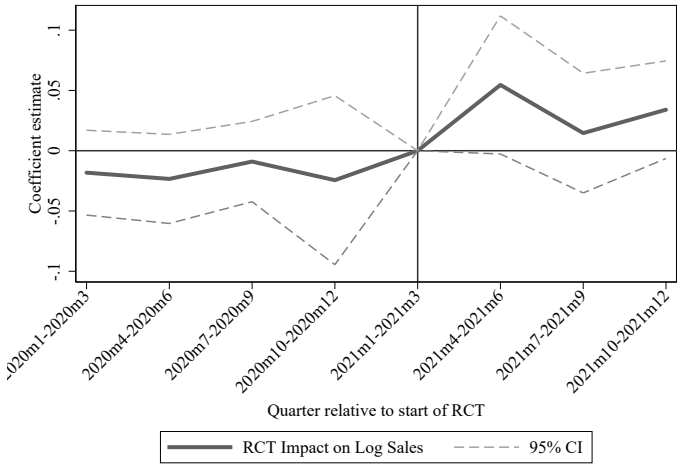
**Figure A2:** Picture of a Sample Bakery

**Table A1:** Heterogeneity in Sales Effects Based on Time Spent on the Daily Protocol

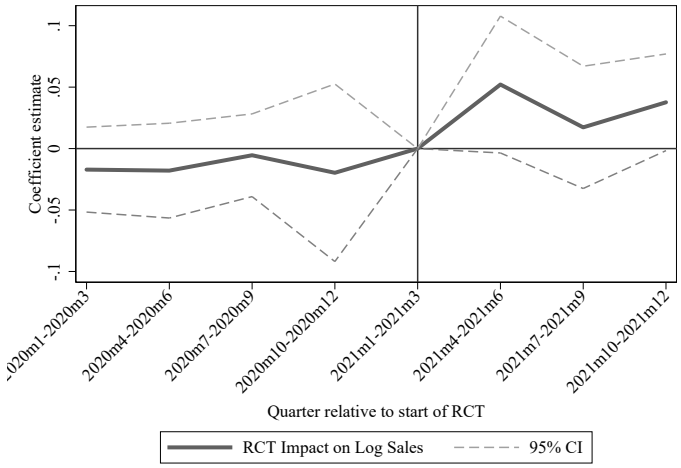
| | (1) |
|---|---|
| Treatment | 0.032 |
| | (0.031) |
| Treatment X Time spent on daily protocol | -0.000 |
| | (0.001) |
| Time spent by store on daily protocol, overall | 0.000 |
| | (0.001) |
| Observations | 1,221 |

Notes: An observation is a store-month during the RCT. Standard errors clustered at the store level are in parentheses. Each regression controls for the mean of the dependent variable in the pre-period and year-month fixed effects. A big team means more than 10 workers at the store.* significant at 10%; ** significant at 5%; *** significant at 1%

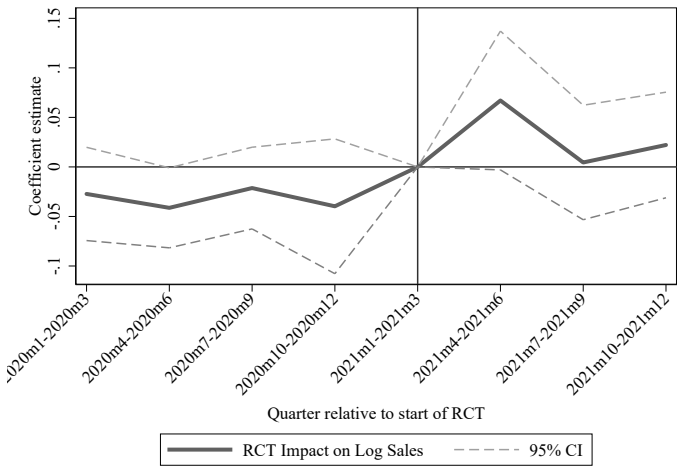
**Figure A3:** Event Study Impacts of the Treatment: Stores Where Treatment Expected to Have Effect




(a) Log Sales




(b) Log Busy Sales




(c) Log Slow Sales



Notes: This figure shows the event study impacts of paperwork reduction.

**Table A2:** Impacts of the Treatment on Individual Components of the Mystery Shopping Score

| | Name badge | Sales procedure | Product present-ation | Free sample | Advert-ising | Customer interact-ion | Sales quest-ions | Upsell | Golden roll | Other roll | Store appear-ance |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| **Panel A: All Stores** | | | | | | | | | | | |
| Treatment | -0.009 | -0.009 | -0.001 | 0.000 | 0.016 | -0.040 | 0.004 | 0.014 | -0.025 | 0.004 | 0.017 |
| | (0.022) | (0.008) | (0.023) | (0.000) | (0.045) | (0.040) | (0.003) | (0.014) | (0.043) | (0.010) | (0.032) |
| Observations | 791 | 791 | 791 | 791 | 791 | 791 | 791 | 791 | 791 | 791 | 791 |
| Mean DV if Treat=0 | 1.901 | 1.992 | 2.926 | 1 | 1.830 | 2.032 | 0.995 | 0.0224 | 2.574 | 0.979 | 2.688 |
| Stores | 144 | 144 | 144 | 144 | 144 | 144 | 144 | 144 | 144 | 144 | 144 |
| **Panel B: Stores Where RCT Predicted to Work by Regional Mgrs** | | | | | | | | | | | |
| Treatment | 0.047 | -0.009 | 0.013 | 0.000 | 0.021 | -0.103** | 0.000 | 0.020 | 0.072 | -0.009 | 0.015 |
| | (0.030) | (0.013) | (0.027) | (0.000) | (0.061) | (0.049) | (0.000) | (0.019) | (0.060) | (0.014) | (0.039) |
| Observations | 416 | 416 | 416 | 416 | 416 | 416 | 416 | 416 | 416 | 416 | 416 |
| Mean DV if Treat=0 | 1.890 | 1.990 | 2.931 | 1 | 1.921 | 2.098 | 1 | 0.0190 | 2.536 | 0.981 | 2.648 |
| Stores | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| **Panel C: Stores Where RCT Predicted Not to Work by Regional Mgrs** | | | | | | | | | | | |
| Treatment | -0.064** | -0.011 | -0.014 | 0.000 | -0.002 | 0.031 | 0.012 | -0.000 | -0.108* | 0.015 | 0.009 |
| | (0.031) | (0.010) | (0.038) | (0.000) | (0.069) | (0.066) | (0.008) | (0.018) | (0.062) | (0.012) | (0.044) |
| Observations | 375 | 375 | 375 | 375 | 375 | 375 | 375 | 375 | 375 | 375 | 375 |
| Mean DV if Treat=0 | 1.915 | 1.994 | 2.921 | 1 | 1.718 | 1.950 | 0.988 | 0.0265 | 2.621 | 0.976 | 2.738 |
| Stores | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 |

Notes: This table presents analyses similar to those in column 6 of Table 2. The difference is we look at the individual components of the mystery shopping scores. * significant at 10%; ** significant at 5%; *** significant at 1%

## **Table A3:** Regional Manager Predictions, Part 1

| Yes | Prediction |
|---|---|
| 1 | Would be very happy about less bureaucracy, less work as a result, do not like to work with notes and strict rules, will work |
| 0 | Both: Some employees are happy about fewer guidelines, others need strict rules |
| 0 | Will have a positive impact on employee satisfaction; but: poor communication of initiative by store management expected, might have negative impact on sal |
| 1 | Great, well-coordinated team in the store, everything fits in the store, would appreciate less bureaucracy |
| 0 | Both: employees will be happy, but individual employees need more restrictions |
| 1 | Well-coordinated team, has been working together for a long time, very good communication within the team, would be glad, no negative effects; will work! |
| 0 | Negative effects, as the team is still very fresh, new management in place, processes not yet internalised; Negative sales |
| 0 | Both. Employees will be glad, mixed team with some old and many young employees. |
| 1 | Would perhaps miss the list; but: no negative consequences in the store; on the contrary: positive impact! |
| 0 | Will be glad; but: implementation of processes not secure, chaotic store; internal evaluations (e.g. strawberries on a cake) mostly negative. Might be chaotic w |
| 1 | Would implement this very well, would also get along well without paper and clear structure; employee satisfaction will increase |
| 0 | Many new staff members, store is a bit chaotic, need structure and guidance, want guidance |
| 1 | Get along without bureaucracy; would feel more comfortable if there was less pressure because of less bureaucracy. Will work |
| 1 | Get along without bureaucracy, nothing would change in the operational processes without bureaucracy, staff already understood important things |
| 0 | Mixed picture; have too high returns on bakery products, returns will get worse. Unclear how it will work |
| 1 | Get along without bureaucracy, nothing would change. Therefore, will work |
| 0 | Need structure, will not work without it, otherwise the store will sink into chaos and lose focus |
| 0 | Need structure, haven't been around long, bureaucracy is important support, returns on bakery products |
| 0 | Need structure and bureaucracy, otherwise staff will have problems |
| 1 | Yes, will work |
| 1 | Yes will work |
| 1 | Yes, will work |
| 0 | No, will not work |
| 1 | Yes, will work |
| 0 | No, does not work |
| 0 | No, does not work |
| 1 | Yes, will work. Clear yes |
| 0 | No, does not work. No way |
| 0 | No, does not work. No way |
| 1 | Will work. Good and organized store management; very conscientious and tidy. Implementation will work |
| 0 | Need assistance. Complicated without lists, young store management, young team needs guidance |
| 0 | Undecided. Maintain documentation obligations, as other structure is difficult to implement; old store management, which wants to maintain habits |
| 1 | Store team does not need lists. Committed, thoughtful and conscientious |
| 0 | Store desperately needs structure which is provided by bureaucracy; organized store management , bad team. Will not work without lists |
| 0 | Good leadership, bad team. Would work partially |
| 0 | Would be good if lists remained. Recent change of management. Large store |
| 1 | Would work. Complete Confidence in the team |
| 1 | No documentation requirements needed. Good team. Good store |
| 1 | No documentation requirements needed. Good team and store management. Well organized |
| 0 | Will not work - team is still finding itself; guidance and structure needed; possible problems if list isn't there anymore. If there's a mystery shopping visit and |
| 1 | Does not work in this store as good as in store . . . ., but will work as well; maybe some structure needed, also autonomous possible. Will work |
| 1 | Similar to store in . . . .; team will be glad; actually need list to get routine, would also work out without list |
| 1 | Will work out without any requirements, team is confident in their performance, happy if there are no lists |
| 1 | Like in store . . . . Team will manage it, but need to stay focused. Problem: When there is a Mystery Shopping visit and expectations are not met, there will b |
| 1 | Team does not need lists. Can manage without lists. Strength in implementing processes. |
| 1 | No lists needed, works out without lists. However, when the store manager is not on duty, they sometimes not meet expectations |
| 0 | List needed for orientation. Does not work without it. |
| 1 | Definitely do not need lists, will implement everything in any case |
| 1 | Do well without a list |
| 1 | In general: will work out |
| 1 | Will work out. |
| 1 | Could do well without lists and without having problems, would like to keep daily log |
| 0 | Focus store; cannot work without clear guidelines, may result in chaos |
| 1 | There won't be any problems with less bureacracy, even if daily log is important from time to time |
| 0 | Focus store; cannot work without clear guidelines, may result in chaos |
| 0 | Cannot work without it, cash differences |
| 1 | Can do without it, store runs great |
| 1 | Can do without documentation requirements, runs great, but still relatively new store management |
| 0 | Cannot do without it, big cash and store differences and problems with sales; even if employees would like to pass on restrictions |
| 1 | Will work out without restrictions |
| 1 | Will work out without restrictions |
| 1 | Will work out without restrictions |
| 1 | Will work out without restrictions |
| 1 | Will work out without restrictions |
| 0 | Will work out without restrictions |
| 1 | Will work out without restrictions |
| 1 | Will work out without restrictions |
| 0 | Structure needed. Won't work without it |
| 1 | Will work out without restrictions |
| 0 | Staff will be glad; procedures are sometimes problematic, often not implemented, therefore bureaucracy and structure needed |
| 0 | Store management wants to maintain bureaucracy; but it could work as well. Unclear if it works out |
| 0 | ? |
| 0 | Store wants to keep bureaucracy, unclear if it works out |
| 0 | Store wants to maintain bureaucracy, clear structures important for training and coaching. Unclear what happens |
| 0 | Store wants to maintain bureaucracy, important for training and coaching; mixed effects |
| 0 | Store wants to maintain bureaucracy, important for training and coaching, has to deal with store differences and leadership |
| 0 | Store wants to maintain bureaucracy, important for training and coaching, has to deal with store differences and leadership |
| 0 | Sometimes help needed, large store, operationally strong, so could also work out |
| 1 | Can be left out, very strong store management, trains staff very well |
| 1 | Can be left out, small store, few employees, can also be trained in person |

Notes: This table gives the first table of regional manager predictions. What is listed here are the predictions that a coauthor wrote down in pen form during the phone calls with regional managers. Due to sensitives and legal restrictions on recording phone calls in Germany, it was not feasible to record the phone calls.

## **Table A4:** Regional Manager Predictions, Part 2

| Yes | Prediction |
|---|---|
| 0 | New store management old established team, need guidance, but could work out in the medium term |
| 0 | No good store management, not good at training staff, clear guidance and lists are important |
| 1 | Works out without, small store, staff are well trained and guided by store management |
| 0 | Do not leave out, big team, difficult cases,information does not go down well |
| 1 | Training on important processes is also possible this way, control can be omitted, will work out |
| 0 | New store management, lists are needed |
| 0 | New store management, lists are needed, but store management is probably good, best case: keep first, leave out later |
| 1 | Independent store, will work out without lists, employee satisfaction will improve |
| 0 | Downtown store, no positive or negative developments on sales or performance, high employee satisfaction anyway |
| 1 | Similar to other well running stores, team will be glad if lists are gone, no change in sales (maybe better sales), time is saved, no change in other numbers |
| 0 | Similar to other well running stores, team will be glad if lists are gone, no change in sales, time is saved, no change in other numbers |
| 1 | If operational list is gone, it's good for the team, it will work |
| 1 | Always enjoyed making lists and bureaucracy, but will also work out well without restrictions |
| 0 | Always enjoyed bureaucracy. Old employees and therefore difficulties without it |
| 1 | Team will be glad when operational list is gone. No problems expected. Will work out! |
| 0 | Rather neutral. Mixed effects. No operational list is good, more time for employees |
| 0 | Will not be received well,. Daily protocol and operational lists are popular; employees like bureaucracy |
| 0 | Like bureaucracy, will find another way, will neither be happy nor sad; neutral effects |
| 0 | Bureaucracy needed |
| 1 | Will work out without |
| 1 | Will work out without |
| 0 | Documentation requirements are needed |
| 1 | Could live without bureaucracy, very communicative store management |
| 0 | Daily protocol needed, operational list not necessarily. Therefore mixed effects |
| 0 | Bureaucracy needed, will not work out without |
| 1 | Strong store management, high sales, employee satisfaction 50/50, store management will not take omitting lists seriously, because there are so many other list |
| 1 | Strong store management, been there for a long time, high employee satisfaction, it will work out very well without documentation requirements |
| 0 | Currently closed, strong store management, employee satisfaction high and will improve |
| 1 | Small store, on a positive trajectory, new store management, will accept bureaucracy reduction and implement successfully. It's an opportunity! |
| 0 | Very strong store management, employee satisfaction will not change. Large store. But: operational implementation will work partially , no big problems |
| 1 | Strong store management, open to everything, high employee satisfaction, omitting lists will be successful |
| 0 | Small store, will be received positively, new store management, mixed effects |
| 0 | Very strong store management, employees been there for many year. Effects unclear |
| 0 | Will meet with resistance, will not accept anything new, will only reluctantly, if at all, let themselves be dragged into it, store management communicates this |
| 1 | Strong store management, open to everything and can implement everything well, already been there a few years |
| 1 | Employee satisfaction will improve with less bureaucracy, strong store management, will work out |
| 1 | Interested store management, will be happy about it, positive emotional response, higher employee satisfaction; Omitting will work out |
| 1 | Top motivated store management, positive emotional response, store management takes on many tasks itself, less bureaucracy will be supportive |
| 1 | Focal point store, motivated store management; store management takes over a lot of bureaucracy from staff; employee satisfaction will not improve necessarily |
| 0 | Critical store, employee satisfaction will not get better, does not work out |
| 1 | Mini store, hardly any bureaucracy, will work out |
| 1 | Mini store, hardly any bureaucracy only 3 employees will be happy when there is less bureaucracy |
| 1 | Store management will be happy that lists/ bureaucracy are gone, but then say: does not help much; employee satisfaction will not increase, but it will work v |
| 1 | Highly motivated store team, very communicative, maybe no increase in sales or staff satisfaction , because store is already productive, will work without lists |
| 0 | Old store management, if it is up to them they will continue to run lists; no change in sales, independent from restrictions - store will be ok |
| 1 | Great store management, will work hard on it and implement it well, will analyze whether it is successful. Will work. Positive influence; employees very satisfi |
| 0 | Employees are dissatisfied with the situation in the store, there are grumblings, feeling relieved because of less bureaucracy could help, unclear what happens |
| 1 | Will work, good store and well organized store management |
| 0 | Problem team, a bit chaotic. Won't work without guidelines and clear guidelines |
| 1 | Could probably work, well organized store management and team |
| 1 | Will work, but: store management is very bureaucratic |
| 1 | Store manager retiring soon. Could work out- well-functioning team; unclear if open to changes, but it will work in general |
| 1 | Could work, or rather: Will work!! |
| 0 | No, will not work |
| 1 | Will work. But team needs to know why |
| 0 | At the moment, no. Will not work |
| 1 | Yes, we implement well, but want to understand why. But: If explanation makes sense (which may be the case), it will work |
| 1 | Bureaucracy costs time; more time has a positive effect on satisfaction; will work out |
| 0 | Older employees, very bureaucratic, keep handwritten lists, love bureaucracy, unclear |
| 1 | Less bureaucracy saves time; more time = positive for employee satisfaction, young team, easy-going |
| 1 | Less bureaucracy saves time; more time = positive for satisfaction, young team, more relaxed and more free time |
| 0 | Structures and control needed |
| 0 | Will improve the general mood, are often overwhelmed with bureaucracy; employee satisfaction and sales will not improve |
| 0 | Undecided |
| 0 | Store management over 20 years in, undecided |
| 0 | Less bureaucracy will improve the general mood; but: employee satisfaction and sale will not improve. Unclear what happens |
| 0 | Undecided |

Notes: This table gives the second table of regional manager predictions. What is listed here are the predictions that a coauthor wrote down in pen form during the phone calls with regional managers. Due to sensitives and legal restrictions on recording phone calls in Germany, it was not feasible to record the phone calls.

# Appendix B Additional Discussion

**"Missing" Documentation Duty.** In the interviews in randomly selected stores, we only asked questions about 21 documentation duties. The "missing" documentation duty is called "Einverständniserklärung Sonntagsarbeit" (=declaration of consent for working on Sundays). When employees have holidays on a Friday, it is not clear whether the weekend counts to the holidays or is already the start of the new working week. According to the top management of the firm, the weekend does not account towards the holidays (as long as workers do not have holidays on the upcoming Monday); according to the workers' council, the weekend is part of the holidays from the previous week. There was a big dispute between the firm and the workers' council about the case in the past. The compromise: Saturday counts as holidays and workers are not allowed to work on that day; Sunday counts as a holiday, workers are, however, allowed to work on that day and the hours are counted as overtime – however, workers have to explicitly declare that they are willing to work on the Sunday (i.e., sign the "Einverständniserklärung Sonntagsarbeit"). The top management and the workers' council also made a "work agreement" about the compromise – which is an Germany a legal binding agreement between the firm and its workers (i.e., the document is legally treated on the company level in the same way as a the German labor law). When we prepared the interviews, both the top management and the workers' council informed us that it is legally and politically impossible to drop this document. Also note that the document is rarely used (only if employees work on Sundays after their holidays) and it takes only one minute to sign it. Because of that, we did not include this documentation duty in our interviews.

**Store league performance ranking.** Inspired by the German Bundesliga, the firm uses different measures of performance to provide an overall scores to stores at the firms, and the stores are then ranked. The goal is to account for differences in possible sales and profitability.

# Appendix C Materials Used in the RCT and Firmwide Rollout

## C.1 Wording Used for the Regional Manager Predictions

I presented the pilot project in a regional manager meeting in Feb 2021. I received the following feedback about the pilot project from the regional managers:

"In some shops, less documentation duties will work well in the daily business operations and will probably have a positive effect on store performance indicators. In other shops the reduction will have negative effect on the daily business and will probably have a negative impact on store performance indicators."

We as researchers are interested in your predictions!

Now I will ask you to make predictions for all of your shops (independent whether the shop will indeed be a pilot shop or not).

I have now a list of your shops (in front of me)

What do you think: If the shop XYZ indeed was a pilot shop: How well would the daily business work ("function") in the shop with less documentation duties?

## C.2 Information on the RCT Provided to Store Managers and Employees

**ONLY FOR PILOT STORES:**

**Information for store managers and employees**

At [FIRM NAME] we constantly ask ourselves how and where we can improve to make your daily work easier. Together with the workers' council, we started discussions on day-to-day business documentation duties (daily protocol, expiry date checklist, weekly report, etc.) at [FIRM NAME] last year.

Starting April 6th, 2021 we will no longer process the *operational checklist* and the *daily protocol* in your store and will drop them without any replacement.

This gives you more freedom[1] to organize yourselves and we trust you that the essential processes (such as the arrangement of the products in the sales counter, covid measures, customer communication) will continue to be done in a company-compliant manner.

We believe that time saved on paperwork is an opportunity, which we can use for training new colleagues and communicating with customers.

[1] The German word is "freiraum", which has the dictionary meaning of freedom in English. The phrase could also be translated as "empower", as in "This empowers you to organize yourselves."

## C.3 Guidelines Given to Regional Manager Explaining the RCT: Mid-February 2021

# Guideline: regional managers

**What is it about?**

At [FIRM NAME] we constantly ask ourselves how and where we can improve to make our employees daily work easier. Together with the workers' council and a team of researchers from the University of Cologne, we started discussions on day-to-day business documentation duties (daily protocol, expiry date checklist, weekly report, etc.) at [FIRM NAME] in 2020.

In a joint pilot-project with the research team we will forego the daily handling of the *operational checklist* as well as the *daily protocol* in 75 randomly selected [FIRM NAME] pilot stores for an initial period of six months, starting April 6th, 2021. In doing so, we give the employees more freedom to organize themselves. The *operational checklist* and the *daily protocol* are continued in all other stores.

The aim of the pilot-project is to scientifically test what are the effects of waiving the two documentation duties. Your cooperation is essential for the success of the pilot project.

Trust your managers in the pilot stores.

**What must be done in pilot stores?**

Please inform all store managers and employees in pilot stores that the *operational checklist* and the *daily protocol* will no longer be used. Emphasize particularly that we want to give the employees more freedom to organize themselves and that we trust the employees will continue to do the essential processes (such as the arrangement of the products in the sales counter, covid measures, customer communication) in a company-compliant manner. You should ensure that store managers and employees in pilot stores will no longer provide written confirmation that operational processes have been implemented in the right way.

Please make it clear to employees that time saved on paperwork is an opportunity that we can use especially for training new colleagues and communicating with customers.

**Will the previous information in the *operational checklist* and the *daily protocol* be recorded elsewhere in the pilot stores?**

The *operational checklist* and the *daily protocol* will be dropped in pilot stores without any replacement; the employees must not confirm in writing anymore that the corresponding tasks are being completed.

In the future, the "cash balances" will be recorded exclusively by the "money transfer list" in pilot stores.

**In which stores will the *operational checklist* and the *daily protocol* be dropped?**

The *operational checklist* and the *daily protocol* will initially be deleted only in 75 randomly selected [FIRM NAME] (pilot) stores. **In all other stores**, the *operational checklist* and the *daily protocol* will **continue to be used in the future as before**. Please ensure this and support your store managers in the implementation.

In order to ensure fairness in the selection of pilot stores, pilot stores were chosen at random. The selection was made by the research team from the University of Cologne and was supported by the workers' council. Since the stores were selected at random, it also happens within the districts that the *operational checklist* and the *daily protocol* are kept in some stores but not in others.

Please make sure that the *operational checklist* and the *daily protocol* are continued or deleted in the "correct" stores. Please do not reintroduce the *operational checklist* and the *daily protocol* in the pilot stores on your own **under any circumstances.**

This would jeopardize the success of the entire project!

**How will I respond to queries from stores managers and employees?**

If you receive any questions from employees or store managers that you cannot answer, please contact your sales director.

If store managers ask why the *operational checklist* and the *daily protocol* are being continued in their stores, while hearing that this is no longer the case in other stores, please answer as follows:

*As a part of a pilot project, the operational checklist and the daily protocol will no longer be used in randomly selected pilot stores for several months. For reasons of fairness, the pilot stores were randomly selected so that each store had the same chance of becoming a pilot store. The stores were drawn by a team of researchers from the University of Cologne together with the workers' council. If you have any questions about this, please do not hesitate to contact* [*NAME OF THE HEAD OF THE WORKERS' COUNCIL*]*, who is supporting the project on the part of the workers' council.*

**Further notes: Contact to the research team**

The research team from the University of Cologne will conduct a survey among all store managers in March 2021. The aim here is mainly to determine when the store managers and employees usually fill out the *operational checklist* and the *daily protocol* and how much time this takes. As a part of the survey the research team will call the store managers directly in the stores on Wednesday mornings in March. You should inform your store managers in advance about the survey.

During the pilot project, the research team will also contact the regional managers regularly to ask for their personal impressions of the impact of the removal of the *operational checklist* and the *daily protocol*.