

Effects of an Information Sharing System on Employee Creativity, Engagement, and Performance

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ABSTRACT

Many service organizations rely on information sharing systems to boost employee creativity to meet customer needs. We conducted a field experiment in a retail chain, based on a registered report accepted by JAR, to test whether an information sharing system recording employees' creative work affected the quality of creative work, job engagement, and financial performance. We found that, on average, this system did not have a significant effect on any of these outcomes. However, it significantly improved the quality of creative work in stores that had accessed the system more frequently and in stores with fewer same-company nearby stores. It also improved creative work and job engagement in stores in divergent markets, where customers needed more

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customization. We found weak evidence of better financial results where salespeople had lower creative talent before the system was introduced. Our findings shed light on those conditions in which information sharing systems affect employees' creative work.

JEL codes: C93; D83; J24; L81; M54

Keywords: information sharing systems; knowledge sharing; creativity; engagement; productivity; labor management; learning; geographically dispersed organizations; retail chains

1. Introduction

Service and retail organizations often need to understand and satisfy customer needs on a timely basis. To do so, they tend to allocate greater decision authority to frontline employees, who better understand local customers than headquarters does (Baiman, Larcker, and Rajan [1995], Fladmoe-Lindquist and Jacque [1995], Aghion and Tirole [1997], Dessein [2002], Campbell, Datar, and Sandino [2009]). However, despite the perceived value in employees' local creativity and the formally granted permission to experiment, not all employees use discretion to generate creative ideas (Campbell [2012]).

We examine the role that an information sharing system recording employees' creative work (hereafter ISSC) can play in ongoing local experimentation and, more specifically, in employees' creative efforts. We report results from a natural field experiment that we developed based on a registered report to test the effects of implementing an ISSC on the quality of creative work, job engagement, and financial performance.¹

In practice, it is unclear whether an ISSC promotes experimentation and yields positive performance outcomes. It might yield significant benefits by (1) providing employees with greater access to information, thus enhancing their creative abilities through a more diverse pool of ideas than their initial set, and/or (2) affecting their engagement by increasing accountability for the quality of their creative work. Yet, an ISSC may impose costs if it unintentionally leads employees to reduce experimentation and conform to a common norm. Employees might reduce experimentation to minimize risk (if they fear that novel work would be judged negatively by peers), if they free-ride on their peers by copying their creative work, or if they feel threatened that their peers will free-ride on them (Arrow [1962]).

We partnered with a mobile phone retail (MPR) company in India to develop a field experiment testing the effects of implementing an ISSC.

¹ For our purposes, we assess the quality of creative work based on Hennessey and Amabile's [2009, p. 572] definition of what creative work should involve: "the development of a novel product, idea, or problem solution that is of value to the individual and/or the larger social group."





Value \ Novelty	Not Novel (Not Attractive)	Very Novel (Very Attractive)
Not Valuable (Not Useful)	<div><p>Value = 1.75, Novelty = 1</p></div>	<div><p>Value = 2.5, Novelty = 4.5</p></div>
Very Valuable (Very Useful)	<div><p>Value = 4.25, Novelty = 1.75</p></div>	<div><p>Value = 4.5, Novelty = 4.5</p></div>

FIG. 1.—Examples of posters and associated customer ratings.

MPR operates 42 company-owned stores in an emerging market where customization of the sales process is essential to compete with local mom-and-pop shops. As with many other customer-focused retailers, idea generation based on the local environment is essential at MPR’s stores. The salespeople create handmade sales posters to attract local customers’ attention and to explain promotions, which are updated by the retailer and/or its suppliers weekly. Figure 1 presents examples of such posters.²

MPR collaborated with us by pilot-testing an ISSC (a Web app) showcasing the sales posters developed by the salespeople at a subset of its stores. We randomly assigned stores to a treatment group, where we introduced the ISSC, or a control group that had no ISSC. The ISSC Web site was smartphone accessible by store managers and salespeople working at treated stores; they could both upload posters and browse other people’s posters.³ Although the salespeople had produced such posters routinely prior to this experiment, the posters had never been shared across stores.

² As figure 1 shows, the quality of these posters in terms of their value (how useful they are at communicating the essence of the deals) and their novelty (how visually appealing they are) varies significantly across stores.

³ Exposure of the posters on the Web site was mandatory. Store managers and managers at the headquarters followed up with all the salespeople in the treatment stores during the monthly “uploading” period to make sure that every salesperson’s poster was in the system.

We measured our main outcomes of interest as follows. We measured creativity on two dimensions: *value* (measured on a 1–5 scale capturing the poster’s ability to communicate the products and deals offered) and *novelty* (measured on a 1–5 scale capturing the poster’s ability to grab customer attention). We used the weekly attendance of a salesperson working for a particular brand at a given store (measured as days per week) as a proxy for job engagement and weekly sales at the store-brand level to measure financial performance.

The registered report process guided our execution and enhanced reliability in two ways. First, it encouraged us to conduct a natural field experiment design, which provided us with significant advantages. We were able to draw causal inferences, thanks to the random selection of our treatment store-brands, and we could examine the effects of an ISSC in a natural context (Bandiera, Barankay, and Rasul [2011], Floyd and List [2016]). Furthermore, because our study was a natural field experiment, subjects were unaware that they were participating in a study. Thus, we avoided self-selection and could discard “Hawthorne effect” alternative explanations. Second, before executing our field experiment, we submitted a registered report proposal in which we committed to conducting a specific set of analyses to test our main hypotheses and delve into the tradeoffs underlying those hypotheses. Having made this commitment, we neither restated our hypotheses nor conducted any unplanned analyses except for expanding the “Additional Analyses” in the accepted proposal from analyzing financial outcomes to analyzing all of our three stated outcomes of interest and conducting various robustness tests. Our hypotheses were articulated based on theory instead of ex post facto rationalization of results and our analyses were based on a carefully crafted research design (refined through multiple rounds of reviews) rather than on data mining.

Based on our power analyses, we are 80% confident that, on average, the ISSC did not change the quality of creative work measures by 0.18 points or more, attendance by 0.23 days/week or more, or sales by 13% or more; that is, the effects were not statistically significant at conventional levels. However, our additional planned tests show that ISSC did have a positive and significant effect on the quality of creative work (and to a limited extent, on sales and attendance) when it was more frequently accessed. In the stores where the system was used most often, its effect was associated with an increase in the value (novelty) of creative work of 0.40 (0.23) points.

As stated in the accepted proposal, we also explored three conditions that could have affected the ISSC’s impact: the users’ natural exposure to others’ ideas, the ex ante creative talent of the individuals, and the type of market served (mainstream vs. divergent). On the first condition, we find that the ISSC was associated with greater quality of creative work (an increase of 0.38 points in the value of creative work and 0.29 points in the novelty of creative work) in stores that had fewer than the median number of same-company nearby stores. This suggests that the system helped most where salespeople had generally less exposure to others’ creative work. Yet the

system was also associated with a 0.30 *decrease* in the novelty of creative work in stores near other branches of the chain. This is consistent with salespeople at those stores feeling concern about their peers' free-riding. On the second condition (*ex ante* creative talent), we find that the system led to better financial results (a 25% increase in sales) for store-brands with salespeople whose *ex ante* creativity was below the median, suggesting that they may have had more to learn from others' work. Finally, on the third condition (mainstream vs. divergent stores), we find that, at divergent stores, the ISSC was associated with a 0.28-point increase in the value of creative work and a 0.24-days increase in the weekly attendance of salespeople.⁴ This was consistent with the idea that stores requiring greater customization benefit more from the system.

In summary, although the introduction of the ISSC at our site did not lead to significant improvement in average outcomes, it was associated with improvement in the quality of creative output when accessed frequently and/or where information was most needed (i.e., where the salespeople were less exposed to others' ideas or where they needed to tailor their efforts to specific customers' needs). Furthermore, the system was associated with better financial performance for store-brands that initially had less-creative teams and with greater job engagement in divergent markets demanding greater customization.

Our study contributes to three streams of literature. First, we contribute to the accounting literature that examines the effects of management control systems on the quality of employees' creative work. This literature has largely focused on incentive pay; for instance, laboratory experiments show that individual rewards for quantity of creative output work better than individual rewards for creativity-weighted quantity of output (Kachelmeier, Reichert, and Williamson [2008], Kachelmeier and Williamson [2010]). Chen, Williamson, and Zhou [2012] find that, when rewarding workers for creativity, group-based tournament incentives better promote group creativity than either individual-based tournament incentives or group-based piece-rate incentives. Our study, however, focuses on a management control system—specifically, an ISSC—that gives employees access to information that not only could affect their motivation to be creative, but could also enhance the knowledge and skills needed for creativity. Our study finds that

⁴ Campbell, Datar, and Sandino [2009] describe divergent units as those operating in markets where the customers' characteristics differ from the characteristics of the customers served by the average business unit of the organization. The study finds that organizations are more likely to delegate decision rights and provide results-based incentives to the local managers of divergent units, consistent with the idea that these local managers have a significantly better understanding of their units' customers than the headquarters does. To operationalize this construct, we asked the manager to identify as "divergent stores" those where the salespeople had to customize the service more than usual due to distinctive customer needs (e.g., stores where customers spoke other languages, communities were distinctive in a way that distinguished them from those of the chain's mainstream stores, and/or customers were significantly more demanding, typically in higher income areas).

these positive effects materialize only when users interact frequently with the system, have a limited supply of ideas, and/or have a greater need for ideas to customize their creative work.

Second, this study adds to the accounting literature on the effect of increased access to information on decision outcomes. Prior studies have found that the implementation of information sharing systems is associated with better decision quality and financial performance (Banker, Chang, and Kao [2002], Campbell, Erkens, and Loumrioti [2015]). We hypothesize and find that ISSC can also affect creativity and engagement (1) when users interact frequently with the system and/or (2) when they have greater need to learn about and implement creative ideas.

Third, we contribute to the literature on new-knowledge-creation theory that studies how information sharing systems affect brainstorming sessions. In two laboratory experiments, Dennis and Valacich [1993] and Girotra, Terwisch, and Ulrich [2010] find that information sharing systems can increase the number and quality of ideas generated as well as the participants' satisfaction in *group* brainstorming sessions. To our knowledge, our study is the first to examine whether an ISSC can enhance the creative work of *individuals*.

Beyond contributing to the academic literature, our study aims to shed light on a topic of great interest to the business community, which increasingly seeks ways to leverage information networks to increase employee interactions and exchanges of ideas.

The rest of this report is organized as follows. Section 2 presents our hypothesis development. Section 3 describes our research method and setting. Section 4 describes our research design, presents our analyses, and discusses our findings. Section 5 concludes.

2. Related Literature and Hypothesis Development⁵

Prior research on service organizations has found that many so-called empowered frontline employees fail to use their discretion creatively to meet the needs of local customers (Campbell [2012]). An emerging literature has identified management control tools that organizations can use to motivate local experimentation, including long-term incentives, tolerance for early failures, and the recruitment of employees who like to experiment with decisions (Manso [2011], Campbell [2012]). However, to our knowledge, this literature has ignored ISSCs, an important control mechanism used extensively to promote creativity.⁶

⁵ Consistent with the registered report process, the theory and hypotheses did not change after the acceptance of our proposal.

⁶ According to a survey conducted by McKinsey Global Institute [2012, p. 12], approximately 70% of companies use information sharing systems (termed "social technologies" in their report), not only to improve collaboration and communication but also to "unleash creative forces among users."

While prior studies have shown that information sharing systems can benefit organizations (e.g., Kulp [2002], Kulp, Lee, and Ofek [2004], Devaraj, Krajewski, and Wei [2007], Campbell, Erkens, and Loumioti [2015]), they have focused on improvements in coordination and decision making rather than on improvements in creativity and local experimentation. Whether such systems can improve creativity is unclear. On the one hand, sharing ideas enhances creativity (Nonaka [1994], Nonaka and Krough [2009]). Research also suggests that encouraging individual creativity can lead to greater task engagement and learning (Conti, Amabile, and Pollack [1995]). On the other hand, sharing creative ideas can lead to a reduction of effort through *free-riding* and fewer new ideas (Arrow [1962], Dyer and Nobeoka [2000]).

Our main objective is to examine whether an ISSC ultimately leads to better financial performance. However, we first develop hypotheses on the intermediate outcomes that can affect financial performance (i.e., quality of creative work and employee engagement).

2.1 EFFECT ON THE QUALITY OF CREATIVE WORK

Customer-focused service organizations that require employees to apply discretion and creativity usually cannot specify in advance all the tasks employees should do to engage and serve customers effectively (Banker et al. [1996]). Much of the information on which empowered employees make decisions is idiosyncratic (Campbell, Erkens, and Loumioti [2015]). Effective employees rely on tacit knowledge; that is, *know-how*, which is difficult to transmit through explicit means and can only be obtained through engaging in practical activities, interacting with mentors, and observing experienced colleagues (Polanyi [1966], Tsoukas [2003]).

For two reasons, ISSCs have the potential to overcome some of the limitations of traditional management control systems that rely on explicitly stated goals (e.g., monitoring and incentive systems). First, ISSCs can expose employees to a broad and diverse pool of ideas from their peers, helping them acquire tacit knowledge or useful skills. Organizational knowledge-creation theory states that employees exposed to other people's ideas are more likely to reflect on their own practices and discover new ways to do their jobs (Nonaka [1994], Nonaka and Krough [2009]). According to Nonaka and Krough [2009, p. 645], "by bringing together different biographies, practitioners gain 'fresh' ideas, insights, and experiences that allow them to reflect on events and situations. . . . Practitioners' diverse tacit knowledge, that they particularly acquired in their diverse social practices, is a source of creativity." Consistent with this theory, Chen, Williamson, and Zhou [2012] find that tournament rewards for creativity are more likely to result in creative solutions when awarded to teams rather than to individuals. The organizational knowledge-creation literature also suggests that the process by which ideas are shared in electronic ISSCs enhances creativity more effectively than the process by which individuals usually share ideas face to face. Electronic ISSCs enable individuals to work alone and share

ideas at different times, preventing the “production blocking” that can occur when individuals must produce ideas in meetings where they need to take turns to speak up (Dennis and Valacich [1993], Girotra, Terwiesch, and Ulrich [2010]).

Second, by exposing employees’ creative work to superiors and/or peers, ISSCs could motivate high-quality creative work more effectively than monitoring or rewards could, given the difficulty of explicitly measuring creativity. The most creative workers might feel motivated, knowing that their work could impact others and be recognized within the organization; the least creative workers might try to avoid exposing work they are not proud of.

But ISSCs could also backfire because individuals exposed to others’ creative work might converge on doing work in similar ways, decreasing overall creativity. This might result from an unconscious attempt by employees to identify and emulate common features of their peers’ creative work or from the employees’ decision to neither pursue nor present their most original ideas for fear of being judged negatively (Diehl and Stroebe [1987]). Furthermore, the exchange of creative ideas among a group of employees could lead to a type of free-riding (Alchian and Demsetz [1972]), which could inhibit creativity if individuals copy others’ ideas without attending to their distinctive circumstances or if they decrease their efforts to produce high-quality work for fear of being copied.

The conflicting arguments described above suggest that introducing an ISSC could either increase or decrease the quality of creative work.⁷ We therefore hypothesize:

H1a: The introduction of an ISSC will lead to an increase in the quality of the employees’ creative work.

H1b: The introduction of an ISSC will lead to a decrease in the quality of the employees’ creative work.

2.2 EFFECT ON EMPLOYEE ENGAGEMENT

Prior research suggests that the three key antecedents of employee engagement (i.e., the investment of an individual’s complete self into her work) are the individual’s sense that her work is meaningful and valuable, the sense that she is capable of performing this work, and her perceptions regarding organizational support (Kahn [1990], Rich, Lepine,

⁷ To achieve high creativity in any particular domain, an individual needs domain-relevant skills, creativity-relevant skills, and task motivation (Amabile [1988]). We could argue that an ISSC is likely to help the individual acquire better domain-relevant skills and to increase task motivation. However, the effect on creativity-relevant skills is unclear. Therefore, we might see an increase in the value of creative work due to greater domain-relevant skills (or task-relevant tacit knowledge) but a decrease in novelty due to free-riding, inability to acquire creativity-relevant skills, and convergence on a few ideas. When measuring the quality of creative work, we will distinguish between the *value* of the work (reflecting domain-relevant skills) and its *novelty* (reflecting creativity-relevant skills).

and Crawford [2010]). ISSCs have the potential to enhance engagement through all of these mechanisms. ISSCs can increase a worker's sense of value by increasing both the expected impact her work could have on others and the worker's potential to be recognized by superiors and peers. These systems also have the potential to develop an individual's abilities and her confidence in those abilities to produce creative work. Furthermore, ISSCs can be seen as a means by which individuals receive organizational support.

In addition to this, ISSCs typically stimulate greater participation in creative activities and a more active and extensive search for information. Participation in information sharing may in turn increase engagement, regardless of the quality of the individuals' creative work.

However, ISSCs could also unintentionally increase fears of being singled out, evaluated, or embarrassed in front of peers, leading to an overall loss of confidence (Diehl and Stroebe [1987], Toubia [2006]). Fear of free-riding could also lead individuals to withdraw from investing in producing high-quality creative work. These two unintended effects would most likely reduce employee engagement. Given the unclear effect that ISSCs would have on engagement, we split our second hypothesis as follows:

H2a: The introduction of an ISSC will lead to an increase in employee engagement.

H2b: The introduction of an ISSC will lead to a decrease in employee engagement.

2.3 EFFECT ON FINANCIAL PERFORMANCE

Customer-focused service organizations that unleash the engagement and creativity of their employees should expect improved financial performance. Sales employees exposed to the creative work of peers and more engaged with their own creative work can be expected to have greater mastery of the brands and deals offered at their stores. Consequently, they should be better able to communicate these offerings and relate them to customer needs, even if the quality of their creative work may not improve significantly. Prior studies on employee engagement demonstrate that highly engaged employees perform better, since they not only exert greater physical effort but also focus their cognitive and emotional energies (Kahn [1990], Rich, Lepine, and Crawford [2010]). These arguments suggest that the direction in which the implementation of an ISSC will affect financial performance will depend on its effect on the quality of creative work and its effect on employee engagement. Following the predictions above, we state our third hypothesis as follows:

H3a: The introduction of an ISSC will lead to an increase in financial performance.

H3b: The introduction of an ISSC will lead to a decrease in financial performance.

3. *Research Method and Setting*

We test our hypotheses by running a field experiment in an MPR chain in India that operated 42 company-owned stores as of September 1, 2016. On that date, the company introduced a pilot project to a random group of stores to test the effects of an ISSC. The system consisted of a Web app that displayed sales posters generated by salespeople from different stores in different markets. The managing director of the company performed the pilot project as a natural field experiment, following our instructions.

MPR operates in a highly dynamic and locally idiosyncratic competitive environment. Its primary competitors are small independent sellers of handsets and connection services who, through their intimate local knowledge, can quickly respond to customer needs. Its second-most relevant set of competitors are online retailers, who often offer lower prices. To compete, MPR (1) offers attractive promotion deals that make customers feel they are getting more value for the prices offered, (2) provides an extensive assortment of products and services to better match customer needs, and (3) has trustworthy, high-quality service. MPR's business strategy and commercial success needs salespeople at the store level to effectively convey the value of products or services.

MPR stores are typically staffed by a manager, a cashier, and promoters representing various brands (connection providers, insurance providers, credit providers, and handset manufacturers). The managers and cashiers are employed directly by MPR, while the promoters are hired and paid by the suppliers they represent. A promoter's pay typically includes a salary component and/or a sales commission component. MPR itself occasionally offers promoters incentives for strong sales performance as well as the chance to become cashiers or store managers.⁸ None of the explicit incentives promoters receive, however, are related to the quality of the posters or any other creative work they produce.

Both MPR and its suppliers offer attractive packages, including bundles of handsets and connections, accessories, different credit options, and promotional rewards (hereinafter called promotion deals). Promoters advertise these promotion deals by making their own sales posters and displaying them in the stores.

The MPR industry in India is competitive. Promotion deals are updated weekly. Good sales posters clearly communicate the essence of the latest deals through a creative visual design that grabs people's attention and draws them into the store. Even after customers enter the store, promoters often refer to the posters as they explain the offering and make their sales pitch. (See figure 1 for a sample of the posters designed by promoters.)

⁸ The performance-based incentive structure at this setting is typical for the retail industry.

Designing these sales posters requires (1) a deep understanding of the local customer base (e.g., what deals and features would be most appreciated by the customers in a specific region and what language is required to connect with them) and (2) a great deal of creativity (e.g., presenting the important features of the deals in a clear and visually appealing way). MPR realized that motivating promoters to generate more creative and eye-catching posters is a very important part of success in this market. However, although brand promoters create sales posters as a part of their sales effort, only a handful of them have consistently generated appealing ones. Many promoters either exert little effort or lack the skills to come up with creative visual designs (figure 1).

The company started up its ISSC to engage more promoters in poster-making and to increase the overall quality and effectiveness of these posters.

This setting provides us with a valuable opportunity to test our hypotheses. First, it exemplifies a typical setting in which ISSCs might add significant value: retail chains that differentiate on customer service and rely on the empowerment and creativity of their frontline staff to deliver customer value. Second, creative output in the natural work environment is generally difficult to measure. Sales posters developed at the store level enable us to reasonably measure the quality of creative work, identifying the two main aspects that the literature highlights regarding the quality of creative work: value and novelty (Hennessey and Amabile [2009]). Furthermore, sales posters are a natural part of the frontline salespeople's work at this company and directly attract local foot traffic and generate sales. Our findings are generalizable to any service organization settings in which frontline employees' participation in creative outputs is valuable and an important driver of financial performance and where such employees have implicit or explicit incentives linked to financial performance.

4. Research Design, Analyses, and Results

4.1 DESCRIPTION AND TIMELINE

4.1.1. General Description of the Experiment. We planned our study as an eight-month field research experiment from May 1, 2016 to December 31, 2016. During the experiment, a need emerged to extend the experiment to January 31, 2017 due to an exogenous economic shock in India in November that significantly affected the retail sector and, in particular, our research site.⁹ Therefore, our main analyses exclude data from November 2016 but include data from January 2017. This maintains the same number

⁹ On November 8, 2016, the Indian government announced the demonetization of 500-rupee (hereafter Rs. 500) and Rs. 1,000 currency notes. This caused chaos as ordinary citizens lined up to exchange their notes for Indian rupees and customer-facing businesses struggled to adapt to the change in currency. As a result, the monthly update of the information sharing system at our research site was delayed from early November to late November (which caused

of months that we originally planned to include in the pre- and postexperimental periods according to our registered report and minimizes the impact of the economic shock on our analyses.

The participants in this experiment were all the brand promoters at MPR. As of September 1, 2016, 36 of the 42 stores had at least one brand promoter. On average, these 36 stores had six brands with promoters per store and six promoters per store. (MPR generally assigns a single promoter for a given brand to each store. In less than 10% of the cases, it has two or more promoters of the same brand in the same store.) We randomly assigned 36 stores into two groups: treatment group A (18 stores, 105 brands, and 106 promoters as of September 1, 2016) and control group B (18 stores, 100 brands, and 104 promoters as of September 1, 2016).¹⁰

Our analyses test the effects of MPR's ISSC at the treatment stores relative to the control group on three outcomes at the store-brand level: the quality of creative work, job engagement, and financial performance. We measure these outcomes using weekly data from archival sources from MPR's accounting and personnel databases and evaluations of the creative work by customers (as explained below). We validate these measures using data from pre- and postexperimental surveys.

4.1.2. Timeline of the Field Experiment. Figure 2 shows the timeline of the field experiment, which we explain below.

4.1.2.1. Preintervention Period. The first four months were the preintervention period. In June 2016 (month 2), we tested some of the data collection methods. (For details, see online appendix 4.) In July 2016, the managing director sent out a memorandum to store managers and promoters under both experimental conditions. The memorandum described the relevance of sales posters to the brands' sales, explained what a high-quality poster is, and let the salespeople know about company resources they would use to prepare their posters. The director also asked store managers to highlight the relevance of the sales posters to their staff. Sending the memorandum to both the treatment and control groups (1) let the promoters and store managers know the importance of sales posters and what good posters should look like and (2) held the information about the importance of these posters constant across both experimental conditions. Online appendix 1 shows the content of this memorandum (month 3 memorandum). We also conducted a preexperimental survey to measure

the December system update to be delayed as well). Given that the demonetization disrupted MPR's normal business operations, especially in November, we extended the experimental period until the end of January 2017. This gave us enough time to reestablish normal operations and for the delayed system updates to play out their effects.

¹⁰In a few cases, store proximity could lead employees in the control stores to learn that an information sharing system was implemented in treated stores. We therefore bundled any stores close to each other. When randomizing the stores, we treated these bundles of stores as a unity to make sure that any bundles of stores fell (together) into the same treatment or control group.

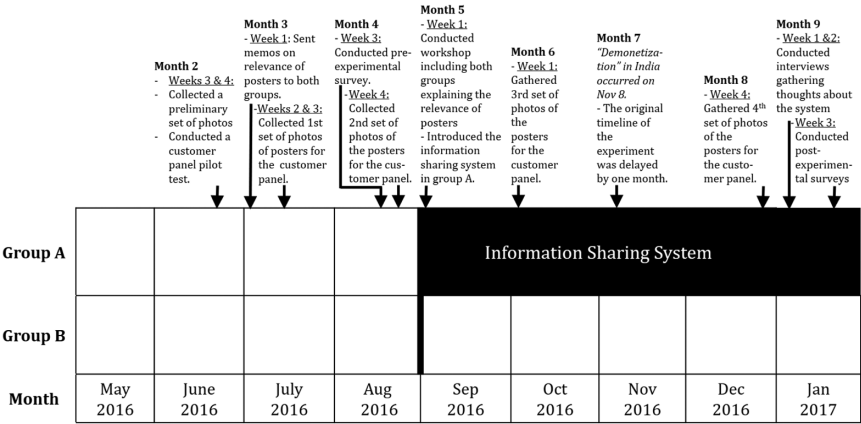


FIG. 2.—Schedule of field experiment testing the effects of an information sharing system recording employee ideas.

the promoters’ engagement, their store managers’ assessment of the quality of the creative posters, whether the promoters were motivated to produce creative work, and the extent to which they had improved their skills to produce creative work over the prior month. Whenever possible, we employed survey instruments validated by prior research to design our questions. Online appendix 2 presents the questions included in this survey. Finally, the headquarters collected pictures of the posters displayed across all the stores for future customer panel evaluations in month 3 (July 2016) and again in month 4 (August 2016), shortly before the intervention.

4.1.2.2. Intervention. At the beginning of month 5 (September 2016), the managing director ran two workshops on consecutive days (the first targeting control stores and the second treatment stores) to highlight the relevance of creating posters and to introduce the treatment stores to the ISSC.¹¹ She described what a high-quality poster is (emphasizing that posters should be useful and attractive) and invited the promoters to work on posters for 30 minutes as they sat at tables organized by store, each of which had a stack of poster-making materials. The director asked each store team to select its favorite poster and then asked the authors of the posters to explain how they came up with their ideas. The workshops were identical, except that the workshop for the treatment stores also included an

¹¹ The managing director believed that the ISSC had to be introduced and described in a workshop. Otherwise, it would be ignored. To avoid confounding the effect of the workshop with the effect of the ISSC, the authors of this paper asked the managing director to run workshops for both the control and treatment groups, differing only in the introduction of the ISSC.

introduction to and explanation of the ISSC.¹² While the promoters and store managers of the treatment stores were working on their posters, two facilitators helped them access the ISSC Web app. To reinforce the messages communicated during the workshop, the managing director sent a memorandum reminding all store teams of the relevance of producing high-quality posters and reminding the staffs of treatment stores how to use the ISSC to upload their posters into the system. Online appendix 1 shows those two memoranda.

4.1.2.3. Postintervention Period. We collected data to evaluate the effects of the intervention during this period. We gathered photos of the posters displayed across all the stores at two times: shortly after the implementation of the ISSC (in week 1 of month 6; i.e., the beginning of October 2016) and toward the end of the sample period (in week 4 of month 8; i.e., the end of December 2016).¹³ In month 9 (January 2017), we also conducted a post-experimental survey that asked all of the store managers to assess the promoters' engagement, their motivation, and their ability to produce posters. (See appendix 2 for the postexperimental survey questions.) To capture qualitative insights and users' impressions of the system, we conducted 19 in-person interviews in January at eight treatment stores, asking store managers and promoters to discuss their experience with the ISSC. (See online appendix 3 for the interview questions.)

4.1.2.4. Day-to-Day Implementation of the Information Sharing System. The ISSC consisted of a Web app where the promoters from the treatment group could continuously see the sales posters created by other promoters and the store and brand for which each was made. On the back end, the app was administered by the managing director, three other head office employees, the Web developer, and the authors of this paper. The Web site enabled the promoters to observe all the posters created in all stores in their mobile or desktop devices, to pick their favorite posters, and to search the posters by brand, by store, or by favorites (see screenshots of this Web site in figure 3). If, despite the mandate, a promoter did not submit a poster, a blank space with an X and the words "No poster was created" appeared above the name of the store-brand. The first set of pictures of sales posters were taken and uploaded into the ISSC right after the system was introduced (September 2016). From then on, store managers and promoters at the treatment stores were required to post their pictures in the ISSC once a month (the first week of month 6, and the fourth week of months

¹² One of the authors of the paper monitored the workshops in person to make sure that there were no technical difficulties launching the app and that the only difference between the groups was the explanation of how to use the ISSC.

¹³ This allowed us to test the effects of the ISSC on financial performance, engagement, and quality of creative work within one month of implementation, capturing initial reactions to it. Our tests include store-brands that had promoters before and after the intervention and take into account the effect of promoter turnover by including store-brand promoter tenure as a control variable.

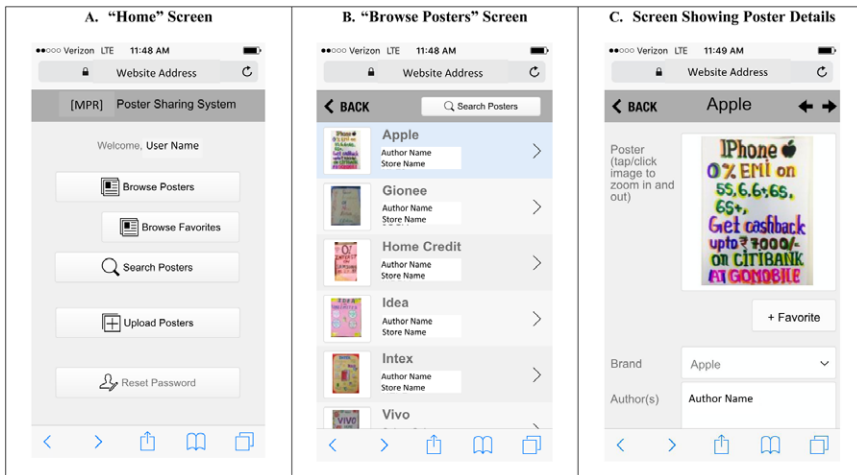


FIG. 3.—Screenshots of the information sharing system.

7 and 8).¹⁴ The store managers and promoters of all the treated stores received an email following the uploading and approval of the pictures every month to let them know the ISSC had been updated.

4.2 DATA COLLECTION AND MEASUREMENT OF THE MAIN VARIABLES OF INTEREST

Table 1, panel A, provides descriptive statistics for our main variables of interest. We include observations for which we have complete data to run our analyses: 4,818 store-brand-week observations (including only those weeks when a promoter of the brand attended the store) and 544 store-brand-month observations when posters were collected for customer panel evaluations.

4.2.1. Main Outcome Variables. We measure financial performance using store-brand sales data (largely attributed to the brand promoters working at the store) from the company's accounting system. *Sales* is defined as the natural logarithm of the store-brand weekly sales.¹⁵ We exclude cases where the weekly sales for the store-brand are less than or equal to zero. The average *Sales* at a store during our sample period was 10.48 (about Rs. 36,000, or US\$ 540), but varied considerably from 0.69 to 14.52 (i.e., from about Rs. 2, or three US cents, to Rs. 2 million or US\$ 30,000).¹⁶

¹⁴The original plan required the managers and promoters to upload new pictures on the first week of every month, but uploading was delayed in November and December due to the demonetization crisis.

¹⁵One of the 15 brands with in-store promoters provided credit services (Home Credit). *Sales* in this case are estimated as the sales amount of items purchased on credit.

¹⁶We use an exchange rate of Rs. 66.5 for each US\$ 1.00.

TABLE 1
Descriptive Statistics for the Main Variables of Interest

Panel A: Descriptive statistics					
	N	Mean	SD	Minimum	Maximum
Sales	4,818	10.48	1.75	0.69	14.52
Value of creative work	544	3.14	0.79	1.00	5.00
Novelty of creative work	544	2.92	0.75	1.00	5.00
Attendance	4,818	5.33	1.40	1.00	7.00
Info sharing	4,818	0.50	0.50	0.00	1.00
Post	4,818	0.56	0.50	0.00	1.00
Active access	2,414	42.31	31.04	4.00	122.00
Number of promoters for the brand at the store	4,818	1.16	0.47	1.00	7.00
Store physical size	4,818	435.04	254.14	100.00	1,092.00
Store age	4,818	6.61	3.42	0.49	11.68
Sales days	4,818	6.98	0.22	3.00	7.00
Number of nearby stores	4,818	3.02	2.22	0.00	6.00
Distance to head office	4,818	4.59	3.43	0.03	11.05
Tenure	4,818	13.38	15.82	0.50	113.50
Gender	4,818	0.12	0.32	0.00	1.00
Preintervention sales	4,818	10.37	1.43	6.84	13.73
Preintervention attendance	4,818	5.13	0.77	1.00	6.50
Preintervention value of creative work	544	3.07	0.62	1.25	5.00
Preintervention novelty of creative work	544	2.92	0.61	1.25	4.75
Panel B: Preintervention variable values between treatment and control groups					
	Treatment	Control	Difference	t-Statistics	
Sales	10.28	10.10	0.18	2.56	
Attendance	4.49	4.57	−0.08	−1.04	
Number of promoters for the brand at the store	1.53	1.43	0.10	2.60	
Store physical size	334.95	570.18	−235.23	−23.92	
Store age	6.68	6.27	0.41	2.86	
Sales days	6.98	6.99	−0.00	−0.53	
Number of nearby stores	2.20	4.14	−1.94	−22.72	
Distance to head office	3.86	5.58	−1.73	−12.03	
Tenure	12.98	13.62	−0.64	−0.83	
Gender	0.12	0.16	−0.05	−3.07	
Number of observations	1,138	1,035			
Value of creative work	3.01	3.13	−0.13	−1.56	
Novelty of creative work	2.86	2.91	−0.04	−0.53	
Number of observations	179	180			

The appendix provides detailed definitions of the variables.

We asked a panel of customers to assess the quality of the sales posters, based on the photos of 683 unique posters collected during the pre- and postintervention periods. Informed by the creativity literature (e.g., Amabile [1988], Hennessey and Amabile [2009]), we obtained two measures for the quality of creative work (adapted from Sethi, Smith, and Park [2001]) from the customer panel, where we asked the customers to evaluate the

value of the posters by assessing their usefulness in communicating the products and deals offered and to evaluate the *novelty* of the posters by assessing their visual attractiveness and ability to grab the attention of the customers.¹⁷ The customer panel was convened after the experiment and included customers of the two income groups that the company served (low and high). Each poster was evaluated by eight customer panelists: 2 customers per income group \times 2 income groups (low and high) \times 2 dimensions (value and novelty). We created a software application to allow customers to consistently rate the posters in batches of 25. The batches were organized by brand and the selection of posters for each batch was generated randomly, including posters collected throughout the pre- and postintervention periods.¹⁸ This allowed us to hold constant the evaluating circumstances and to make a fair comparison of the quality of creative posters drawn at different times. We obtained ratings from 116 customers at five retail stores who agreed to evaluate up to eight batches of posters each.

The customer panel measures include a *value* rating indicating how effective the poster is at communicating the products or deals offered, using a not useful (1) to very useful (5) scale, and a *novelty* rating indicating how much the poster's visual design grabs the customer's attention, using a not attractive (1) to very attractive (5) scale. Online appendix 4 explains in detail what the customer panel did, presents the definitions that the customers read to rate the posters, and shows the screenshots of the software application.

The intraclass correlation coefficient is 0.3917 for the four ratings received by each poster on the value dimension and 0.3916 for the four ratings received by each poster on the novelty dimension (both correlations are significantly different from zero, with a *p*-value < 0.01). The four ratings that each store-brand poster received for each dimension were averaged to obtain the main measures used in our analyses, *Value of creative work* and *Novelty of creative work*.¹⁹ Examples of the ratings are shown in figure 1. As table 1, panel A, shows, the average value rating for the posters of a store-brand was 3.14 and the average novelty rating for a store-brand was 2.92.

¹⁷ We focused on measuring the value and novelty of the creative output rather than the creativity of the person or the creative process, as prior literature has highlighted the complexities in—and lower reliability of—assessing person and process measures (Amabile [1988, p. 126]).

¹⁸ We decided to create batches per brand after noticing, during a pilot test, that some customers were sorting the posters based on brand preferences.

¹⁹ We also asked the promoters' store managers to rate the posters in pre- and postexperimental surveys (see online appendix 2 for the questions). The store managers' assessment was positively associated with the customers' assessment of the quality of the promoters' posters, estimated based on the average of the value and novelty ratings of the posters (correlation = 10%, significant at a 10% level).

Our main measure capturing job engagement is *Attendance*, a weekly measure of brand promoter attendance.²⁰ Table 1, panel A, reports that the promoters of a brand attended the store an average of 5.33 days a week, with attendance ranging from one to seven days a week. In addition, we constructed measures of employee engagement through pre- and postexperimental surveys (see online appendix 2). These measures are positively associated with *Attendance*, our proxy for engagement (correlation = 39.1%, significant at a 1% level).

4.2.2. Explanatory Variables. The main explanatory variables in our analyses are *Info sharing* (identifying treated stores) and *Post* (identifying the period after the ISSC had been introduced). A similarly relevant variable is *Active access*, the number of times the staff at each store accessed the system to upload or browse posters during the postperiod. Table 1, panel A, shows that, although the average frequency of access to the system was low, it ranged widely, from 4 to 122.

We also collected data from company records and surveys to construct control variables related to store and promoter characteristics. Store characteristics include the number of promoters for each brand at the store, store age and physical size, sales days (number of days in the week when the store made sales), the number of nearby MPR stores, and the distance to MPR's head office. Promoter characteristics include tenure, gender, and preintervention measures for sales, attendance, and quality of creative work. We define our variables in the appendix. Table 1, panel A, shows significant variation across all these variables.

Table 1, panel B, compares the preintervention values of the main variables between the treatment and control groups. There are no statistically significant differences in preintervention attendance, value of creative work, and novelty of creative work between the two experimental conditions. Despite the random assignment of treatment conditions, there were greater preintervention sales for the treatment group and some differences in the preintervention covariate values between the treatment and control groups. In our analyses, we control for all these covariates as well as for the preintervention average values of the outcome variables.

Online appendix 5 displays two correlation tables corresponding to the two samples. We used these tables to assess the effect of MPR's ISSC on weekly store-brand sales and store-brand promoter attendance and on the quality of posters. These tables show insignificant correlations between the main variables of interest (*Sales*, *Attendance*, and measures of the quality of creative work) and the dummy variable for adopting the ISSC (*Info sharing*),

²⁰ We use average brand promoter attendance when a store has more than one promoter for a brand in a given week. Furthermore, we adjusted this measure to exclude cases when a new promoter did not last more than a week at MPR or when a promoter reported that he attended a store different from his home store for 2 or less days in a month. The latter situation happens because promoters occasionally visit other stores for a few hours for training purposes.

but it does report (1) a general increase in sales and attendance across both treatment and control stores after the ISSC was introduced (*Post*) and (2) a significantly positive association between the salespeople's access to the ISSC and three of our four outcome measures (*Sales*, *Value and novelty of creative work*).²¹

4.3 REGRESSION ANALYSES TESTING OUR HYPOTHESES

We test our hypotheses by estimating the following difference-in-differences regression model at the store (*i*)-brand (*j*) level, using robust standard errors clustered by store:

$$\begin{aligned} Outcome_{ijt} = & \beta_0 + \beta_1 Info\ sharing_i + \beta_2 Info\ sharing_i \times Post_{it} + \beta_3 Post_{it} \\ & + \beta_n Controls_{ijt} + Brand\ fixed\ effects + \varepsilon_{ijt}, \end{aligned} \quad (1)$$

where $Outcome_{ijt}$ is measured using (1) the natural logarithm of sales for brand *j* at store *i* in week *t*, (2) the quality of the creative work displayed for each brand *j* at store *i* in month 3, 4, 6, or 8 (based on customer panel evaluations of the posters), or (3) promoter attendance for brand *j* at store *i* in week *t*.²² The variable *Info sharing* is equal to 1 if the store is treated (i.e., is part of group A) and 0 otherwise. H1–H3 (predicting significant effects of the ISSC on the quality of the creative work, job engagement, and financial performance) are tested by examining the direction and significance of β_2 .

$Controls_{ijt}$ includes the store and brand promoter characteristics described in table 1, as well as brand fixed effects (since the brands have different types of products spanning different price ranges). The appendix defines the variables used in our analyses.

We first evaluate the average treatment effect of the ISSC on sales, the financial outcome (table 2, column 1). Then, we run similar regressions to evaluate the average treatment effect of the ISSC on important intermediary outcomes; that is, the value and novelty of the creative work (table 2, columns 2 and 3)²³ and job engagement, measured as weekly promoter attendance (table 2, column 4). Our results suggest that the introduction of the ISSC *did not* have a statistically significant effect on any of the outcomes of interest. We conduct a series of tests to ensure the results are robust to alternative specifications (for details see online appendix 6). Based on our power analyses, we are 80% confident ($1 - \beta = 0.8$, using a 10% significance level, $\alpha = 0.1$) that, on average, the mere introduction of the ISSC did not

²¹In addition to the correlation tables, we match each poster to the average weekly sales data, ranging from two weeks before a given poster collection to two weeks before the next poster collection, and find that both the value and the novelty of creative work are positively and significantly correlated with financial performance.

²²For stores with two or more promoters for a given brand (which make up less than 10% of the store-brands) in a given week, the attendance variables and promoter-level characteristics are an average value across the promoters of the same store-brand.

²³In a few cases (64 of the 544 observations in table 2), more than one poster was created for a given store-brand-month. We treated data from different posters as different observations.

TABLE 2
Average Effect of an Information Sharing System on Financial Performance,
Quality of Creative Work, and Engagement

	Quality of Creative Work			
	Sales (1)	Value (2)	Novelty (3)	Attendance (4)
<i>Info sharing</i>	0.0666 (1.41)	-0.2200** (-2.66)	0.0018 (0.02)	-0.0120 (-0.12)
<i>Post</i>	0.3236*** (5.21)	0.0208 (0.31)	0.0291 (0.32)	0.3166*** (7.70)
<i>Info sharing × Post</i>	0.0248 (0.32)	0.1577 (1.53)	-0.0423 (-0.36)	0.1278 (1.01)
Store characteristics				
<i>Number of promoters for the brand at the store</i>	0.0702** (2.04)	-0.0835 (-0.98)	-0.1278 (-1.61)	-1.0501*** (-13.95)
<i>Store physical size</i>	0.0002*** (4.06)	-0.0002* (-1.70)	0.0002 (1.69)	0.0001 (0.89)
<i>Store age</i>	-0.0070 (-1.30)	0.0222*** (3.28)	-0.0012 (-0.15)	-0.0075 (-0.79)
<i>Sales days</i>	0.2354*** (4.93)	-0.4012** (-2.68)	-0.1019 (-0.79)	0.7935*** (7.64)
<i>Number of nearby stores</i>	-0.0155** (-2.23)	-0.0083 (-0.57)	-0.0067 (-0.46)	-0.0147 (-1.01)
<i>Distance to head office</i>	0.0004 (0.05)	-0.0387*** (-3.88)	-0.0167* (-1.80)	-0.0121 (-1.09)
Promoter characteristics				
<i>Tenure</i>	0.0022 (1.49)	-0.0017 (-0.79)	-0.0014 (-0.84)	0.0047 (1.59)
<i>Gender</i>	-0.1413** (-2.50)	0.1055 (1.14)	0.0055 (0.06)	0.1251 (1.35)
<i>Preintervention sales</i>	0.7122*** (17.06)	-	-	-
<i>Preintervention value of creative work</i>	-	0.4326*** (5.77)	-	-
<i>Preintervention novelty of creative work</i>	-	-	0.4564*** (10.28)	-
<i>Preintervention attendance</i>	-	-	-	0.3032*** (4.44)
Brand fixed effects	Yes	Yes	Yes	Yes
R^2 (pseudo- R^2)	0.8283	0.1979	0.2390	0.0415
Observations	4,818	544	544	4,818

This table reports coefficient estimates from ordinary least squares (*OLS*) regressions in columns 1–3 and Tobit regressions (with an upper limit = 7) in column 4. R^2 s are reported for *OLS* regressions and pseudo- R^2 s for Tobit regressions. *t*-statistics in parentheses are based on robust standard errors clustered by store. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. *Sales* (our proxy for financial performance) refers to the natural logarithm of weekly sales for a given brand in a given store. *Value* refers to the score given to the poster by the customer panel on how effective the poster is at communicating the products or deals offered using a not useful (1) to very useful (5) scale. *Novelty* refers to the score given to the poster by the customer panel on how attractive the visual design of the poster is using a not attractive (1) to very attractive (5) scale. *Attendance* (our proxy for engagement) refers to the number of days the average promoter working for a brand at the store reported to work during a given week. *Info sharing* is an indicator for whether the store is in the treatment group (i.e., where an information sharing system is implemented). *Post* is an indicator for whether the time period is after the intervention (months September, October, December, and January). Month 7 (November) is excluded due to the demonetization in India. The appendix provides detailed definitions of the variables.

change our creative measures by 0.18 points or more on a 1–5 point scale, the promoters' attendance by 0.23 or more days per week, or sales by 13% or more.²⁴ (See online appendix 7 for details on our power analyses.)

We conjecture that the lack of results may be due to any of three reasons: (1) the limited extent to which salespeople accessed the ISSC,²⁵ (2) the tradeoffs underlying the implementation of the ISSC, which could have led the system to produce positive outcomes for some store-brands and negative results for others, or (3) the possibility that the ISSC may not have had a sizable impact on any stores during our sample period—due either to a real lack of impact or to the limited time horizon of our experiment, which may have concealed system effects that could have arisen over time. To test our first conjecture, in subsection 4.4.1, we examine whether salespeople that accessed the system more often were significantly impacted by the introduction of the ISSC. To test our second conjecture, in subsection 4.4.2, we examine factors that could have differentially increased or decreased the benefits (or costs) associated with the ISSC across stores. Any results found in subsections 4.4.1 and 4.4.2 would challenge our third conjecture. We planned and committed to running the following “Additional Analyses” using financial performance (sales) as the dependent variable in our accepted registered report proposal. In this paper, we expand these same analyses to include the other two outcomes of interest included in our planned hypotheses as additional dependent variables: quality of creative work and job engagement.

4.4 ADDITIONAL ANALYSES

4.4.1. Effect of the Information Sharing System Contingent on Active Access to the System. As seen in the descriptive statistics, the degree to which promoters at different stores accessed the ISSC varied greatly.²⁶ We examine whether the lack of impact of the ISSC could be related to promoters who interacted

²⁴These power analyses, prepared for our registered report proposal, also suggest that, with a probability of 90% ($1 - \beta = 0.9$), the ISSC did not change our creative measures by 0.21 points or more on a 1–5 point scale, the promoters' attendance by 0.27 or more days per week, or sales by 15% or more.

²⁵This limited access, combined with the fact that the managing director drew significant attention to the relevance of creating high-quality posters across both treatment and control stores through the workshops and memoranda, may have diminished the power to distinguish a significant difference between the treatment and control groups.

²⁶To understand what factors could explain this variation, we ran a regression of *Active access* on all the control variables used in our main analyses. In untabulated results, we found that the access to the system was greater in stores that were larger (in store size), were older, had more sales-days in the week, and were located closer to the head office. Also, our interviews revealed that the promoters' different degrees of comfort with the system may have also contributed to the variation in the frequency with which they accessed the system. For example, when the promoters were asked whether they experienced any difficulty in using the system, some promoters responded “No, it's easy to use”; some commented “It was difficult at the beginning but now it's easy”; while a minority were frustrated by the system and said that they preferred to ask someone at the head office to upload their posters into the system.

with the system less frequently. Columns 2 and 3 of table 3 show that the introduction of the ISSC was associated with greater increases in the *Value of the creative work* and the *Novelty of the creative work* when the store staff accessed the system more frequently. In terms of economic significance, the ISSC was associated with an increase in the *Value (novelty) of creative work* of 0.40 (0.23) points on a 1–5 point scale for the store(s) that used the system most often.²⁷ These increases in creativity are similar to or larger than those resulting from providing creativity-based incentives to individuals (e.g., Kachelmeier, Reichert, and Williamson [2008] find increases in creativity ratings of 0.49 points on a 1–10 scale, following the implementation of such incentives). Online appendix 6 shows that the results in table 3 are robust to several alternative specifications.

Overall, our results provide evidence that the ISSC had a positive effect on the quality of creative output (and in some robustness tests, on the stores' financial performance and job engagement) when it was most frequently accessed.

We complement our analysis with qualitative insights on how often salespeople accessed the system from the 19 interviews that we conducted in January at eight treatment stores. Although the salespeople said the app was easy to use, about half of them cited reasons for *not* using it more often: forgetting usernames, passwords, the link to the system, and so on. Furthermore, our interviews suggested that several promoters only used the system as a mechanism to upload rather than to actively browse posters; many asked the head office to upload posters on their behalf. Most of them used the system only when they were required to upload their posters.

All of the store managers and promoters interviewed—even those who made limited use of the ISSC—stated that the new focus on creating posters was very useful. They made remarks such as: “There is a difference in a simple and a well-designed handmade poster. The customer will definitely have a look at well-designed posters.” The salespeople who more actively used the system suggested that they had changed the way they made posters. One interviewee stated: “We take ideas from other posters now.” Another one said: “There is always this thought in my mind that these posters are going to be uploaded in the system and it changes the way I make posters.”

Based on this feedback and results suggesting that some salespeople improved the quality of their posters, MPR's managing director decided to roll out the system to all of the stores, to promote the system more aggressively, and to invest in creating a more engaging user experience.

4.4.2. Conditions Affecting the Effect of the Information Sharing System on Outcomes. Whether a company would be better off letting ideas naturally

²⁷ We use data from tables 1 and 5 to estimate the effect of the system—for the store(s) that used the system most often—on the *Value of creative work* ($0.0013 + 0.0033 \times 122$) and the *Novelty of creative work* ($-0.2178 + 0.0037 \times 122$).

TABLE 3
Effects of an Information Sharing System on Financial Performance, Creativity, and Engagement Contingent on the Frequency of Access to the System

	<i>Sales</i> (1)	Quality of Creative Work		
		<i>Value</i> (2)	<i>Novelty</i> (3)	<i>Attendance</i> (4)
<i>Info sharing</i>	0.0672 (1.45)	−0.2121** (−2.53)	0.0122 (0.13)	−0.0097 (−0.10)
<i>Post</i>	0.3238*** (5.21)	0.0211 (0.31)	0.0297 (0.32)	0.3170*** (7.70)
<i>Info sharing</i> × <i>Post</i>	0.0135 (0.13)	0.0013 (0.01)	−0.2178 (−1.35)	0.0708 (0.50)
<i>Info sharing</i> × <i>Active access</i> × <i>Post</i>	0.0003 (0.22)	0.0033* (1.78)	0.0037* (1.92)	0.0013 (0.51)
Store characteristics				
<i>Number of promoters for the brand at the store</i>	0.0705** (2.05)	−0.0710 (−0.78)	−0.1144 (−1.33)	−1.0489*** (−13.98)
<i>Store physical size</i>	0.0002*** (3.93)	−0.0002* (−1.84)	0.0002 (1.33)	0.0001 (0.83)
<i>Store age</i>	−0.0072 (−1.28)	0.0191** (2.73)	−0.0047 (−0.67)	−0.0085 (−0.88)
<i>Sales days</i>	0.2339*** (4.74)	−0.4342*** (−3.02)	−0.1406 (−0.93)	0.7862*** (7.65)
<i>Number of nearby stores</i>	−0.0153** (−2.19)	−0.0049 (−0.34)	−0.0023 (−0.18)	−0.0138 (−0.93)
<i>Distance to head office</i>	0.0007 (0.08)	−0.0346*** (−3.61)	−0.0117 (−1.32)	−0.0106 (−0.93)
Promoter characteristics				
<i>Tenure</i>	0.0022 (1.45)	−0.0020 (−0.92)	−0.0018 (−1.10)	0.0047 (1.56)
<i>Gender</i>	−0.1410** (−2.49)	0.1206 (1.28)	0.0213 (0.25)	0.1266 (1.36)
Preintervention value-dependent variable	Yes	Yes	Yes	Yes
Brand fixed effects	Yes	Yes	Yes	Yes
R^2 (Pseudo- R^2)	0.8283	0.2019	0.2445	0.0416
Observations	4,818	544	544	4,818

This table reports coefficient estimates from ordinary least squares (*OLS*) regressions in columns 1–3 and Tobit regressions (with an upper limit = 7) in column 4. R^2 s are reported for *OLS* regressions and pseudo- R^2 s for Tobit regressions. *t*-statistics in parentheses are based on robust standard errors clustered by store. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. *Sales* (our proxy for financial performance) refers to the natural logarithm of weekly sales for a given brand in a given store. *Value* refers to the score given to the poster by the customer panel on how effective the poster is at communicating the products or deals offered using a not useful (1) to very useful (5) scale. *Novelty* refers to the score given to the poster by the customer panel on how attractive the visual design of the poster is using a not attractive (1) to very attractive (5) scale. *Attendance* (our proxy for engagement) refers to the number of days the average promoter working for a brand at the store reported to work during a given week. *Info sharing* is an indicator for whether the store is in the treatment group (i.e., where an information sharing system is implemented). *Post* is an indicator for whether the time period is after the intervention (month 5, 6, 8, or 9). *Active access* is a measure of the number of times promoters in the store accessed the information sharing system in the postperiod; it is set to zero for all stores in the preintervention period and for all control units at all times. Month 7 (November) is excluded due to the demonetization in India. The appendix provides detailed definitions of the variables.

emerge and spread by word of mouth, which MPR had previously done, or promoting idea transmission with an ISSC could depend on store conditions. We explore three conditions that could lead to better or worse outcomes associated with an ISSC: (1) the salespeople's natural exposure to others' ideas, (2) the creative talent of the salespeople, and (3) the type of market served (mainstream vs. divergent).

- 1) Natural exposure to others' ideas: Alternative channels to learn about others' creative work will likely diminish the potential benefits of an ISSC. At MPR, promoters could potentially learn about others' posters by walking into nearby stores. To formally examine whether the system's effect was greater in stores isolated from other MPR stores, in table 4 we split our samples into stores with more nearby stores (above the median) and those with fewer nearby stores, rerun our baseline regressions, and compare the treatment effects of the two subsamples. Although the level of exposure to other stores did not affect the extent to which the system affected sales and attendance, our findings suggest that the ISSC was associated with greater value and novelty of creative work in the subsample of stores with fewer nearby stores than in the subsample of stores with more nearby stores.²⁸ In stores with fewer same-company nearby stores, the ISSC was associated with a 0.38-point increase on the 1–5 point scale measuring the value of creative work (usefulness) and a 0.29-point increase on the 1–5 point scale measuring novelty of creative work (attractiveness). Interestingly, the system was also associated with a 0.30-point decrease in the novelty of creative work on the 1–5 point scale in stores with *more* same-company nearby stores, where promoters may have been more aware that others could free-ride on their work.
- 2) Creative talent of the salespeople: Individual creative talent could affect the effectiveness of the ISSC. On the one hand, if only a few individuals at the stores have creative talent, it may be suboptimal to impose an ISSC that would require all individuals to spend time producing creative work rather than focus on selling. On the other hand, even if many individuals lack creative talent, their effort to develop posters could lead to greater engagement with—and understanding of—their work, producing greater benefits. Furthermore, exposing the work of creative individuals to their peers could further motivate them to develop higher-quality sales posters. To explore the effect of creative talent on the effectiveness of the ISSC, we compare the treatment effects between stores with higher quality ex ante creative output (above the median) with those with lower quality ex ante creative

²⁸ The difference in the *Info sharing* \times *Post* coefficients between the subsamples with more versus fewer nearby stores is statistically significant (at the 5% level) when the dependent variable is *Novelty of creative work* (z -statistics = 2.34), but not when it is *Value of creative work* (z -statistics = 1.23).

TABLE 4
Effects of an Information Sharing System on Financial Performance, Quality of Creative Output, and Engagement:
Differences Between Subsamples Split Based on the Number of Nearby Stores

Nearby Stores→	Sales			Value of Creative Work			Novelty of Creative Work			Attendance		
	More Stores	Fewer Stores		More Stores	Fewer Stores		More Stores	Fewer Stores		More Stores	Fewer Stores	
	(1)	(2)		(3)	(4)		(5)	(6)		(7)	(8)	
Info sharing	-0.0107 (-0.12)	0.0514 (0.51)		-0.2603 (-1.57)	-0.4948** (-2.64)		-0.0094 (-0.08)	-0.0787 (-0.45)		0.0689 (0.44)	-0.1054 (-0.60)	
Post	0.2470** (2.63)	0.4700*** (11.32)		0.0738 (0.89)	-0.1131 (-0.66)		0.1693** (2.28)	-0.2290 (-1.42)		0.3034*** (9.81)	0.3231*** (4.31)	
Info sharing × Post	0.0098 (0.08)	-0.0548 (-0.61)		0.0545 (0.30)	0.3802* (2.01)		-0.3056** (-1.96)	0.2877* (1.44)		0.1736 (1.38)	0.1059 (0.56)	
Store characteristics												
Number of promoters for the brand at the store	0.0577* (1.96)	0.1288* (2.09)		0.0338 (0.47)	-0.3209* (-2.07)		-0.0458 (-0.47)	-0.3250*** (-3.44)		-0.9705*** (-14.42)	-1.1680*** (-6.51)	
Store physical size	0.0003*** (4.58)	0.0001 (0.30)		-0.0001 (-1.12)	-0.0003 (-1.48)		0.0003*** (3.09)	0.0003 (0.96)		0.0003* (1.91)	-0.0002 (-0.89)	
Store age	-0.0048 (-0.95)	-0.0148 (-1.15)		0.0201** (2.43)	0.0376** (2.37)		0.0004 (0.07)	-0.0002 (-0.01)		-0.0072 (-0.67)	-0.0171 (-0.82)	
Sales days	0.2649* (1.86)	0.2285*** (4.07)		-1.1540 (-1.73)	-0.3249** (-2.28)		0.7601 (1.13)	-0.0999 (-0.66)		1.0095*** (7.16)	0.7492*** (5.80)	
Number of nearby stores	-0.0574*** (-3.04)	0.0925* (1.89)		-0.1934*** (-3.26)	-0.0371 (-0.68)		-0.2059*** (-5.50)	-0.0697 (-1.39)		-0.0916 (-1.30)	0.0265 (0.47)	

(Continued)

TABLE 4—Continued

	Sales			Value of Creative Work			Novelty of Creative Work			Attendance		
	More Stores (1)	Fewer Stores (2)		More Stores (3)	Fewer Stores (4)		More Stores (5)	Fewer Stores (6)		More Stores (7)	Fewer Stores (8)	
Nearby Stores→												
<i>Distance to head office</i>	0.0141 (1.25)	0.0019 (0.19)		0.0390 (1.50)	−0.0450*** (−3.18)		0.0551** (2.33)	−0.0225 (−1.63)		0.0456 (1.28)	−0.0153 (−1.18)	
Promoter characteristics												
<i>Tenure</i>	−0.0008 (−0.50)	0.0058** (2.41)		−0.0036 (−1.34)	0.0022 (0.52)		−0.0033 (−1.63)	0.0002 (0.05)		−0.0002 (−0.08)	0.0134*** (3.25)	
<i>Gender</i>	−0.1133 (−1.57)	−0.1607* (−1.84)		0.1876 (1.43)	0.0633 (0.48)		0.0998 (0.89)	−0.0509 (−0.42)		0.0122 (0.16)	0.1387 (1.18)	
Preintervention value of the dependent variable	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Brand fixed effects	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
<i>R</i> ² (pseudo- <i>R</i> ²)	0.8635	0.7820		0.2378	0.2251		0.2401	0.3109		0.0484	0.0423	
Observations	2,545	2,273		301	243		301	243		2,545	2,273	

This table reports coefficient estimates from ordinary least squares (OLS) regressions in columns 1–6 and Tobit regressions (with an upper limit = 7) in columns 7 and 8. *R*²s are reported for OLS regressions and pseudo-*R*²s for Tobit regressions. *t*-statistics in parentheses are based on robust standard errors clustered by store. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. ^aDenotes that the coefficients for *Info sharing* × *Post* are significantly different between the two subsamples at a 0.10 level. *Sales* refers to the natural logarithm of weekly sales for a given brand in a given store. *Value of creative work* refers to the score given to the poster by the customer panel on how effective the poster is at communicating the products or deals offered using a not useful (1) to very useful (5) scale. *Novelty of creative work* refers to the score given to the poster by the customer panel on how attractive the visual design of the poster is using a not attractive (1) to very attractive (5) scale. *Attendance* refers to the number of days the average promoter working for a brand at the store reported to work during a given week. “More (Fewer) Nearby Stores” refers to the subsample of stores with a number of nearby stores above (below or equal to) the median number of nearby stores in our sample. There are 15 (20) stores in the “More (Fewer) Nearby Stores” subsample. *Info sharing* is an indicator for whether the store is in the treatment group (i.e., where the information sharing system is implemented). *Post* is an indicator for whether the time period is after the intervention (on or after month 5). The appendix provides detailed definitions of the variables.

output, rerun our baseline regressions, and compare the treatment effects between the two subsamples. Table 5 suggests that the effect of the system on the outcomes of interest was generally statistically insignificant, regardless of the ex ante creative talent of the salespeople. Yet, the effects were consistently positive for the subsample of stores with lower ex ante creative talent. A comparison of the *Info sharing* \times *Post* coefficients across subsamples suggests that the effect of MPR's ISSC on sales tended to be more favorable in stores with lower rather than higher ex ante creative talent (difference in coefficients = 0.37, z -statistics = 2.02). In stores where the staff had lower ex ante creative talent, the introduction of the system was associated with a 25% increase in *Sales*.

- 3) Differences across markets on the need to customize service: Promoting experimentation and the sharing of ideas across stores could produce greater benefits if the individuals need to adapt their creative work to local conditions. However, for more homogeneous, mainstream stores where local customization does not add much value, the benefits of being exposed to multiple ideas could be more limited or even lead to confusion. We split the sample into stores that operate in divergent versus mainstream markets, based on the characteristics of the customers (Campbell, Datar, and Sandino [2009]). We operationalized the construct of divergent stores by asking the managing director to identify stores whose clientele has unique characteristics compared to the customers served by the average MPR store. The director identified 13 such stores (e.g., with customers who speak uncommon languages, have higher income and are more demanding than in the mainstream stores, and/or have other unique characteristics such as being workers from the same factories). Table 6 suggests that in divergent stores, the ISSC had a significantly positive impact on the *Value of creative work* (an increase of 0.28 points on a 1–5 point scale) and on *Attendance* (an increase of 0.24 days/week). This is consistent with the idea that stores requiring greater customization could benefit more from the system.

The results in tables 4–6 are generally robust to alternative specifications (for details, see online appendix 6).

Overall, our findings suggest that the introduction of the ISSC is more likely to be associated with improvements in creative output in stores with fewer nearby stores, where there is less chance to be exposed to others' ideas, and also in more divergent stores, where the need to customize to local needs is higher. Our results also provide weak evidence that the ISSC will lead to better financial results (i.e., higher sales) in stores where the salespeople had lower creative talent to begin with and will lead to greater job engagement (i.e., greater attendance) in divergent stores.

TABLE 5
Effects of an Information Sharing System on Financial Performance, Quality of Creative Output, and Engagement:
Differences Between Subsamples Split Based on Ex Ante Creative Talent at the Store

Ex Ante Creative Talent →	Sales			Value of Creative Work			Novelty of Creative Work			Attendance		
	High	Low		High	Low		High	Low		High	Low	
	(1)	(2)		(3)	(4)		(5)	(6)		(7)	(8)	
Info sharing	0.1795** (2.15)	-0.1501 (-1.55)		0.0081 (0.08)	-0.3602*** (-3.19)		0.1010 (1.04)	-0.1133 (-0.83)		0.1416 (1.02)	0.0484 (0.34)	
Post	0.4082*** (4.05)	0.1800* (1.94)		-0.3521** (-2.52)	0.3079*** (2.85)		-0.2066 (-1.24)	0.2278** (2.46)		0.3294*** (4.71)	0.3272*** (4.63)	
Info sharing × Post	-0.1395 ^a (-1.35)	0.2260 ^a (1.52)		0.1922 (0.97)	0.2271 (1.39)		-0.0905 (-0.45)	0.1052 (0.74)		-0.1301 (-1.00)	0.2539 (1.17)	
Store characteristics												
Number of promoters for the brand at the store	0.0742 (1.22)	0.0483 (1.18)		-0.3453** (-2.66)	0.0236 (0.36)		-0.2980** (-2.77)	-0.0308 (-0.44)		-0.9533*** (-6.81)	-1.0231*** (-8.51)	
Store physical size	0.0002** (2.13)	0.0001 (1.09)		-0.0002 (-1.47)	-0.0003 (-1.65)		0.0001 (0.35)	0.0004 (1.62)		-0.0001 (-0.67)	0.0001 (0.89)	
Store age	-0.0170 (-1.44)	-0.0012 (-0.15)		-0.0074 (-0.32)	0.0161* (1.78)		-0.0064 (-0.32)	-0.0164 (-1.42)		-0.0139 (-0.78)	-0.0095 (-0.92)	
Sales days	0.1278* (1.96)	0.3250*** (5.09)		-0.4571** (-2.24)	-0.0773 (-0.44)		-0.1560 (-0.91)	0.1682 (0.61)		0.7462*** (3.98)	0.6411*** (3.50)	
Number of nearby stores	-0.0038 (-0.24)	-0.0165 (-1.62)		0.0504** (2.29)	-0.0384*** (-2.87)		0.0166 (0.69)	-0.0248 (-1.29)		0.0098 (0.46)	0.0094 (0.57)	

(Continued)

TABLE 5—Continued

	Sales		Value of Creative Work		Novelty of Creative Work		Attendance	
	High (1)	Low (2)	High (3)	Low (4)	High (5)	Low (6)	High (7)	Low (8)
Ex Ante Creative Talent →								
Distance to head office	0.0052 (0.61)	−0.0041 (−0.44)	−0.0338 (−1.46)	−0.0381** (−2.64)	−0.0237 (−1.41)	−0.0152 (−1.62)	−0.0166 (−1.31)	−0.0057 (−0.36)
Promoter characteristics								
Tenure	0.0014 (0.44)	0.0016 (0.72)	−0.0066** (−2.44)	0.0028 (1.07)	−0.0056** (−2.27)	0.0019 (0.82)	−0.0014 (−0.45)	0.0046 (1.39)
Gender	−0.0584 (−0.69)	−0.2158*** (−2.92)	0.0975 (0.77)	0.0954 (0.76)	0.1383 (0.87)	−0.0290 (−0.30)	0.1611* (1.77)	0.0546 (0.56)
Preintervention value of the dependent variable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Brand fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R ²	0.8276	0.8459	0.2744	0.2118	0.2322	0.1775	0.0433	0.0505
Observations	1,954	2,260	258	286	258	286	1,954	2,260

This table reports coefficient estimates from ordinary least squares (OLS) regressions in columns 1–6 and Tobit regressions (with an upper limit = 7) in columns 7 and 8. R^2 s are reported for OLS regressions and pseudo- R^2 s for Tobit regressions. t -statistics in parentheses are based on robust standard errors clustered by store. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. *Denotes that the coefficients for *Info sharing × Post* are significantly different between the two subsamples at a 0.10 level. “Sales” refers to the natural logarithm of weekly sales for a given brand in a given store. “Value of Creative Work” refers to the score given to the poster by the customer panel on how effective the poster is at communicating the products or deals offered using a not useful (1) to very useful (5) scale. “Novelty of Creative Work” refers to the score given to the poster by the customer panel on how attractive the visual design of the poster is using a not attractive (1) to very attractive (5) scale. “Attendance” refers to the number of days the average promoter working for a brand at the store reported to work during a given week. “High (Low) Ex Ante Creative Talent” refers to the subsample of stores with average scores for quality of creative work above (below or equal to) the median score for quality of creative work in the sample during the preintervention period, where quality of creative work is measured based on the average of the “value” and “novelty” of creative work. There are 79 (97) store-brands in the “High (Low) Ex Ante Creative Talent” subsample (splitting roughly equally between the two experimental conditions). *Info sharing* is an indicator for whether the store is in the treatment group (i.e., where the information sharing system is implemented). *Post* is an indicator for whether the time period is after the intervention (on or after month 5). The appendix provides detailed definitions of the variables.

TABLE 6
Effects of an Information Sharing System on Financial Performance, Quality of Creative Output, and Engagement:
Differences Between Subsamples Split Based on the Type of Market Where the Store Is Located

Type of Market →	Sales		Value of Creative Work		Novelty of Creative Work		Attendance	
	Mainstream (1)	Divergent (2)	Mainstream (3)	Divergent (4)	Mainstream (5)	Divergent (6)	Mainstream (7)	Divergent (8)
<i>Info sharing</i>	0.0258 (0.26)	0.0801 (1.16)	-0.3636** (-2.55)	-0.2788 (-1.51)	-0.0005 (-0.00)	-0.0807 (-0.58)	-0.0497 (-0.28)	-0.0029 (-0.02)
<i>Post</i>	0.1972* (2.00)	0.4188*** (6.10)	0.1035 (0.76)	-0.0170 (-0.35)	0.0304 (0.22)	0.0513 (0.38)	0.3276*** (3.97)	0.2826*** (7.74)
<i>Info sharing × Post</i>	0.1035 (0.73)	-0.0171 (-0.21)	0.0453 (0.24)	0.2775* (2.13)	-0.1177 (-0.57)	-0.0475 (-0.29)	0.0471 (0.20)	0.2413** (2.50)
Store characteristics								
<i>Number of promoters for the brand at the store</i>	0.1028 (1.53)	0.0488 (1.02)	-0.0137 (-0.14)	-0.2033* (-1.99)	-0.0832 (-0.55)	-0.1903** (-2.88)	-1.1343*** (-9.19)	-0.9847*** (-10.22)
<i>Store physical size</i>	-0.0002 (-0.72)	0.0002** (3.05)	-0.0008 (-1.72)	-0.0001 (-0.99)	-0.0003 (-0.46)	0.0002* (2.00)	-0.0002 (-0.30)	0.0001 (0.87)
<i>Store age</i>	-0.0178* (-2.00)	-0.0065 (-0.50)	0.0313* (2.06)	0.0273 (1.67)	-0.0146 (-0.72)	0.0269** (2.35)	-0.0114 (-0.76)	-0.0322 (-1.46)
<i>Sales days</i>	0.2311*** (5.11)	0.1056 (0.79)	-0.3696* (-2.55)	-1.7106*** (-3.31)	-0.1472 (-0.85)	0.2125 (0.51)	0.8202*** (7.30)	0.5153** (2.26)
<i>Number of nearby stores</i>	-0.0183 (-1.20)	-0.0055 (-0.70)	-0.0240 (-1.24)	0.0004 (0.02)	-0.0166 (-0.58)	-0.0007 (-0.04)	-0.0589** (-2.51)	0.0248 (1.47)

(Continued)

TABLE 6—Continued

Type of Market →	Sales		Value of Creative Work		Novelty of Creative Work		Attendance	
	Mainstream (1)	Divergent (2)	Mainstream (3)	Divergent (4)	Mainstream (5)	Divergent (6)	Mainstream (7)	Divergent (8)
<i>Distance to head office</i>	0.0051 (0.55)	−0.0104 (−0.66)	−0.0370** (−2.51)	−0.0498* (−1.85)	−0.0187 (−1.26)	−0.0615*** (−4.06)	−0.0223 (−1.31)	0.0123 (0.48)
Promoter characteristics								
<i>Tenure</i>	0.0005 (0.18)	0.0039 (1.67)	−0.0010 (−0.23)	−0.0006 (−0.21)	−0.0019 (−0.61)	−0.0011 (−0.47)	0.0086* (1.66)	0.0063* (1.70)
<i>Gender</i>	−0.1769** (−2.28)	−0.0969 (−0.87)	0.1646 (1.25)	−0.0369 (−0.27)	0.0367 (0.28)	−0.0335 (−0.42)	0.1561 (1.32)	0.0652 (0.47)
Preintervention value of the dependent variable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Brand fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>R</i> ²	0.8203	0.8167	0.1889	0.2342	0.2873	0.2079	0.0469	0.0414
Observations	2,156	2,662	241	303	241	303	2,156	2,662

This table reports coefficient estimates from ordinary least squares (OLS) regressions in columns 1–6 and Tobit regressions (with an upper limit = 7) in columns 7 and 8. *R*²s are reported for OLS regressions and pseudo-*R*²s for Tobit regressions. *t*-statistics in parentheses are based on robust standard errors clustered by store. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. “Sales” refers to the natural logarithm of weekly sales for a given brand in a given store. “Value of Creative Work” refers to the score given to the poster by the customer panel on how effective the poster is at communicating the products or deals offered using a not useful (1) to very useful (5) scale. “Novelty of Creative Work” refers to the score given to the poster by the customer panel on how attractive the visual design of the poster is using a not attractive (1) to very attractive (5) scale. “Attendance” refers to the number of days the average promoter working for a brand at the store reported to work during a given week. “Mainstream (Divergent) Markets” refers to the subsample of stores where the demographics of the customers served by the store are homogeneous (heterogeneous) based on the diversity of languages, conditions, and income levels in the area. There are 22 (13) stores in the “Mainstream (Divergent) Markets” subsample. *Info sharing* is an indicator for whether the store is in the treatment group (i.e., where the information sharing system is implemented). *Post* is an indicator for whether the time period is after the intervention (on or after month 5). The appendix provides detailed definitions of the variables.

5. Conclusion

Customer-focused businesses have increasingly adopted ISSCs to enable empowered employees to share ideas or creative work with their peers. In principle, these systems should enhance employee creativity (by exposing employees to a broad pool of stimulating ideas and holding them accountable for their own creative work) and employee engagement (by increasing the perceived impact of their work and by encouraging effort in information acquisition and understanding of their work). This paper describes the details of a field experiment (based on a registered report) in a retail chain to test the effects of introducing an ISSC on (1) the quality of creative work, (2) job engagement, and (3) financial performance.²⁹

We find that the ISSC implemented at our research site did not have a statistically significant effect on any of these three outcomes for the treated stores. However, further analyses reveal that under certain conditions, the system did have positive effects. The ISSC (1) was significantly associated with an increase in the quality of creative work (and in some robustness tests, the stores' financial performance and attendance) when it was more frequently accessed; (2) was associated with greater quality of creative work in stores with fewer nearby stores in the same chain, consistent with the notion that this kind of system could pay off when employed by individuals that are not naturally exposed to others' work; (3) was associated with greater financial performance in stores with lower *ex ante* creative talent, where individuals had relatively more to learn from others; and (4) had a significantly positive impact on the value of creative work and the attendance of salespeople working for stores in divergent markets, consistent with the idea that stores requiring greater customization could benefit more from this kind of system.

While our results (and lack of results) are robust to alternative specifications, they should nevertheless be interpreted with caution for two reasons. First, because the company implemented the system following the protocol of a natural field experiment, it confronted some limitations that could have reduced the power of the tests. To keep the initial conditions of treatment and control firms constant, MPR's managing director had to draw attention to the relevance of producing creative work not only to treatment firms but also to control firms and it had to discourage discussions about the system in weekly meetings that included all the store managers and in broad communications that included all the promoters. Second, in our planned additional analyses, we tested moderating conditions potentially affecting the effect of the ISSC on our outcomes of interest. Given

²⁹ One interesting treatment that could be examined in future research would be to randomize the anonymity of the posters' creators. This would enable testing the effects of the ISSC contingent on the visibility and social pressure of attaching the employees' name to the exposed work. Unfortunately, the sample size in this study did not allow us to implement an anonymity condition.

that these were naturally occurring (rather than randomly generated) conditions, our ability to claim that those relations were causal is somewhat limited.

In addition, given that our study intended to isolate the effects of sharing information through a system from any other effects, our implementation did not allow for a more comprehensive social network project that might include (1) broad interactions and discussion among the salespeople related to the creative work shared, (2) mutual ratings of the posters, and/or (3) bonuses or rewards for the best posters. Future work could explore the effects of these features on ISSC use and on creative work, job engagement, and financial performance.³⁰

APPENDIX
Variable Definitions

Variable Names	Definitions
Dependent variables	
<i>Sales</i>	Natural logarithm of weekly sales for a given brand in a given store.
<i>Attendance</i>	Number of days an employee promoting a brand at the store reports to work during a given week (when the store is staffed with more than one brand promoter, this variable is defined as average days in the week when the brand promoters attended the store).
<i>Value of creative work</i>	Average score given to the poster by the customer panel on how “useful” the poster is at communicating the products or deals offered using a not useful (1) to very useful (5) scale.
<i>Novelty of creative work</i>	Average score given to the poster by the customer panel on how “attractive” the visual design of the poster is (how much it grabs the customer’s attention) using a not attractive (1) to very attractive (5) scale.
Treatment indicators	
<i>Info sharing</i>	An indicator that equals one if the store is in the treatment group (i.e., Group A where an information sharing system is implemented).
<i>Post</i>	An indicator that equals one if the time period is after the intervention (month 5, 6, 7, 8, or 9; or from September 1, 2016 to January 31, 2017).

(Continued)

³⁰ We appreciate the registered report process as it is especially supportive of projects like ours: field experiments in real organizations that could address important and relevant research questions but are costly and risky to implement. The discipline enforced by this review process helped us adhere to the original study design and enabled us to carry out this experiment in the face of unanticipated difficulties. We also appreciate the early feedback that we received before conducting our field experiment, which led to a higher quality and more powerful study.

APPENDIX—Continued

Variable Names	Definitions
Store characteristics	
Number of promoters for the brand at the store	Number of promoters for the brand at the store in the week.
Store physical size	Store size in square feet.
Store age	Store age in years.
Sales days	Number of days in the week when the store made sales.
Number of nearby stores	Number of MPR stores within a one-mile radius.
Distance to head office	Distance to the head office in miles.
Promoter characteristics	
Tenure	Number of months working at MPR.
Gender	An indicator variable equal to one if the promoter is female.
Preintervention sales (attendance, quality of creative work)	Average weekly sales (weekly attendance, quality of creative work) for a given store-brand during the preintervention period. Quality of creative work is measured as the average of value of creative work and novelty of creative work.

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