Evaluating the Impact of Working from Home on Productivity and Work-Life Balance in China

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Sector(s): Firms, Labor Markets

Location: Shanghai, China

Sample: 249 call center employees

Target group: Workers

Outcome of interest: Productivity Service provider performance Worker satisfaction

Intervention type: Alternative work arrangements

AEA RCT registration number: AEARCTR-0000276

Data: Download dataset (4.1 MB)

Research Papers: Does Working from Home Work? Evidence from a Chinese Experiment

Partner organization(s): CTrip, Stanford University Department of Economics, Stanford University Graduate School of Business (GSB), Toulouse School of Economics - Toulouse Network for Information Technology (TNIT)

In an attempt to reduce employee turnover and increase productivity, companies are increasingly allowing employees to work from home. Researchers analyzed the impact of working from home on productivity and work-life balance by randomly assigning some employees of a call center in China to work from home. Working from home significantly increased employees' productivity and job satisfaction, although they were less likely to be promoted than similar-performing peers working in the office.

Policy issue

The societies of developed countries have changed drastically in the past 50 years, leading to major changes in the workplace. In the US, women now make up almost 50 percent of the workforce, and 48 percent of all households are now led by two working parents.[1], More working adults are caring for elderly relatives and are enrolled in higher education courses.[2] To try to give more flexibility to workers, companies are increasingly allowing their employees to work from home. In addition to improving work-life balance, working from home may reduce companies' rent costs and employee turnover and also benefit communities by lowering commuter congestion and emissions. Despite its potential benefits, many companies have been slow to adopt the practice because they are unsure how it will impact the productivity of workers. Employees working from home may find it easier to focus in a quieter environment and may miss less work if they schedule personal activities, like doctor's appointments, in the time they save by not commuting. On the other hand, the lack of supervision may allow workers to multitask by watching TV or playing computer games, and thus reduce the quality of their work.

Context of the evaluation

Researchers partnered with CTrip International Corporation, which was one of the first firms in China to allow call center employees to work from home. Established in 1999, CTrip has 16,000 employees and is the largest travel agency in China. CTrip makes hotel, flight, and tour reservations for clients over the phone through call centers in Shanghai and Nan Tong. Call center representatives work in teams of 10 to 15 people taking orders, resolving problems with reservations, and contacting airlines and hotels. They work five eight-hour shifts per week and have no flexibility to choose when they work. They are paid a flat wage of about 1300 renminbi (US$212) per month plus a monthly bonus, averaging an additional 1300 renminbi (US$212), based on order volumes and call quality. Promotion to team-leader is also based on performance, so workers are given ample incentive to perform well.



Beijing West Railway Station,

Photo Credit: Charlie Fong

Details of the intervention

Researchers designed a randomized evaluation of CTrip's work-at-home pilot program to test its effect on worker productivity, employee satisfaction, and promotions. From a group of 996 employees, 503 volunteered to participate, of which 249 were qualified by virtue of having worked at the firm for 6 months, having broadband internet, and having their own workspace in their homes. From this group, those with even-numbered birthdays (day of birth ending in 0, 2, 4, etc.) were randomly selected to work at home. Those with odd-numbered birthdays were required to continue working from the office and served as the comparison group.

Employees selected to participate in the program worked four days per week from home and one day in the office. They were still supervised by their team leader, who always worked in the office, and they maintained the same hours, wage levels, type of work, and computer and communication equipment.

Working from home changed participants' working conditions in three main ways. First, they saved about 80 minutes per day in commuting time, giving them time to take care of personal and family responsibilities. Second, they were unable to receive real-time support from their supervisors. Finally, they generally worked alone and in a quieter environment than comparison employees in the office.

Researchers took advantage of CTrip's comprehensive employee database to measure the impact of working at home on employee performance, promotions, and job satisfaction. Performance was measured by the number of calls answered and made, time spent on the phone, and calls answered per minute. Researchers and CTrip also conducted surveys and interviews to measure work exhaustion and attitudes.

Results and policy lessons

Impact on employee productivity and promotion: Employees working from home performed significantly better than comparison employees working in the office, but were less likely to be promoted than similar-performing peers working in the office. Employees working from home made 13 percent more calls per week and answered forty more calls per week relative to comparison employees. They attributed this difference to having a quieter environment at home. They also worked 9.2 percent more minutes per day than the comparison group because they did not have to commute, took shorter breaks, and took fewer sick days. Despite managers' fears, working from home had no impact on the quality of calls. However, working from home had a negative effect on promotion opportunities. Conditional on performance, employees working from home were less likely to be promoted than their office-based peers. This was likely due to reduced training opportunities and less face-to-face contact with team leaders.

Impact on employee satisfaction: Employees working from home reported having a more positive attitude and less exhaustion from work than the comparison group. They were 16 percentage points more likely to report being satisfied with work. Employees working from home were also less likely to quit their job than those in the comparison group. During the 9 month period of the study, 35 percent of the comparison group quit while 17 percent from the work-at-home group quit, representing an approximately 17 percentage point (50 percent) decrease.

Post-study: CTrip considered the program so successful that it offered the option to work from home to the entire airfare and hotel departments in August 2011. CTrip estimated that they saved about US$2,000 per employee per year working from home. After scaling up the program in 2011, about half of the original work-from-home group decided to return to work in the office and 35 percent of the comparison group chose to begin working from home. The work-from-home program further increased productivity after employees learned whether they were more productive working from home or in the office. After the program had been rolled out, those working from home were 22 percent more productive relative to their counterparts in the office.

Employee and company learning: This study highlights the importance of both employee and company learning in the adoption of a new management practice like working from home. Before the evaluation, both groups were unsure about its impact, and the nine-month evaluation and subsequent roll-out process were essential for their ability to evaluate its effectiveness. CTrip learned that, despite an overall business slowdown, working from home improved performance compared to working in the office. They also learned that allowing employees to choose whether they work at home or the office had the greatest effect on performance, that employees of all performance levels improved by working at home, and that working from home dramatically reduced attrition.

Bloom, Nick, James Liang, John Roberts, and Zhichun Jenny Ying. 2014. ‰ÛÏDoes Working from Home Work? Evidence from a

Chinese Experiment.‰Û Quarterly Journal of Economics, forthcoming.

1. Council of Economic Advisors. 2010. "Work-life balance and the economics of workplace Flexibility."
2. Council of Economic Advisors. 2010. "Work-life balance and the economics of workplace Flexibility."