How Temporary Assignments Boost Innovation

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Just as digitalization and automation are transforming the shop floor, they are changing the role of front-line manufacturing employees. Workers increasingly create value not only by performing their core duties, but by contributing to broader organizational objectives such as competitiveness and innovation. Those with creativity and aptitude for problem-solving have proven particularly valuable: their frontline perspectives often generate promising process improvements and business opportunities that are not visible to managers. As a result, frontline innovation has become one of the largest sources of sustained competitive advantage in

manufacturing industries. At leading companies, up to 75% of annual productivity gains now trace back to bottom-up ideas by non-R&D employees.[1]

While frontline innovation is common and impactful, it is not well understood how managers can effectively support it. In our research, we show for the first time how strategic *frontline mobility* — the short, focused, and purposeful exchange of staff between different company sites — can substantially boost the contributions of these employees to innovation and organizational learning in manufacturing companies.

We engaged in a large-scale study of a multinational, multibillion-euros car parts manufacturer. We collected data on frontline ideas and their economic impact over four years and examined their relationship with individual worker mobility. To arrive at robust managerial insights on the causal effects of worker mobility, we analyzed more than 21,000 ideas submitted by almost 2,500 workers using advanced econometric methods.[2] Key to our analytical approach was matching mobile frontline employees to similar colleagues who did not travel to other plants, which allowed us to precisely estimate the contributions originating from mobility.

Knowledge Transfer and Employee Learning

Our analyses reveal two distinct pathways through which frontline mobility fosters manufacturing innovation.

First, frontline mobility promotes knowledge sharing between factories. By virtue of their experience, shop floor employees frequently possess a wealth of tacit production knowledge at a level of detail that far exceeds what is covered in manuals or known to engineers. For instance, it is usually the workers on the ground who learn first-hand how to iron out well-intentioned but occasionally impractical process and product designs. When employees are strategically deployed to different sites, they carry this knowledge with them and help circulate it inside the company.

One factory, for instance, may have built up extensive experience with a specific production method, and by temporarily assigning some of its employees to other factories, managers can see to it that this knowledge is shared. Likewise, upon their

return, employees bring home improvements spotted at or inspired by the processes at the plant they visited. The impact of such knowledge transfer is significant: in our research, the average move created manufacturing improvements worth more than €100,000 within one month (ca. $122,000). While some researchers and managers still doubt the value of frontline employees' tacit production knowledge, our findings show that this attitude can starve a company of one of its most valuable resources for innovation.

Second, frontline mobility makes workers themselves better innovators, because it stimulates their learning. When they visit other factories, they are exposed to different, but often related, manufacturing setups — for instance, a plant that produces the same product as their home factory, but for a different market and with slightly different machinery. As workers observe how different setups of similar manufacturing processes are linked to various performance outcomes, they acquire a more fundamental understanding of how these processes work. This gives rise to what we call know-why (as opposed to know-how), which is an understanding of *why* things work rather than *how*.

To illustrate, consider injection molding (a key operation at the company we studied). The minimum heating time of thermoplastic material for a specific mold — for example, five minutes — is know-how. However, understanding why that time threshold has to change when the mold design becomes more intricate is know-why. Once acquired, this type of knowledge significantly improves employees' ability to come up with innovations, because they better understand how the different pieces of the manufacturing process fit together, and therefore how they can be enhanced. Thus, rather than creating immediate cost savings like knowledge transfer, know-why make workers themselves better innovators. In our study, employees' ideas increased in value by €20,000 per month after a move (ca. $24,000), and this increase lasted for several years. Beyond the issue of frontline mobility, the result adds a new dimension to human resource management: not only can frontline employees learn to become better at their (primary) jobs, but they can also learn to become better innovators.

How to Implement Frontline Mobility

How can businesses implement strategic frontline mobility? Three key considerations emerge from our research.

First and foremost, for frontline mobility to promote innovation, it needs to be purposeful and problem-driven. That means employees should not be sent to other plants as passive observers, for training, or as a reward. Instead, moves should be tied to a specific and operationally relevant task. In our study, employees were regularly sent to other factories to support local problem solving, for instance when the production process was facing quality issues. These visits were short (up to two weeks), but they intensely engaged visiting employees in the local factory's operations. In doing so, employees became deeply embedded in the context of the visited plant and interacted repeatedly with its staff, processes, and machinery. This hands-on approach to frontline mobility is instrumental to knowledge transfer and learning. Only when visitors work jointly with colleagues and truly immerse themselves in the visited plant does it create the right environment for the serendipitous sharing of ideas and best practices that drives innovation.

Second, frontline mobility works best between plants that that share similar processes and machinery, and make similar products. If processes, machinery, and products differ too much between two plants, the gap between their existing knowledge stocks becomes too large for any meaningful knowledge transfer and learning to take place. At some point, if two plants are too different, knowledge from one plant may simply not apply to the other plant.

Many companies' practices fall into exactly this kind of trap. One particularly common scenario involves sending employees from peripheral plants (such as foreign or geographically distant plants) to central plants (frequently collocated with corporate headquarters) to learn how things are done "the right way." This does not help bottom-up innovation, just because central plants often lead the way with new processes and technologies. The differences in terms of knowledge are therefore too big for visiting peripheral employees to apply any of the central plants' knowledge back at their home plant. Likewise, employees from more advanced central plants may find little to learn from the particular circumstances and constraints under which

peripheral plants operate. Thus, for frontline innovation, turning to related units in similar contexts is better than visiting technologically advanced but unrelated ones.

Third, while the benefits of frontline mobility are substantial, it is best to limit how many employees participate. At the car parts manufacturer we studied, about 3% of the workforce visited another plant each year. Involving more employees than that in exchanges may increase costs, for example to cover staff absences at their home factories. In addition, while there was no limit to employees' learning, knowledge transfer abated after about ten exchanges per factory pair and year.

A Case for Strategic Frontline Mobility

Frontline employees are uniquely experienced and positioned to innovate products and processes. Companies that adopt a frontline innovation mindset — one that stimulates, objectively evaluates, and swiftly implements frontline ideas — can therefore make significant strides. Our research shows that companies should complement such a mindset with a strategic approach to frontline mobility, which boosts employee-driven innovation by facilitating internal knowledge sharing and stimulating employee learning.

Since Covid-19 has put a halt on business travel over the past year, many companies have started questioning whether the time, money, and carbon emissions associated with travel are necessary, or whether the collaboration enabled by digital tools is a sufficient substitute. While we do not evaluate the degree to which virtual collaboration fosters frontline innovation, our study provides strong evidence that what drives innovation is exactly the kind of serendipity and free-flowing exchange of ideas that only emerges in the physical presence of fellow workers. As such, we believe that a purposeful, directed, and strategic mobility program will be best suited to support employee-driven manufacturing innovation in the long term.

[1] Sting, F. J., & Loch, C. H. (2016). Implementing Operations Strategy: How Vertical and Horizontal Coordination Interact. Production and Operations Management, 25(7), 1177–1193. http://doi.wiley.com/10.1111/poms.12537.

[2] Cornelius, P. B., Gokpinar, B., & Sting, F. J. (2020). Sparking Manufacturing Innovation: How Temporary Interplant Assignments Increase Employee Idea Values. Management Science. Published online 20 Aug 2020. The research is available under open access through https://doi.org/10.1287/mnsc.2020.3673.