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How platforms can help their contract workers make decisions in uncertain environments

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Managers at a firm have autonomy to make operational decisions based on their specific contextual knowledge. The firm's knowledge may complement the manager's, adding value through advanced tools based on global information. Recently, firms in the sharing economy have implemented systems to help their service providers: the ride-sharing platform Uber tells drivers where demand may be increasing while the car-sharing platform Turo recommends non-binding prices for individuals to rent out their own car to their neighbours.

When implementing one of these decision support systems to aid decision-makers, a firm has a few key choices to make. Among these are what guidance/data should be conveyed to the decision-maker, and what kind of training, if any, is necessary. Specifically, should a simple recommendation be provided ("Tell"), or should other information underlying that recommendation also be conveyed ("Show")? Is in-person training necessary in situations where utilising the decision support does not require any special skills?

In a recent article, we collaborated with a Tanzania-based mobile money operator facing these decisions when trying to help their contracted employees (called agents) make better decisions. Mobile money is bringing large groups of unbanked individuals into the formal financial system by allowing users in developing economies to deposit, transfer, and withdraw money using their mobile phones.

The ease of use and relatively low-cost nature of mobile money have led to fast adoption in many developing economies. The adoption is associated with poverty reduction and with the hope that mobile money can be a contributor to significantly reducing impoverishment around the world. However, the extent to which this progress can continue is linked to not only broad user adoption but also to the ability of agents to consistently complete transactions for customers and avoid stock-outs.

Stock-outs occur when an agent does not have enough cash or electronic currency (float) to complete a transaction. Periodically, if an agent believes she has too much cash or float, she can "rebalance" to obtain the desired allocation of cash versus cash. When rebalancing, the agent must decide her budget as well as how to allocate that budget between cash and float. Having too much cash or float can be costly because of the opportunity cost associated with her capital investment. Having too little cash or float can be costly because the agent may not be able to serve all of her demand, missing out on commissions. Unfortunately, unpredictable consumer demand makes this decision extremely difficult.

The mobile money operator we worked with wanted to improve rebalance decisions in order to reduce stock-outs. However, it's unclear how this should be done. Firms can either train agents in person or simply notify them that they will now have access to additional information. In-person training allows for clarification questions to be asked, more in-depth knowledge to be conveyed, and may develop more trust. However, it comes at high financial and time costs. In contrast, simply notifying agents about the system and its benefits has the potential to asynchronously reach many agents at a very low cost.

In terms of what guidance to provide, managers can either make an explicit recommendation or provide information meant to nudge an agent towards a good decision. The benefit of an explicit recommendation is that agents do not need to understand how the recommendation is created, but only how to follow the recommendation. The argument for providing information is that agents can combine the information and their own private signals of demand based on local knowledge to potentially make decisions that are better than the recommendation. For example, an agent may know that today there is a festival in the area so people will need more cash.

Of course, agents can also receive both the information and the recommendation. In this case, agents may use the recommendation as a starting point and incorporate their own beliefs about how the day's demand will be relative to the information provided and end up making better decisions. On the other hand, agents may get confused and perform worse than they would have had they received a recommendation or information alone.

To find out what the mobile money operator should do, we tested all six combinations of guidance and training. Results indicate that training agents in person and providing them with only an explicit, personalised, daily recommendation reduces the probability that agents stock out of float during a given day by between 2.8 and 3.8 percentage points (8.9 per cent and 12.1 per cent relative improvement based on a baseline stock-out rate of 31.6 per cent). We also see increases in the probability that agent rebalances their cash and float inventory on a given day of between 2.7 and 5.1 percentage points (6.9 per cent and 12.8 per cent relative improvement based on a baseline rebalance rate of 38.7 per cent). Agents trained in person but who receive summary statistics of transaction volumes or agents who are notified about the program and not offered in-person training do not experience changes in stock-outs or rebalances.

Additionally, we identify four broad types of agents: Side-gig (works and rebalances relatively infrequently), Rain-or-shine (works frequently and has a high volume of transactions), Play-it-safe (has high inventory levels and low stock-out rates), and lopsided (experiences substantially more cash deposits than cash withdrawals).

Our results show that the stock-out reduction effect is concentrated in the lopsided type.

First, it is hard to "move the needle" on the population at large; even after in-person training and sophisticated recommendation algorithms are rolled out, significant improvement gaps may still remain.

Second, workers that can benefit the most from the system rollout may be those who are trying hard currently without success, and those workers for whom a directional correction is fairly obvious but for some reason not taken by the worker without a nudge. Managers can use the categorisation of the four agent types we identify to create targeted or prioritised/phased roll-outs in the future.

Third, even in a situation where a recommendation is easy to follow, in-person training is still needed. Firms can use our results to determine whether the benefits outweigh the costs of providing training. In situations where the costs are too high, policy makers can provide incentives or subsidies in order to promote inclusive growth in mobile money availability where businesses may fail to do so.

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