

Incentive Effects of Automation in Bureaucracies - Evidence from Pakistan

Shan Aman-Rana*

Extended Abstract

Automation of processes in organizations can have two major spillover effects: First, it can reduce the span of control of the existing worker resulting in reduced incentives to perform on the job. Second, automation can increase the span of attention for other existing tasks and this can enhance performance. I investigate this trade-off empirically within the context of Punjab, Pakistan. The government implemented the Punjab Land Records Management and Information Systems (LRMIS) project in 2011. The project aimed to digitize existing land records in Punjab and automated the process of providing land titles to citizens. I aim to study the effects of this automation drive on incentives of existing bureaucrats who LRMIS automated system replaced. This research will have implications for the design and implementation of e-governance agendas in bureaucracies.

Objectives of the research and the empirical setting

State capacity is an important determinant of development ((Besley & Persson 2009); Muralidharan et al. (2016); Bertrand et al. (2015)). In many developing countries e-governance is viewed as the critical ingredient in developing state capacity. The idea is that automated processes take away the discretion of the bureaucrat and institutionalize transparency. Moreover, automation ensures timely and cost effective service delivery over a larger geographical area.

However, automation can generate unintended effects on the incentives of existing workers. Automation of processes in organization can have two major spillover effects: First, it can reduce the span of control of the worker resulting in reduced incentives to perform on the job. Second, automation can increase the span of attention for other existing tasks and this can enhance performance. If the span of control effect dominates the span of attention then the impact evaluation of automation, that do not consider these spillover effects, will be overestimated. In this case automation might not be the panacea of all service delivery issues in developing countries that it is envisioned to be.

I will investigate this trade-off empirically within the context of civil services in Punjab, Pakistan. Supported by the World Bank, the government implemented the Punjab Land Records Management and Information Systems (LRMIS) project. The project aimed to digitize existing land records in Punjab and make digitally recorded, legally registered land title available to citizens. Within five years, under LRMIS, the Punjab government ‘scanned 10 million pages of old records, digitized over 55 million landowners’ records across the province, and made all

*London School of Economics and Political Science. Email:S.Aman-Rana@lse.ac.uk

rural land title information available online 24/7 for landowners'¹. Prior to LRMIS it would take many months to complete a land transaction in Punjab since land entitlement had to be signed off by revenue officers working at the lowest tier of the administrative. Following LRMIS it is claimed that citizens could get their land titles within an hour². LRMIS is being lauded as one of the success stories of automation. However, whether and what kind of spillover effect it had on the incentives of the revenue officers to perform existing tasks is not clear.

This research will have significant policy implications for implementation of e-governance agendas in bureaucracies. Automation projects should be designed in a way that leverage the span of attention effect while limiting any negative spillover effects through span of control.

Existing Literature and Contribution

Bandiera et al. (2011) study span of control and span of attention using novel data on CEO time use. They document the relationship between the size and composition of the executive team and the attention of the CEO. They find that CEOs with broader spans of control invest more in a 'team' model of interaction and spend more time internally, with the team model of interaction being more prevalent in larger firms. While Bandiera et al. (2011) describe how different span of control can result in changes in span of attention of the CEO, this study will investigate how arguably exogenous changes in span of control, following automation, can have spillover effects on performance of existing tasks by workers. Cathcart et al. (2004) studies correlations of span of control and employee engagement and find that higher span of control is associated with lower employee engagement. They, however, do not study the causal spillover effects of automation on span of control versus span of attention.

There are many studies that investigate the direct impact of automation in developing countries. Muralidharan et al. (2016) study the impact of biometrically-authenticated payments infrastructure i.e. Smartcards on beneficiaries of employment (NREGS) and pension (SSP) programs in the Indian state of Andhra Pradesh, using a large-scale experiment that randomized the rollout of Smartcards over 157 sub-districts and 19 million people. They find that the Smartcards delivered a faster and less corrupt NREGS payment. Duflo et al. (2012) found that time-stamped photos and monetary incentives increased teacher attendance and test scores in schools. While these studies focus on the direct effect of automation they do not investigate the spillover effects of automation on existing tasks by workers.

¹Ijjasz-Vasquez, Ede (2017) 'Punjab, Pakistan has just transformed its land record management system. What can we learn?', World Bank Blogs. accessed at: <http://blogs.worldbank.org/sustainablecities/punjab-pakistan-has-just-transformed-its-land-record-management-system-what-can-we-learn>

²ibid.

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