

# Work 4.0: How is digitalization changing workplace organization?

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## **Management Summary**

This master thesis has examined the relationship between the use of modern information and communication technologies (ICT) and workplace organization. Being a highly topical subject of discussion in newspapers as well as in economics and management journals the objective was to shed more light on the burning issue what impact modern ICT have on human resource management and the internal workplace organization of firms.

Current organizational changes have led to a corporate design that is less pronounced by a strict hierarchy, but more by a flexible organizational form. Employees perform a wider range of tasks and may shape their work planning more autonomously. These occurrences define the concept of decentralization. However, some firm policies such as monitoring activities may steer in the opposite direction: centralization.

Earlier work that concentrated on the association between ICT and organizational design at the firm level, found evidence that ICT usage promotes decentralization. Only a few studies highlight that the net impact of ICT on workplace organization is uncertain and centralization might appear next to decentralization. Thereby, this ambiguous discussion emphasizes the importance of further research.

In this thesis, Garicano's theory of a hierarchy served as a starting point for the argument that different human resource policies promoting either centralization or decentralization might appear simultaneously at lower and higher hierarchical levels. Taking into account current cost developments of the introduction and distribution of ICT among managers and employees, I specified and tested different implications of this theory. I find firm-level evidence that a mix of both – centralization and decentralization – can appear when firms implement information and communication technologies at higher and lower hierarchical levels.

In addition, I identify by considering individual-level data that centralization may eclipse decentralization. Hence, I argue that firms seem not to forego monitoring measures while

promoting decentralization measures. On the contrary, monitoring measures are of increasing importance to compensate for the loss of control due to decentralization measures. It represents a countermeasure against asymmetric information. With mobile ICT and decreasing ICT costs, monitoring may be applied more efficiently and cost-effective. Thus, it is possible to implement a decentralized workplace organization without losing control over outcomes and work processes. My results support this reflection.

The results presented in this thesis are based on German data from the Linked Personnel Panel and data from the IAB Establishment Panel. Both data sets provide appropriate proxies or controls to determine the impact of ICT on workplace organization. As centralization measures, I took into account data on monitoring activities such as structured appraisal interviews, target agreements, development plans, performance reviews, forced distribution systems and performance appraisal by a group of superiors. Decentralization is measured by policies of worker autonomy such as self-managed working time, working from home, delegation of responsibility and decision authority, and self-managed working groups.

Digitalization is specified by the share of managers and employees who are endowed with internet-compatible mobile devices, or whether or not a worker utilizes ICT at the workplace. Using establishment level and individual level data, I try to fill a research gap. To the best of my knowledge, I did not find existing work that analyses this subject by using LPP data on monitoring, autonomy and digitalization policies.

In a next step, I concentrated on endogeneity issues and defined appropriate instrumental variables in order to strengthen the results. On the establishment level, this thesis may be extended by newly generated data, as a third wave on LPP data will be available soon. Moreover, it would be interesting to identify the link to market competition or productivity outcomes. In this context, I could determine whether organizational redesign has actually an independent impact on a firm's productivity or whether it is just a needed intermediate step to achieve a higher productivity while integrating modern ICT.

The debate over future corporate developments has tended to stress the role of digitalization and workplace organization. I would emphasize that digital advancement is tied closely with the redesign of organizational forms. The combination of centralizing and decentralizing firm policies will lead to new challenges for firms and their employees that need to be addressed in order to cope with a highly competitive environment worldwide.