

Impact of workplace communication networks on productivity:

A new approach using wearable sensors

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Abstract

This paper empirically investigates the structure of communication networks among employees within a firm and the impact of the communication networks on their productivity. To collect information on face-to-face communication among employees quantitatively, we use wearable sensors that automatically record data on face-to-face communication among employees wearing them at two offices of a company that provides software support to corporate clients. Using the data, we first show the structure of the communication network using sociogram. Next, we investigate the impact of the communication network on productivity. The results show that an increase in *betweenness centrality* in a communication network has a positive and significant impact on office performance. Communication between employees can be interpreted as the transfer of their specialized knowledge. Thus, it is considered that an employee's high *betweenness centrality* indicates that the employee efficiently gathers information from various colleagues through the communication network. These results imply that the efficient gathering of information through face-to-face communication with various colleagues who have specialized expert knowledge improves productivity by helping to solve complicated problems that employees face.

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