

Information Technology, Labour Productivity and Organizational Complementarities: A Panel Data Analysis

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Abstract.

This paper intends to contribute to the IT Business Value literature by shedding light on the role and importance of organizational complementarities and investment time lags in the IT-productivity relationship. The role of organizational complementarities in the IT-productivity relationship is investigated. We also assess the importance of investment time lags and different complementary resources for diverse IT categories (including both software and hardware). Different complementarities are taken into account: process innovation, product differentiation, reorganization of work flows, and changes in the management structure, company strategy, marketing/sales methods, or external relations. We use a panel dataset of 66,317 firms in the Netherlands with data on production, employment, innovation, technology, and investment figures for the period 1992-2006. Cobb-Douglas and Translog production functions are used to link IT capital, labour productivity and organizational complementarities. Panel data estimates show that contribution of IT to firm productivity is significantly enhanced when complementarities are in place in time. Among different complementarities, process innovation, reorganization of work flows and changes in the company strategy are proved to be the most influential ones. It was also found that complementarities are more important for software rather than hardware investments. Furthermore, our findings show that even in the presence of complementarities, IT effects are significantly evident in productivity figures only after a certain time lag.