

From Planning to Predictive Control: How AI-Enabled Forecasting Reconfigures Budgeting

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Abstract:

This study examines how forecasting using artificial intelligence (AI) reshapes the budgeting process within management control systems (MCS). Instead of considering budgeting as a technologically enhanced planning device, we redefine budgeting as a predictive tool in MCS, and its effectiveness depends on both analytical accuracy and organizational understanding. Based on the literature in MCS and Organizational Information Processing Theory (OIPT), we develop and test a model to explain how AI-enabled forecasting accuracy impacts budgeting effectiveness and organizational performance. A survey was sent to senior finance and control professionals in medium-sized and large organizations. Using structural equation modeling, we found that forecasting accuracy improves budgeting effectiveness only when estimations are well understood and embedded in managerial routines. We also found that controllers play a vital role by strengthening predictive accuracy and managerial interpretation. One limitation identified is digital orientation, which shapes how predictive capabilities are incorporated into budgeting processes. Our study also validates technologically enhanced predictive budgeting as a socio-technical system instead of a purely analytical innovation. Overall, our findings show that the value of AI-enabled forecasting in budgeting lies in reconfiguring MCS for interpretation and integration.

Keywords:

Artificial intelligence, predictive analytics, budgeting, management control systems, controllers, digital orientation.