

The influence of technological innovation and corporate sustainability in firm's performance: An industry 4.0 perspective

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Abstract

There is a global drive towards adopting the industry 4.0 framework, but little literature exists regarding its long-term profitability. This paper aims to study the impact of technical innovation, measured by the investment in research and development (R&D) and the number of patents published by the companies over a period on the accounting returns of the companies. It also intends to study the effect of corporate sustainability practices, measured by environmental, social and governance scores (ESG), on the profitability of the companies. The data is collected for fortune 500 companies for a span of 8 years, as the study focuses on companies adopting the concept of "Industry 4.0". Various regression models were performed to test the hypothesis, such as OLS, fixed-effect model and GLS, to estimate the panel data using Eviews software. The empirical analysis portrays a positive and significant relationship between corporate sustainability and technological innovation on the firm's performance. The results also show a substantial advantage for the companies under industry 4.0 as the finding suggests technological innovation and corporate sustainability practices can accelerate the company's profitability over the period as there is a high positive correlation among the study variables. The findings offer policymakers insights regarding incorporating strategies involving sustainable practices, such as investments in research and development (R&D) and patent publications.

Keywords: Environmental, social, Governance (ESG) score, Research and development (R&D), Patents, Profitability, Panel data