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Technology Adoption and Productivity: Evidence from UK SMEs

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NON-TECHNICAL SUMMARY

Scope of Study

Small and medium-sized enterprises (SMEs) are the backbone of the UK economy, making up 99% of all businesses. Despite their importance, SMEs often struggle with low productivity compared to larger firms. One promising way to boost productivity is through the adoption of digital technologies. This study examines the impact of various digital technologies, used individually or in combination, on the productivity of UK SMEs.

This study fills a gap in our understanding of how digital technologies affect SME productivity. While previous research has typically examined the impact of individual technologies, such as artificial intelligence (AI), this study is among the first to investigate the effects of a broad range of production-enhancing technologies and to assess whether adopting multiple technologies together as a 'technology bundle' leads to greater productivity gains than using them individually.

The study uses the most recent data from the UK's Longitudinal Small Business Survey (LSBS), focusing on the years 2022 and 2023. This nationally representative survey collects detailed information on the performance, technology use, and business characteristics of SMEs. Six key advanced digital technologies are examined: artificial intelligence, robotics, and automation (AIRA), cloud computing, business intelligence (BI), computer-aided design (CAD), the Internet of Things (IoT), and virtual/augmented reality (VR/AR).

Key Findings

- **Not All Technologies Are Equally Important.** Some technologies are more effective than others in boosting productivity. Business intelligence and cloud computing stand out as the most impactful, followed by CAD and, to a lesser extent, AIRA. In contrast, IoT and VR/AR have shown little to no positive effects on productivity. This suggests that data-driven tools like BI and cloud services are particularly valuable for SMEs in terms of productivity.
- **Technology Bundles: More Isn't Always Better.** While it might seem logical that using more technologies together would lead to greater benefits, this is not always the case. Some combinations of technologies result in lower productivity. For example, pairing VR/AR with AIRA or CAD often leads to diminishing returns. This could be due to overlapping functions, integration challenges, or the complexity of managing multiple systems at once.



- **Firm Characteristics Matter.** The impact of technology adoption varies depending on SME characteristics. Larger, older, and profitable SMEs tend to benefit more from digital tools. However, women-led, family-owned, and minority-ethnic-led businesses often face barriers (including limited access to finance, weaker digital infrastructure, or fewer support networks) that limit their ability to adopt and benefit from these technologies.
- **Growth Ambitions Also Matter.** SMEs with stronger growth ambitions exhibit higher productivity, reinforcing the link between performance and strategic orientation.
- **Location and Industry Matter.** The adoption of digital technologies among UK SMEs is uneven, with England and business services firms leading the uptake, particularly in cloud computing, business intelligence, and CAD. By contrast, SMEs in Wales, Scotland, and Northern Ireland, as well as in sectors such as transport, retail, and accommodation, lag significantly behind, suggesting regional and sectoral divides.

Practical and Policy Implications

- Digital technologies offer great promises for improving SME productivity, but their benefits are not automatic. Rather than adopting more technologies, careful selection and implementation of the right tools are key to success. Firms should focus on technologies that align with business goals and capabilities.
- Policy support should focus on helping firms choose the right technologies for their production needs. Financial incentives, training, and advisory services could usefully be targeted at high-impact technologies such as BI and cloud computing. Policies should also target underserved groups of SMEs, including women-led and family-owned SMEs.

