PART OF THE STRATEGIC PRODUCTIVITY SERIES

LEADING THROUGH THE PRODUCTIVITY PARADOX: ALIGNING TECH INVESTMENTS WITH BUSINESS GROWTH

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EXECUTIVE SUMMARY

Amidst the excitement about the transformative potential of new technologies - such as streamlining warehouse operations, forecasting customer trends, and AI crafting personalised marketing content - many assume that these advances will finally solve the UK's persistent productivity puzzle. Despite this optimism, the empirical reality tells a different story. UK productivity growth continues to stagnate, with levels of output per hour lagging behind key competitors such as Germany and France.

This paradox raises a critical question: Why hasn't the surge in technology and digital investment led to the expected boost in productivity? Despite significant resources being allocated to digital solutions, many firms still struggle to see meaningful returns. The disparity is particularly stark between a small group of high-performing "frontier" companies that effectively harness new technologies and a larger segment of firms that continue to lag behind.

Addressing the productivity paradox requires a strategic approach involving four main drivers for technology-driven productivity:

1. Prioritise Broad-Based Productivity

Firms often equate productivity growth with efficiency gains. While the cost-efficient use of resources matters, sustained productivity growth involves aligning technology with strategic objectives to deliver better products and services that create long-term value.

2. Embed technology in business strategy

Misalignment between technology initiatives and broader business goals limits impact. Successful organisations integrate digital tools into their strategic vision, driving transformation across the organisation rather than achieving isolated improvements of its parts.

3. Engagement and Continuous Learning

Technology adoption is successful only when employees are effectively engaged and trained. Cultivating a culture of continuous learning is vital for realising the benefits of digital tools.

4. Agile Decision-Making and Flexible Budgeting

Rigid structures and conservative financial practices can stifle innovation. Adopting agile decision-making and flexible budgeting enables firms to respond swiftly to opportunities and invest in sustained growth.

To bridge the productivity gap, business leaders must look beyond technology alone and address deeper organisational challenges. A holistic approach that integrates technology into core business strategies, enhances employee capabilities, and fosters strategic alignment is essential for unlocking the true potential of digital investments. By shifting the focus from short-term efficiency to long-term productivity gains, firms can build a resilient foundation for sustainable growth.

THE PRODUCTIVITY PARADOX: WHY DIGITAL INVESTMENTS AREN'T DELIVERING

The persistence of the productivity paradox presents an ongoing challenge for business leaders. Despite substantial investments in information and communication technologies (ICT), productivity gains have remained limited. Historically, technological revolutions such as mechanisation and electrification led to significant and sustained productivity improvements. In contrast, the digital revolution has not consistently delivered similar results, with only brief spurts of growth seen in the 1990s and early 2000s[2,3].

A closer examination reveals a troubling dichotomy: a small group of high-performing "frontier" firms has achieved significant benefits from deploying cutting-edge technologies, achieving productivity levels far exceeding the national median. These companies effectively leverage digital tools, driving innovation and outperforming their competitors.

In contrast, a large segment of firms remains stuck at lower productivity levels. Evidence suggests that the UK has a particularly long tail of low-productivity firms, unlike competitor countries such as Germany, where smaller firms are more productive[4,5]. This pronounced disparity between the top-performing frontier firms and the lagging "long-tail" firms exacerbates the UK's overall productivity challenges and highlights a less balanced productivity distribution compared to economies like Germany and France.

The prevailing explanation for the productivity gap between large and small firms centres on the failure of diffusion of technologies and knowledge more generally. While innovations thrive among frontier firms, they often do not spread effectively across the broader economy, resulting in a dual-speed economy where a select few companies advance rapidly while the majority struggle to keep up.

The lack of technology diffusion between firms highlights issues in two main channels:

1. Supply Chain Diffusion (Vertical)

Frontier firms often fail to transmit productivity gains down the supply chain to smaller suppliers and partners. This vertical gap prevents smaller firms from adopting advanced technologies and practices, limiting their ability to improve productivity.

2. Ecosystem Diffusion (Horizontal)

The broader business ecosystem frequently lacks mechanisms to share knowledge and best practices across industries and sectors. This horizontal gap means that many firms outside the immediate sphere of leading companies miss out on innovative solutions, reinforcing the productivity divide.

While there is ongoing debate about whether the long-tail of low-productivity firms fully explains the UK's post-2007 productivity slowdown, the widening gap between top and bottom performers, particularly in manufacturing and services, continues to pose a significant challenge to the UK's economic growth potential.

One key factor that may help explain this divide is management practices. Research shows that well-managed firms are better equipped to leverage technology effectively, turning investments into meaningful productivity gains. For instance, during the COVID-19 pandemic, firms with robust management adapted swiftly, increasing online sales and enhancing digital engagement, while those with weaker management struggled to respond[6]. This highlights a crucial lesson: technology investments alone are not enough. Without the right management culture, process alignment, and effective integration of people, the anticipated productivity benefits of digital technologies remain out of reach.

2 D. Coyle (2023) Why isn't digitalisation improving productivity growth? Productivity Insights Paper No. 022, The Productivity Institute.
3 M. Fleming (2021) Productivity Growth and Capital Deepening in the Fourth Industrial Revolution. Working Paper No. 010, The Productivity Institute.
4 NIESR (2022). Productivity in the UK: Evidence review.
5 See https://www.bankofengland.co.uk/-/media/boe/files/speech/2018/the-uks-productivity-problem-hub-nospokes-speech-by-andy-haldane.
6 ONS (2021). Management practices, homeworking and productivity during the coronavirus (COVID-19) pandemic.

THE STRATEGIC IMPERATIVE OF PRODUCTIVITY FOR BUSINESS LEADERS

Strategic productivity, as emphasised by The Productivity Institute, is crucial for businesses and organisations aiming to achieve sustained productivity improvements. This concept involves aligning productivity strategies across all functions within an organisation to drive long-term growth and efficiency. Figure 1 identifies five key business drivers essential for strategic productivity. **INNOVATION AND DIGITAL ADOPTION** enable businesses to harness new technologies for sustained productivity gains, through greater efficiencies in production and service delivery, as well as the improvement and development of new products and services. **ENHANCING WORKER SKILLS AND WELL-BEING** ensures a motivated and capable workforce. **EFFECTIVE LEADERSHIP AND MANAGEMENT** are critical for setting the direction and fostering a culture of continuous improvement. **MARKETING AND COMMUNICATION** help in understanding market needs and effectively positioning products and services. **MOBILISING FINANCE** ensures that businesses have the necessary resources to invest in productivity-enhancing initiatives.

Figure 1: Five Key Drivers of Productivity in Business

Source: K. Penney, J. Pendrill (2022) Strategic Productivity For the Leadership Team: Briefing Paper, September 2022, The Productivity Institute.

WHY PRODUCTIVITY GROWTH IS CRITICAL TO BUSINESS SUCCESS

Productivity lies at the heart of business success. It's not just about doing things efficiently but about converting resources—labour, capital, skills, and technology—into meaningful outcomes that drive sustainable growth. Traditional macroeconomic metrics like GDP per hour often overlook the nuanced impact of productivity at the firm level, where it directly influences competitiveness, agility, and resilience.

High productivity underpins long-term competitiveness and resilience. It allows firms to deliver better-quality products at lower costs, enabling them to capture market share and reinvest profits into innovation. Productive companies are also more agile, adapting quickly to economic disruptions and technological changes, while firms with low productivity often find themselves vulnerable and unable to capitalise on new opportunities.

Yet, despite these significant advantages, many companies continue to treat productivity as a by-product of efficiency rather than a core strategic focus. It is seldom elevated to a strategic Key Performance Indicator (KPI). Instead, businesses often focus narrowly on operational efficiency—metrics like output per machine or revenue per employee—without addressing the broader drivers of productivity (see box).

Beyond operational benefits, productivity enhances talent attraction and retention. High-performing firms tend to offer better wages, invest in employee development, and create a more satisfying work environment, making them attractive to skilled talent. This, in turn, boosts organisational capabilities and drives further growth.

Finally, the societal benefits of productivity cannot be overlooked. Productive firms contribute more to the economy through increased tax revenues, supporting essential public services and infrastructure.

To unlock its full potential, productivity must be approached as a strategic priority, demanding more than efficient resource allocation. It requires innovation, alignment with long-term business goals, and a sustained focus on creating value. For business leaders, this means embracing a mindset that prioritises holistic productivity over short-term gains, laying the foundation for resilient growth and competitive advantage.

FROM LEGACY TO LEADERSHIP: NAVIGATING DIGITAL TRANSFORMATION IN DIGITAL IMMIGRANT FIRMS

Given the importance of digital technologies and the key challenges faced in their diffusion and adoption by the broader business community, Our research, funded by The Productivity Institute, explores challenges faced by "digital immigrant" firms—established businesses that are rooted in traditional models but are now striving to adapt to a rapidly evolving digital landscape. Unlike "digital natives," which are companies built from the ground up with digital capabilities, digital immigrants often face unique hurdles in their transformation journey.

The focus on digital immigrant firms is crucial for several reasons:

SIGNIFICANT MARKET PRESENCE OF DIGITAL IMMIGRANTS

Many digital immigrants are small and medium-sized enterprises (SMEs). SMEs form the backbone of the UK economy, comprising 99.9% of all private sector businesses. They employ around 16.7 million people—accounting for 61% of private sector employment—and generate approximately £2.3 trillion in turnover, which is 52% of the private sector's total turnover.[7] While most SMEs are less than 10 years old, a significant number of small legacy firms continue to operate with traditional business models and outdated systems. It is important to note that large organisations can also be considered digital immigrants if they were established before the digital age and still rely heavily on legacy systems, which can hinder their ability to adapt as quickly as digital-native companies built on modern digital infrastructures.

BARRIERS TO DIGITAL ADOPTION

Digital immigrant firms face unique challenges in adopting new technologies, including outdated legacy systems, entrenched processes, and a cultural mindset that may not fully embrace digital innovation. These obstacles limit their ability to effectively utilise digital, which is a key reason why the anticipated productivity gains from technological advancements have not yet been fully realised.

ECONOMIC IMPLICATIONS

The successful digital transition of these firms is crucial not only for their individual survival but also for the broader economy. Overcoming transformation barriers and enhancing productivity are essential steps in narrowing the productivity gap between the UK's leading companies and those lagging behind. Without targeted support to promote technology diffusion and strategic focus, these persistent challenges could continue to impede the UK economy's growth recovery.

Based on interviews with thirteen Chief Information Officers (CIOs) from various sectors including retail, construction, and financial services, we identified four key drivers of technology-driven productivity: i) prioritise broad-based productivity; ii) employee engagement and continuous learning; iii) strategic alignment; and iv) agile decision-making and flexible budgeting.

7 Department for Business and Trade (2023). Business population estimates for the UK and regions 2023: statistical release. https://www.gov.uk/government/statistics/business-population-estimates-2023/business-population-estimates-for-the-uk-and-regions-2023-statistical-release

FOUR KEY DRIVERS OF TECHNOLOGY-DRIVEN PRODUCTIVITY: STRATEGIC OPPORTUNITIES FOR CIOs

Productivity poses a complex challenge for CIOs, who must translate substantial investments in ICT into tangible improvements in organisational performance. Yet, for those willing to identify and understand the underlying drivers of technology-driven productivity, this challenge can be transformed into an opportunity for CIOs to contribute to the creation of sustained business value.

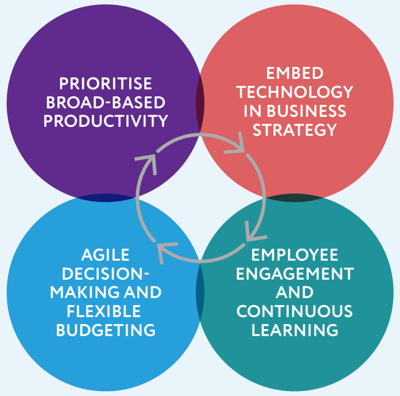

Figure 2: Four Key Drivers of Technology-Driven Productivity: Insights from CIO Interviews

PRIORITISE BROAD-BASED PRODUCTIVITY

A central theme that emerged from interviews was the common equation of the concepts of efficiency and productivity. Many CIOs equated productivity with efficiency, frequently using terms like "enhancing efficiency" and "operating efficiently" throughout the discussions.

However, while efficiency is undoubtedly crucial—especially in terms of streamlining processes and reducing costs—productivity encompasses much more. Productivity not only involves doing things efficiently but also ensuring that the right outcomes are achieved in terms of better products and services that create more value for the organisation.

Several CIOs observed that their organisations were too focused on short-term cost savings, neglecting at the expense of investment in long-term innovation. This narrow focus on immediate gains led to the underutilisation of digital tools, which were primarily deployed to automate tasks and cut costs, rather than to drive transformational change. As a result, the potential of these technologies to contribute to sustained productivity growth was often neglected. To fully realise the benefits of digitalisation, CIOs emphasised the need for leadership teams to shift away from a short-term mindset and adopt a more strategic approach—one that integrates technology into the broader business strategy and fosters an environment that encourages innovation.

TURNING INSIGHTS INTO ACTION

Educate on the Distinction: Clearly differentiate between efficiency and broader productivity for CIOs and leadership teams, highlighting how ICT investments can contribute to long-term strategic goals. This approach encourages a shift in focus from short-term efficiency gains to achieving broader, sustainable business outcomes. Redefine project metrics to focus on outcomes such as customer satisfaction, rather than solely on efficiency and cost reduction.

Balance Short-Term and Long-Term Goals: Encourage a balanced approach that values both quick wins in terms of efficiency and sustainable growth through productivity. This dual focus will ensure that short-term improvements do not come at the expense of long-term gains in ICT investment.

"All our business cases are based on the ratio of cost to either revenue or efficiency."

(IT Director/ Insurance)

EMBED TECHNOLOGY IN BUSINESS STRATEGY

The misalignment between technology initiatives and broader business goals was another recurring concern among CIOs. Several respondents noted that this often stemmed from management treating technology spending as isolated operational fixes rather than as tools for driving strategic change. The failure to integrate technology into the broader business strategy limits its potential as a driver of business transformation.

TURNING INSIGHTS INTO ACTION

Cross-Functional Strategy Alignment Sessions: Facilitate regular meetings between IT and senior leadership to ensure that technology initiatives are aligned with long-term business goals. These sessions will foster collaboration and promote a shared understanding of how technology can drive transformation.

Technology Integration Scorecard: Implement a scorecard system to track how well technology projects align with strategic objectives. This tool can guide decision-making and ensure that technology investments contribute to broader innovation goals, rather than merely serving as operational fixes.

Leadership Tech Awareness Workshops: Organise workshops for senior leadership to deepen their understanding of how digital tools can be leveraged beyond efficiency. By prioritising technology as a transformative driver, these workshops can help shift leadership perspectives and encourage a more strategic approach to ICT investments.

"It must not be a technology-led decision; it has to be a company decision... That's why so many companies fall behind."

(CIO/ Financial Services)

EMPLOYEE ENGAGEMENT AND CONTINUOUS LEARNING

Another recurring theme from the CIO interviews was the critical importance of employee engagement and continuous learning in maximising the impact of technology investments. Many CIOs highlighted that training is often treated as an afterthought, resulting in poor uptake of new tools and, consequently, limited productivity gains. This issue is compounded when engagement and training are not adequately considered during the development of business cases, leading to their underestimation in project budgets.

Without adequate training, employees may resist adopting new tools due to a lack of understanding or preparation. CIOs unanimously agreed that continuous learning and development are essential for equipping staff with the skills needed to adapt to technological changes. Even the most advanced digital tools become ineffective if employees are unable or unwilling to use them.

TURNING INSIGHTS INTO ACTION

Micro-Learning Modules: Develop bite-sized, easily digestible training sessions that employees can access on-demand. This flexible approach ensures continuous learning without overwhelming staff or disrupting their daily responsibilities.

Engagement-Driven Pilot Teams: Introduce small pilot teams to test new technologies before rolling them out company-wide. These teams can provide feedback, identify training gaps, and act as advocates, promoting broader engagement and smoother adoption.

Integrated Training Budgets in Business Cases: Ensure that business cases for new technology investments include detailed and realistic budgets for employee training and engagement. Proper allocation of resources is crucial to maximising the long-term impact of the technology.

"Retraining people who've been doing the same job for years is tough. Many don't want to unlearn what's worked for them."

(CIO/Maintenance company)

AGILE DECISION-MAKING AND FLEXIBLE BUDGETING

CIOs identified the combination of rigid organisational structures and conservative financial oversight as major barriers to effective digital transformation. Hierarchical structures often slow down decision-making, requiring multiple layers of approval before investments in new technology can be made. This rigidity prevents firms from being agile and responsive, hindering their ability to capitalise on emerging opportunities in a timely manner.

CIOs also highlighted the restrictive role of financial oversight, with Chief Financial Officers (CFOs) frequently imposing tight controls on technology budgets. This focus on short-term cost savings over long-term innovation further exacerbates this issue. Tight budget constraints often lead to the underestimation of training and engagement costs, limiting the resources available for ensuring successful technology adoption. While financial discipline is undoubtedly important, an excessive focus on short-term efficiency can stifle innovation and hinder the development of the skills needed for long-term productivity gains.

TURNING INSIGHTS INTO ACTION

Streamlined Approval Processes: Simplify approval frameworks for digital investments, empowering mid-level managers to authorise smaller projects and allowing for quicker responses to emerging opportunities.

Innovation-Focused Budget Allocation: Create an "innovation fund" within the technology budget, specifically designated for long-term investments in digital tools and training. This ensures that resources are available for innovation, even within the broader framework of financial discipline.

CFO-IT Collaboration Workshops: Regular workshops between CFOs and CIOs can bridge the gap between financial oversight and technology strategy. Involving CFOs from the outset helps align budget priorities with both immediate efficiency gains and long-term innovation objectives. This collaborative approach ensures that financial planning actively supports technological progress rather than creating obstacles, fostering a shared vision that balances cost control with strategic growth opportunities.

"Many IT projects are introduced for soft benefits, such as increased job satisfaction, but CFOs are not interested in that; they are asking why we have not cut any jobs."

(CDO/Agriculture)

KEY TAKEAWAYS AND NEXT STEPS FOR BUSINESS LEADERS

The insights gained from our discussions with CIOs from digital immigrant firms highlight a critical issue: the shortfall of turning technology investment into productivity gains is not merely due to the technologies themselves but, more importantly, to deep-rooted organisational challenges. It has become evident that technology alone cannot solve the productivity puzzle. Instead, the core issues lie in leadership vision, investment in human capital, and aligning financial objectives with innovation goals.

For digital immigrant firms aiming to bridge the gap with digital natives, the path forward involves adopting a mindset and strategic approach that mirror those of digital-native companies—without expecting to fully transform into one. Digital immigrant firms bring unique strengths to the table, such as deep industry expertise, established customer relationships, and robust operational knowledge. By leveraging these strengths alongside new digital capabilities, they can create a hybrid business model that offers distinct advantages.

Such a new business model demands that CIOs be empowered to take a leading role in driving technological change, with stronger coordination among C-suite executives. Moreover, the development of technical literacy within the leadership team is essential to ensure that digital initiatives are seen as integral to the firm's long-term strategic vision.

Achieving sustained productivity gains will require expanding traditional project metrics to include not only immediate cost savings but also long-term effectiveness and improvements in work processes. Moving beyond a narrow focus on cost-cutting, business leaders must prioritise a strategy that enhances employee empowerment and fosters continuous innovation. Productivity should be treated as a central element of growth strategies, integrated into both day-to-day operations and forward-looking strategic planning.

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