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Exploring the roles of public procurement on the performance of Knowledge- intensive business services (KIBS)

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Executive Summary

Knowledge-intensive business services (KIBS) are important facilitators, carriers, and sources of innovation in the knowledge-based economy, acting as catalysts for internal communication and knowledge conversion. They also play an increasingly important role in public sector, providing specialized expertise that supports innovation and public service transformation. This research brief examines KIBS firms' engagement in UK public procurement, focusing on their number and distribution rather than contract values. Using data from 2016-2022, we analyse patterns across different types of KIBS suppliers and government organizations.

Our analysis reveals that KIBS represent a large proportion of government suppliers, with particularly strong representation in computer programming and management consultancy. KIBS encompass a diverse range of services. The typology used in this research brief separates technology-intensive services (T-KIBS) from traditional professional services (P-KIBS). We find distinct patterns between T-KIBS and P-KIBS, as well as variations across central government, local authorities, and NHS procurement. While the number of KIBS suppliers has grown across all categories, we observe stronger growth in T-KIBS suppliers, especially in central government procurement.

The findings highlight important considerations for procurement. First, while KIBS expertise is crucial for public sector modernisation, particularly in technical domains like IT services, careful consideration is needed regarding the balance between external and internal capabilities, especially in management consulting. Second, with suppliers heavily concentrated in London, procurement processes could be redesigned to encourage participation from regional KIBS firms, for instance through smaller contract lots or innovation partnerships. The analysis also suggests the need for differentiated approaches to T-KIBS and P-KIBS procurement, reflecting their distinct roles in public sector innovation.

1. Introduction

While public procurement's potential to stimulate innovation has attracted significant scholarly and policy attention, its effectiveness as a policy instrument remains unclear due to limited empirical evidence (Kundu et al., 2024). This evidence gap is particularly striking in the services sector which, despite accounting for most procurement spending, has received limited research attention - especially regarding KIBS (although see Warland and Mayer, 2017). This gap is particularly notable given KIBS firms' critical role in innovation and economic development, acting as important facilitators, carriers, and sources of innovation in the knowledge-based economy (den Hertog, 2000; Miles, 2005). Furthermore, KIBS are predominantly SMEs that often face resource constraints and barriers to accessing public contracts (Flynn et al., 2015). In this research brief, we aim to address these gaps by answering the question: What are the growth dynamics and spatial distribution of KIBS suppliers in the UK public procurement market?

This report is structured as follows. Section 2 defines KIBS and highlighting their key features, diversity, innovation patterns, and importance in the knowledge-based economy. It then explores the link between KIBS and public procurement. Section 3 introduces data sources and methodology. Section 4 presents key findings, revealing the proportion of KIBS suppliers, their growth trajectory, the primary KIBS sectors involved in public procurement, and the geographical distribution of KIBS and non-KIBS suppliers across the UK. Finally, Section 5 discusses the implications and outlines future research directions.

2. Theoretical background

2.1. KIBS: features, growth, innovation and roles in innovation system

KIBS are defined by Miles et al., (1995) as "services that involved economic activities which are intended to result in the creation, accumulation or dissemination of knowledge". These are private companies or organizations whose core value-added activity involves

delivering knowledge-intensive inputs to the business processes of both private and public sector clients, with the goal of developing tailored services or product solutions that meet the specific needs of their clients (den Hertog, 2000; Bettencourt et al., 2002).

KIBS encompass a diverse range of services. Miles et al., (1995) separate technology-intensive services (T-KIBS) from traditional professional services (P-KIBS; see Table 1). P-KIBS, such as accountancy and management consultancy services, rely more on external sources of knowledge and intensive use of technology. T-KIBS, such as computer, engineering, and R&D services, rely more on internal resources, and require scientific and technological knowledge (Miles et al., 1995; Lee and Miozzo, 2019).

KIBS are characterised by their reliance on professional knowledge, serving both as sources of expertise and facilitators of their clients' innovation activities (Miles et al., 1995; Muller and Zenker, 2001). Because knowledge is both their key input and output, they rely heavily on highly skilled professionals to deliver complex services, making their workforce's expertise their most valuable resource (Miles, 2005).

The growth of KIBS is largely driven by the increasing demand for their services across various sectors of the economy (Miles, 2005). In other words, outsourcing is a key driver of growth for KIBS, encompassing a wide spectrum of services, from software development to professional consultancy. The growth of KIBS also relates to the increasing dependency on a wide range of technological knowledge. This is evident in T-KIBS, such as computer and information technology services and R&D services (Li and Deng, 2024). Furthermore, regulation and societal shifts, such as the increasing focus on environmental issues, play a significant role in driving the growth of KIBS specializing in green technologies and environmental compliance (Miles, 2005).

The importance of KIBS lies in their ability to transfer knowledge and expertise to client firms, thereby enhancing the innovative capabilities of the entire economy (Muller and

Table 1. Typology of KIBS. Source: Miles et al., 1995; Lee and Miozzo 2019

Typology	Examples	Features
Professional KIBS (P-KIBS)	Accountancy, Legal, Management consultancy services	<ul style="list-style-type: none"> • Rely more on external sources of knowledge • Intensive use of knowledge
Technology-based KIBS (T-KIBS)	Computer, engineering, R&D services, testing services	<ul style="list-style-type: none"> • Rely more on internal resources like internal R&D and interaction with universities • Require scientific and technological knowledge and skills

Zenker, 2001). They act as innovation intermediaries, connecting different parts of the innovation system - from manufacturing to science and customers - while also developing innovative solutions themselves (Corrocher and Cusmano, 2014). This is particularly true for T-KIBS, such as R&D services, which not only facilitate innovation in their client organizations but are also significant innovators in their own right (Li and Deng, 2024).

2.2. Public procurement and KIBS

Client interactions drive innovation in knowledge-intensive business services through collaborative knowledge creation and learning (Bettencourt et al., 2002). Public procurement represents a distinct client context that shapes KIBS innovation in several ways. Government procurement offers market opportunities that can stimulate private sector innovation, particularly when agencies act as early adopters of new solutions (Edler and Georghiou, 2007). This can help bridge the critical gap between development and market introduction for innovative services. Additionally, public agencies bring valuable resources to innovation partnerships, including domain expertise, stable funding, and clearly articulated requirements that can guide service development (Aarikka-Stenroos and Jaakkola, 2012). Public sector clients also provide

unique reputational benefits. References from government agencies carry special weight as they are perceived as objective validators, helping KIBS firms - especially SMEs - win new clients in both public and private sectors (Warland and Mayer, 2017; Uyarra and Flanagan, 2010).

However, public procurement also presents distinct challenges. Risk aversion under public scrutiny, lengthy decision-making processes, and rigid procurement procedures can constrain interactive learning and innovation (Warland and Mayer, 2017). The UK Procurement Act 2023 aims to simplify procurement processes and increase transparency, potentially making it easier for KIBS firms, especially SMEs, to navigate the procurement process. Understanding these dynamics is crucial as governments increasingly rely on KIBS firms for complex services, particularly in IT and technology domains. While KIBS play important roles in public service delivery, excessive reliance on external consultants has raised concerns about value for money and public sector capability development (NAO, 2016; Mazzucato and Collington, 2023).

This is particularly evident in recent years, with consultants becoming integral to government operations and receiving substantial contracts - for instance, over £600m during the

pandemic and £306m for Brexit-related advice in just two years (Tussell, 2024). The differing nature of T-KIBS and P-KIBS contributions suggests the need for nuanced procurement approaches that reflect their distinct roles - securing necessary technical expertise (specially from T-KIBS) while ensuring strategic use of consultancy services.

3. Data

The data used in this analysis was sourced from the Tussell database, covering the period from 2016 to 2022 and including 48,474 unique UK firms. Additionally, KIBS firms, comprising both T-KIBS and P-KIBS, were identified based on the UK SIC 2007 industrial classifications, as detailed in Table 2 below.

4. Results

4.1. Percentage of KIBS suppliers in public procurement

Figure 1 illustrates that approximately 27.5% of public procurement suppliers in the UK were KIBS firms in 2022. This figure includes 12.7% P-KIBS and 14.8% T-KIBS. This represents an increase compared to 2016, when 24% of public procurement suppliers were KIBS firms, comprising 11.2% P-KIBS and 12.8% T-KIBS.

Table 3 presents the top 10 public sector bodies with which KIBS firms have contracts in 2022. UK Research and Innovation (UKRI) emerges as the largest procurer with 1,271 KIBS suppliers, representing 57.38% of its total supplier base. This represents an anomalous peak compared to previous years, where UKRI's KIBS supplier numbers were substantially lower at around 550. UKRI,

Table 2. KIBS SIC codes

SIC 2007	Industries	KIBS types
62	Computer programming; consultancy and related activities	T-KIBS
63.1	Data processing, hosting and related activities; web portals	T-KIBS
69.1	Legal activities	P-KIBS
69.2	Accounting, bookkeeping and auditing activities; tax consultancy	P-KIBS
70.2	Management consultancy activities	P-KIBS
71.1	Architectural and engineering activities and related technical consultancy	T-KIBS
71.2	Technical testing and analysis	T-KIBS
72.1	Research and experimental development on natural sciences and engineering	T-KIBS
72.2	Research and experimental development on social sciences and humanities	T-KIBS
73.1	Advertising	P-KIBS
73.2	Market research and public opinion polling	P-KIBS
74.1	Specialised design activities	P-KIBS
74.2	Photographic activities	P-KIBS
74.9	Other professional, scientific and technical activities n.e.c.	P-KIBS

through UK Shared Business Services (UKSBS), sometimes acts on behalf of other government departments, agencies and public bodies, which may explain the figure. UKRI's broad remit also naturally leads to engagement with KIBS, especially in areas like research services, data analysis, and specialised consulting.

The Ministry of Defence follows with 706 KIBS suppliers (47.26% of its suppliers), with a notably higher proportion of T-KIBS suppliers, reflecting its significant technical and digital requirements. Infrastructure-focused organizations such as National Highways show the highest proportion of KIBS suppliers (64.39%), with a strong skew towards T-KIBS, likely reflecting their technical engineering and digital needs.

4.2. KIBS across three main government authorities

Figure 2 illustrates the evolution of KIBS procurement across different parts of UK government from 2016 to 2022. Overall, there has been a steady increase in the number of KIBS suppliers engaged by

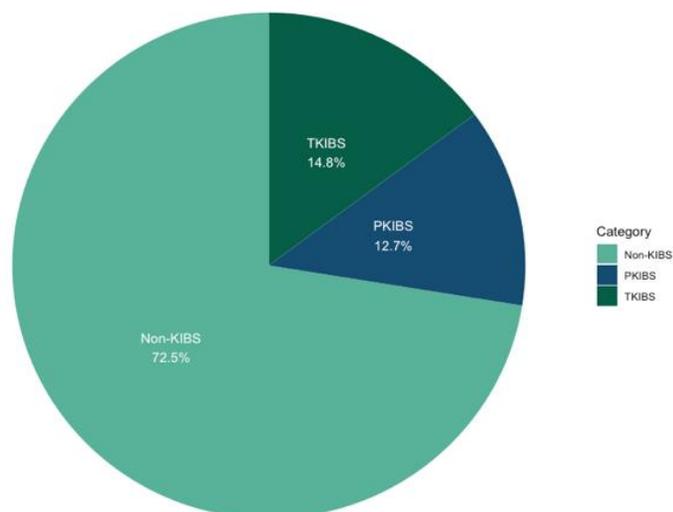


Figure 1. KIBS vs. non-KIBS Suppliers in 2022

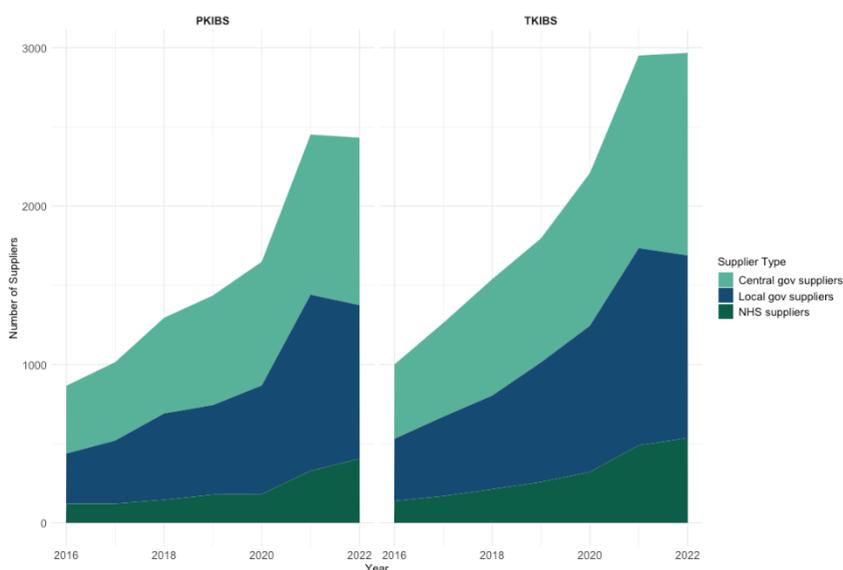


Figure 2 PKIBS and TKIBS across government authorities (2016-2022)

Table 3. The major buyers of KIBS in 2022 (top 10)

Contracting authority	KIBS	KIBS (%)	PKIBS	TKIBS
UK Research and Innovation (UKRI)	1271	57.38%	732	539
Ministry of Defence (MOD)	706	47.26%	200	506
NHS England	471	50.65%	292	179
Department for Environment Food Rural Affairs (DEFRA)	405	53.78%	178	227
National Highways (previously Highways England)	396	64.39%	38	358
Department for Work and Pensions (DWP)	335	63.33%	75	260
Department for Business Energy Industrial Strategy (BEIS)	324	53.03%	159	165
UK Health Security Agency (UKHSA)	255	43.22%	91	164
Scottish Government	246	37.44%	146	100
Home Office	239	57.73%	87	152

government, with central government departments showing the highest absolute number of KIBS suppliers throughout the period, particularly from 2018 onwards, followed by local government and NHS. T-KIBS suppliers show stronger representation in central government procurement. Local government and NHS demonstrate more balanced engagement between T-KIBS and P-KIBS suppliers, possibly reflecting their diverse service delivery needs. This greater demand for KIBS can be explained by multiple factors, including Brexit preparations and the Covid pandemic crisis response. Further, the rapid shift to remote work and digital service delivery has likely increased demand for IT and digital consulting services, potentially benefiting T-KIBS firms. However, to fully understand these patterns, a more detailed analysis of contract values and volumes would be needed to complement the supplier count data presented here.

4.3. KIBS suppliers by industry and size

Among the various KIBS sectors (Figure 3), we can identify computer programming as the largest supplier in the UK public procurement market in 2022. This highlights the critical role of T-KIBS in providing digital solutions and services to the public sector. The prominence of computer programming firms may be driven by the increasing digitalisation in the public sector, including the adoption of AI, cloud computing, and other advanced technologies. This is followed by management consultancy and engineering activities. Further research could explore the specific services provided by these KIBS

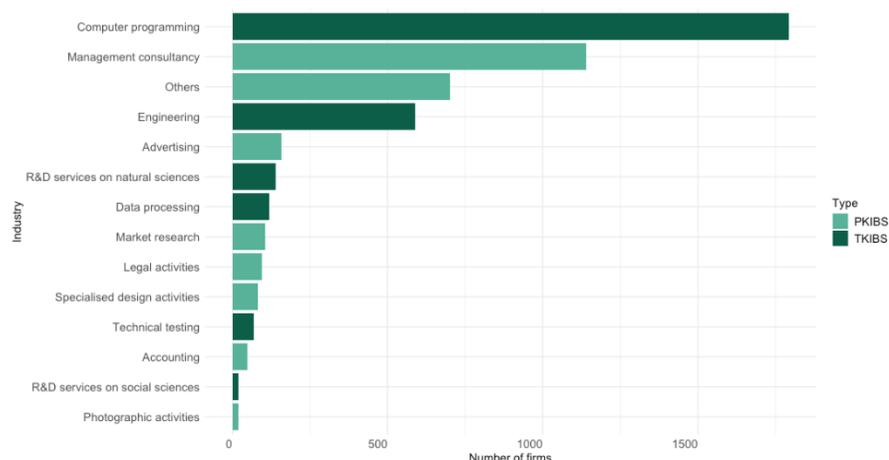


Figure 3. KIBS suppliers by industry in 2022

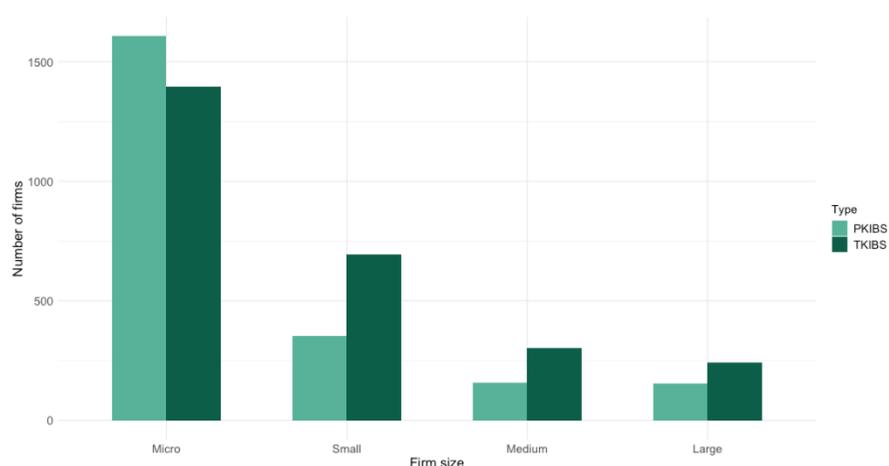


Figure 4 The major buyers of KIBS in 2022 (top 10)

sectors and how they contribute to innovation and value creation in the public sector.

The size distribution analysis (Figure 4) reveals that while micro and small firms constitute the majority of suppliers numerically, there are important variations between T-KIBS and P-KIBS. T-KIBS suppliers tend to be larger organizations, particularly in computer programming and engineering services. However, this supplier count data should be interpreted alongside contract value data (not shown here) - evidence suggests that although SMEs make up the majority of suppliers, a substantial share of contract value is awarded to a smaller number of large firms, particularly in management consultancy and IT services (Tussell, 2024).

4.4. Geographical distribution of KIBS suppliers

The geographical analysis in figure 4 shows a strong concentration of both KIBS and non-KIBS suppliers in London, though non-KIBS firms display broader dispersion across the Southeast. This spatial pattern aligns with KIBS firms' tendency to cluster in major urban centres, where they can leverage knowledge networks and agglomeration benefits (Doloreux and Shearmur, 2012; Brunow et al., 2020). In contrast, non-KIBS firms show greater flexibility in location, likely due to different operational requirements and market access needs. However, it's important to note a potential caveat regarding headquarter effects. The observed concentration in London

may partly reflect the tendency of firms to register their headquarters in the capital, even if their operations are more geographically dispersed. This could lead to an overestimation of the actual concentration of economic activity in London. Further research could investigate the factors that influence the geography of KIBS and non-KIBS suppliers and the implications for regional economic development and innovation policies. Such analysis could provide valuable insights for policymakers seeking to promote more balanced regional growth and innovation ecosystems across the UK.

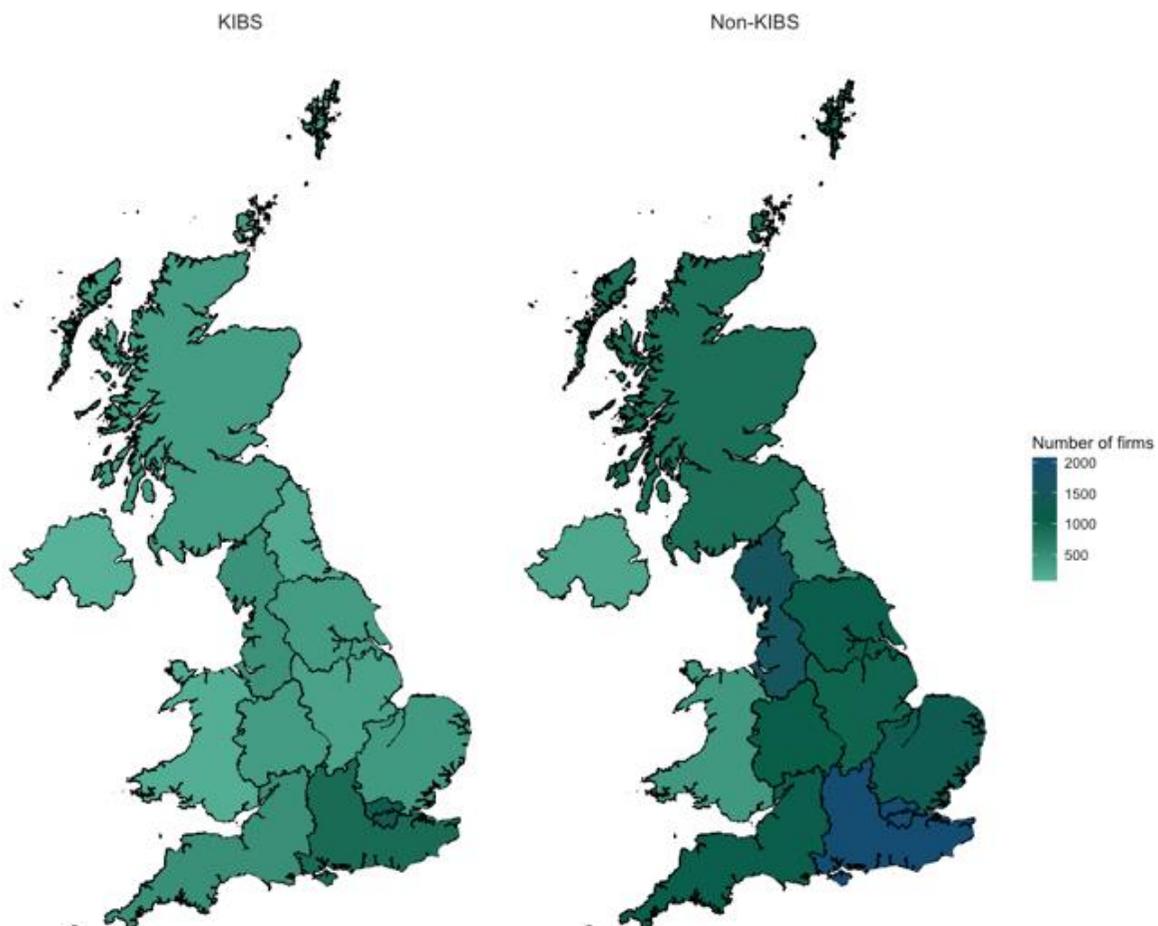


Figure 5. KIBS vs. non-KIBS suppliers across regions in 2022

5. Conclusion

In this report we looked at the growth, geographic distribution, and sectoral patterns of KIBS firms engaged in UK public procurement. Our analysis focused on the number of unique KIBS suppliers rather than contract numbers or value. Our analysis showed that KIBS firms constitute 27% of government suppliers. This proportion is even higher for some government bodies, where KIBS represent over 50% of the supplier base. In particular, T-KIBS suppliers show strong growth in their engagement with public procurement. Computer programming and management consultancy emerge as dominant sectors by number of suppliers, reflecting the growing digitalisation in the public sector and the demand for innovative solutions.

Geographically, both KIBS and non-KIBS suppliers show a strong tendency to cluster in London, highlighting the capital's role as a hub for KIBS and general business activities. Non-KIBS suppliers exhibit a more dispersed pattern, particularly in the Southeast, compared to KIBS firms. This suggests that KIBS may derive greater benefits from urban agglomeration economies and knowledge spillovers. Central government KIBS suppliers are heavily concentrated in London, while local government suppliers show a more distributed pattern across UK regions. This reflects the differing nature and requirements of central and local government procurement.

These findings point to several policy considerations. First, while KIBS firms provide crucial expertise for public service transformation, questions remain about achieving the right balance between external and internal capabilities. Further, the distinct patterns between T-KIBS and P-KIBS point to the need for differentiated procurement approaches. Second, the concentration of suppliers in London, especially for central government procurement, suggests a need to design procurement processes that encourage participation from smaller KIBS firms and those outside London/Southeast, potentially through breaking contracts into smaller lots or using pre-commercial procurement for innovation. Third, there is a need to improve data collection and analysis of KIBS procurement to better understand its impact on public sector innovation and economic development.

Future research should examine contracting patterns in more depth. While our supplier count analysis provides valuable insights on the range and diversity of KIBS firms working with the public sector, further research is needed to understand procurement patterns across different types of KIBS firms and regions. Additionally, further research should explore how public procurement influences innovation in KIBS firms, including whether and how different types of public contracts affect their innovative capabilities and outputs. Specifically, further analysis is needed to understand whether this increased engagement with KIBS is due to increased public demand for existing services or because of new needs, for instance around the adoption of AI, cloud computing, and other advanced technologies in the public sector, creating new opportunities for specialized KIBS. This broader analysis would help identify potential barriers to KIBS participation, particularly SMEs, assess innovation impacts, and inform more effective procurement policies.

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