

This is a repository copy of *Understanding Performance in Professional Services for Innovation Intermediation: Technology Consultants vs. Management Consultants*.

White Rose Research Online URL for this paper:

<https://eprints.whiterose.ac.uk/201334/>

Version: Published Version

---

**Article:**

Williams, Christopher and Van Triest, Sander (2023) Understanding Performance in Professional Services for Innovation Intermediation: Technology Consultants vs. Management Consultants. *Technovation*. 102824. ISSN 1879-2383

<https://doi.org/10.1016/j.technovation.2023.102824>

---

**Reuse**

This article is distributed under the terms of the Creative Commons Attribution (CC BY) licence. This licence allows you to distribute, remix, tweak, and build upon the work, even commercially, as long as you credit the authors for the original work. More information and the full terms of the licence here:

<https://creativecommons.org/licenses/>

**Takedown**

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing [eprints@whiterose.ac.uk](mailto:eprints@whiterose.ac.uk) including the URL of the record and the reason for the withdrawal request.



# Understanding performance in professional services for innovation intermediation: Technology consultants vs. management consultants

Christopher Williams<sup>a,\*</sup>, Sander van Triest<sup>b</sup>

<sup>a</sup> School for Business and Society, University of York, York, YO10 5XB, United Kingdom

<sup>b</sup> Amsterdam Business School, Universiteit van Amsterdam, Plantage Muidergracht 12, 1018 TV, Amsterdam, the Netherlands

## ARTICLE INFO

### Keywords:

Technology consultants  
Management consultants  
Innovation intermediaries  
Practice performance

## ABSTRACT

The innovation intermediation (II) literature can be enriched by the professional service firm (PSF) literature when it comes to understanding the determinants of performance for different types of consultants that fulfil an II function in this era of digital transformation. The present study (1) contrasts two classic types of private-sector consultancy that have been shown to act as IIs amidst digital transformation (technology consultants vs. management consultants), and (2) shows how both II and the PSF literature point to three factors: the consultant's client focus, the level of innovativeness within the consultant's own firm, and extent to which the consultant's own firm can learn. Analysis of the effects of these factors is based on a dataset of 122 observations at PSF practice level divided between technology consultants and management consultants. We find for technology consultants innovativeness and learning are beneficial for performance, while for management consultants these factors do not matter and that client focus is key. We discuss implications for II research and practice.

*"An organisation that acts as an agent or broker in any aspect of the innovation process between two or more parties"* – Bakici et al. (2013: 313)

## 1. Introduction

The role of private-sector consultancy firms as innovation intermediaries (IIs) has been highlighted in seminal work in the II field (Bessant and Rush, 1995; Howells, 2006). As a type of professional service firm (PSF), consultancy firms regularly act as IIs, assisting clients with their innovative endeavors (Williams, 2019). Private-sector consultancy firms have been pivotal in the phenomenon of digital transformation globally (Christensen et al., 2013; Krüger and Teuteberg, 2016; Tabrizi et al., 2019; Ulas, 2019). Von Nordenflycht (2010) describes PSFs as knowledge-intensive, having low capital intensity, and being staffed by a professionalized workforce. They also have a strong client focus. These features resonate with features of IIs as described by Howells (2006), especially in terms of knowledge-brokerage and having human capital able to understand and apply new digital technology to add value to clients. However, scholars note high diversity within the PSF industry: not all PSFs are the same (Malhotra and Morris, 2009; Von

Nordenflycht, 2010). Even within the consultancy industry, there are different types of consultancy firms with different types of expertise and skills able to act as IIs and assist clients in their innovation search and digital transformation efforts (Williams, 2019).

While much research on IIs has been concerned with their impact and value creation for client organizations (Colombo et al., 2015; Janssen et al., 2014; Lauritzen, 2017; Lopez and Vanhaverbeke, 2009), as well as their own growth and capability development (Hossain, 2012), much of this research sees IIs as public sector, think tank and third sector organizations (Bakici et al., 2013; Rossi et al., 2022; Williamson, 2014). IIs also create value in areas of grand challenge that transverse client organizations and stakeholder groups, such as with sustainability transitions (Gliedt et al., 2018). Despite the early recognition that private sector consultancy firms are also key actors in the brokering of knowledge for innovation in client organizations (Bessant and Rush, 1995; Howells, 2006), little attention has been explicitly paid to how private-sector consultancy firms perform as IIs and the nature of differences between consultancy firms that approach innovation and knowledge brokering from alternative angles. It is important to understand this in a context of digital transformation; as noted by Tabrizi et al. (2019): "70% of all [digital transformation] initiatives do not reach their goals". It is also important to understand how different types of

\* Corresponding author.

E-mail addresses: [chris.williams3@york.ac.uk](mailto:chris.williams3@york.ac.uk) (C. Williams), [s.p.vantriest@uva.nl](mailto:s.p.vantriest@uva.nl) (S. van Triest).

<https://doi.org/10.1016/j.technovation.2023.102824>

Received 25 August 2022; Received in revised form 8 June 2023; Accepted 6 July 2023

Available online 12 July 2023

0166-4972/© 2023 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

consultancy firms perform as IIs. Indeed, scholars in the knowledge intensive business services (KIBS) field note important distinctions between technology-oriented KIBS (t-KIBS) and traditional professional KIBS (p-KIBS) (Doloreux et al., 2019; Freel, 2006; Miles et al., 1995). Scholars note how ignoring p-KIBS firms in studies of innovation (i.e., focusing only on t-KIBS) will lead to “misplaced generalizations” (Freel, 2006, p. 339) and that “care must be taken to identify what the differences are” between t-KIBS and p-KIBS firms (Rodriguez et al., 2017, p. 41).

We address this gap by examining performance in two fundamentally different types of consultancy firms that prior literature has shown to act as IIs amidst digital transformation. Firstly, pure-play technology consultants (t-KIBS) directly assist clients in innovation efforts, supporting search efforts, introducing, and adapting new digital technologies and building innovative solutions for clients. Technology consultants work closely with technologists within the client organization as well as other diverse technology providers (van Leusen et al., 2016). They are more likely to facilitate exchange across multiple networks (Christensen et al., 2013) and are the closest to the definition of IIs given above (Bakici et al., 2013: 313). Secondly, pure-play management consultants (p-KIBS) help to shape innovative policy at a more strategic level. Literature on management consultancy emphasizes the consultant’s judgement and repeatable processes in innovative projects (Christensen et al., 2013) and shows how consultants help bring management innovation into client organizations (Wright et al., 2012). Tabrizi et al. (2019) argue that digital transformation is not about technology, it is about broader business and HR strategy that management consultants are well-suited for: understanding how marketplaces should be served, leveraging tacit knowledge within the organization, designing customer experiences, and managing the human resource and cultural implications of digital transformation. Overall, both technology consultancy and management consultancy are vital professional services to assist clients in digitalization and digital transformation in the modern era, although they are likely to offer different types of services to assist clients in their digitalization endeavors (Krüger and Teuteberg, 2016; Tabrizi et al., 2019; Ulas, 2019).

Understanding how different types of consultants perform as IIs cannot be done through a singular theoretical lens. Indeed, as Hossain (2012) notes, there are “no well-established theories ... [on] ... the intermediary market in practice” (Hossain, 2012: 754). We approach the problem by combining different logics in one study. We show how there is common ground across *both* consultancy and II literature: (1) the need for client focus (based on social embeddedness with clients) (van Leusen et al., 2016; Wu et al., 2009), (2) the need for innovativeness (searching for new possibilities and using creativity on behalf of clients) (Williams, 2019), and (3) the need for continual and reciprocal learning (in order to be at the cutting edge for clients) (Randhawa et al., 2022). These three lenses are prominent features in both the consultancy literature (Anand et al., 2007; Sundbo, 1997; van Leusen et al., 2016) as well as the II-specific literature (Bessant and Rush, 1995; Rossi et al., 2022). We develop a path model to explain the performance of consultants as IIs by using these three lenses. Testing this path model on a sample of technology consultants (n = 57) vs. management consultants (n = 65) reveals marked differences in the interplay between client focus, innovativeness, and learning within the II. While innovativeness and learning are – as expected - highly correlated with each other in both samples, the strongest association with performance in technology consultants is a mix of innovativeness and learning (which we interpret as relating to technology content focus) while for management consultancy it is client focus (a relational dimension which we interpret as vital for engagement and stakeholder management – Kirk and Vasconcelos, 2003 – and a weaker technical knowledge base – Fincham, 2006).

The present study contributes in three ways. Firstly, it adds new insight into how private sector consultants perform when seen as IIs. The key finding is that there are important differences between different types of ‘consultants as IIs’ that are reflected in internal organizational

factors impacting the II’s own performance. Technology consultants depend more on content focus to perform – their innovativeness and learning capabilities matter in an era of digital disruption – and less on client focus. For management consultants, client focus is paramount to perform. Differences between management and technology consultants have not been identified as salient in prior II research (although they have in the consultancy literature, see Kirk and Vasconcelos (2003) and Fincham (2006)). The differences identified here contribute to the small but growing literature on the distinctions between t-KIBS and p-KIBS (Freel, 2006; Rodriguez et al., 2017) and raise new questions for how we research and understand consultants as IIs. Secondly, the path model approach reveals the interplay between internal organizational factors ‘inside’ consultancy organizations that act as innovation intermediaries. The strongest association is between innovativeness and learning (i.e., content focus), while the weakest is between client focus and the content focus factors. This suggests that studies of internal organizational dynamics of IIs need to take a systemic and holistic view of a range of organizing variables, with the expectation that these system models will differ across II types. Thirdly, we show that the PSF and II literatures – which have mainly grown as quite separate literatures – have much in common when it comes to understanding how ‘consultants as IIs’ perform. There is an opportunity for II scholars to draw more from the PSF field in the future, particularly in relation to understanding how diversity within the professional services space impacts the II function and subsequent outcomes.

## 2. Background and hypotheses

The nature of the II function has been described as “non-linear” (Bessant and Rush, 1995), dealing with problems “not well defined” (Agogué et al., 2017), and suffering from “performance ambiguity” (Dalziel, 2010). These adjectives for the II function can be appreciated when one looks at the range of complex roles they perform. IIs are described as ‘shapers’ in the context of ecosystem development (Randhawa et al., 2022) and as ‘bridges’ between multiple and diverse actors (Bakici et al., 2013; Bessant and Rush, 1995) and performing a ‘systemic role’ (Rossi et al., 2022). IIs perform roles ranging from scan and search efforts for clients needing to solve difficult innovation problems to more direct testing and training work on new technologies (Hossain, 2012; Howells, 2006). They also create value for both clients which are ‘innovation seekers’, and clients which are ‘innovation solvers’ (Lopez and Vanhaverbeke, 2009). Literature shows how IIs fulfil these varied roles in numerous ways, putting a spotlight on the adoption of knowledge-based practices (De Silva et al., 2018), and the utilization of competences in cross-industry relations, ICT-based innovation, and even shared leadership (Janssen et al., 2014).

Against this complex backdrop, we identify three threads in both consultancy and II literatures that resonate with the notion of ‘consultant as II’. While the consultancy literature has emerged somewhat separately to the II literature (as indicated through the different author teams, conferences, and journal focus), we note theoretical similarities in the three areas. Firstly, *client focus* relates to how consultants as IIs seek to establish close relationships with clients to create value. In service theory, this is referred to as client centrality (Shah et al., 2006). Without this in place, IIs will not understand the nature of client needs as they evolve, and they will not be able to access client tacit knowledge or establish trusting and enduring relationships with clients conducive to strategic innovation for the client. Secondly, *innovativeness* relates to the extent to which the consultant firm as an II is itself an innovative organization. Innovativeness allows IIs to try and test new ideas before engaging with any given client, to discuss and share information on new technology and how it can be applied in practice. In this sense, being an II is not merely a predictable, routine, and administrative function. It requires a willingness throughout the organization to think and act in innovative ways. Organization innovation theory highlights the importance of organizational climate conducive to innovation and having a

managerial attitude towards change (Damanpour, 1991). Thirdly, *learning* relates to how consultants as IIs are willing and able to continually assimilate and apply new knowledge. Organizational learning theory emphasizes the importance of taking time to develop individuals' mental models and how these are then used to create the learning organization (Edmondson and Moingeon, 1998). Learning as an II can have a proactive component – a willingness to seek new information and knowledge relating to new technologies and their applications. It also has a reactive component – IIs engaging in reflective practice and learning from past experiences on projects with clients.

### 2.1. Client focus

In the *consultancy literature*, interaction with clients is the basis by which consultants learn about client problems to develop accurate proposals and useful projects to address those problems. Much of the knowledge needed for innovation on consultancy is tacit, and direct engagement with clients allows tacit knowledge to flow. Client focus is seen as a primary way for generating new knowledge in consultancy (Fosstenlökken et al., 2003) and supports innovative outcomes through proximity effects (Rodriguez et al., 2017). Building social networks and trustworthy relationships with clients alongside other technology organizations has been shown to be essential to the performance of consultants offering technology-based advice and solutions (van Leusen et al., 2016; Wu et al., 2009). Williams (2019) puts an emphasis on social capital with clients as a principal determinant for consultants to innovate for and on behalf of a client. This is illustrated by the case of Ergonomica Consulting, a technology consultancy specialized in sustainability transformations. The company worked attentively over multiple years with a hotel chain client to develop and re-develop proposals for new lighting systems for the hotel in California (Williams, 2019).

The *II literature* also puts a spotlight on interaction with clients as a key determinant of effective II performance. Howells (2006) describes the “close and continuous interactions” between IIs and clients needed to support innovative change. Bessant and Rush (1995) describe the client recommendations that can lead to business development for consultancies acting as IIs. Janssen et al. (2014) describe the importance for the II to acquire clients in their case data, this being based on establishing credibility through close contact. Dalziel (2010) describes how clients trust the judgement of IIs, this being based on a commitment by the II to work on behalf of the client. Rossi et al. (2022) talk about the II upgrading role as a function of visits to understand client needs and provide examples of IIs working directly with large numbers of clients. Many cases in the *II literature* illustrate these interactions, such as Barcelona City Hall's encouragement of collaboration between companies, universities, and the public sector to be collectively focused on a Smart City initiative on behalf of the city, involving the use of a publicly-funded II called 22@barcelona (Bakici et al., 2013).

Given these similarities between the consultancy literature and the *II literature* on the theme of client focus, we hypothesize.

**H1.** Performance of private-sector consultants as innovation intermediaries will be positively associated with their client focus.

### 2.2. Innovativeness

The *consultancy literature* has investigated innovativeness within the private-sector consultancy industry extensively (Anand et al., 2007; Christensen et al., 2013; Williams, 2019). Large, global players – such as McKinsey & Company – have re-invented themselves with new practice areas and ways of servicing the market, including in digital transformation services (Christensen et al., 2013). The emergence of new practice areas in consultancy firms is seen as a principal example of strategic innovation in large consultancy firms (Anand et al., 2007). Smaller, niche consultancy firms also continually innovate into order to

maintain differentiation in a highly competitive space. They allow themselves to experiment with new ways of working, although this is seldom not without difficulty, particularly as they need to find the time to innovate when they are under pressure to be utilized on client projects (Christensen and Klyver, 2006; Taminiau et al., 2009). Owusu-Manu et al. (2015) see willingness to take risks and investment in R&D by engineering consultants as standard business management practices. Others note how consultancies innovate not necessarily by offering radical new services or ideas, but by helping clients evolve through new but standardized ways of working (Wright et al., 2012). The example of Innogy Consulting GmbH illustrates innovativeness within a consultancy unit. This case is set in the context of fundamental reform in the energy industry in Germany. Innogy Consulting, an energy industry consultancy, became more proactive in developing new types of solutions for existing energy clients in Germany as well as diversifying into new segments and locations (Williams, 2019).

The phenomenon of innovativeness is also well represented in the *II literature*. This relates to a wide range of innovative modes. Rossi et al. (2022) describe how public IIs in the UK and France have needed to upgrade their business models as the mandates given to them by governments have changed. Williamson (2014) describes the case of NESTA – an II based in the UK with charitable status that did more than run network events and produce publications to support its goal of promoting talent, creativity and innovation in science, technology and the arts. NESTA also has an experimental R&D role for trying out new ideas in public services. De Silva et al. (2018) show how research and technology organizations (RTOs) acting as IIs engage in collaborative innovation through various knowledge-based practices. These include a proclivity and willingness to access new unrelated knowledge, and a willingness to use innovation ecosystems to identify new opportunities to combine knowledge. Randhawa et al. (2022) note how IIs need to adopt dynamic capabilities themselves when helping to shape the development of service ecosystems in healthcare. This emphasizes the envisioning (or sensing) of joint value propositions, realizing the co-design of this through influencing and resource investment, as well as a capability to continually enhance the configuration of the ecosystem. Innovativeness is conspicuous in cases in the *II literature*. For instance, the case of NineSigma in Cleveland, OH, illustrates how innovative ideas were sourced and connected with various resources on a global basis using an open innovation platform (Hossain, 2012). As a private II, NineSigma had developed new solutions that allowed it to scale globally using new services for solution-provider facilitation in sustainability. An example was NineSigma Planet Earth, an open innovation sustainability initiative it created in 2008. Collectively, this literature underscores the culture of innovativeness within the *II organization* that is needed to create both internal and external value.

Given these similarities between the consultancy literature and the *II literature* in terms of innovativeness, we hypothesize.

**H2.** Performance of private-sector consultants as innovation intermediaries will be positively associated with their innovativeness.

### 2.3. Learning

It is widely acknowledged in the *consultancy literature* that the industry is a knowledge-intensive one that requires member organizations and individuals to continually learn (Hitt et al., 2001; Von Nordenflycht, 2010). There are fundamentally two distinct ways in which consultants learn: through formal training, and through learning ‘on the job’ (Hitt et al., 2001). While both explicit and tacit knowledge are emphasized in these learning modes, the knowledge, and skills that consultants gain over their education and career – be it formal or informal – provide the basis by which they are valued by clients. Christensen and Klyver (2006) emphasized ‘re-learning’ as consultancy firms need to spend time to reflect – with clients – on situational and technological contexts and outcomes of prior work. Some researchers have emphasized reflective



practice in consultancy as a basis for embedding change and improved ways of working. [Taminiau et al. \(2009\)](#) stress the need for constant informal sharing of knowledge in consultancy firms, this having both an external dimension (with clients) as well as an internal one (amongst colleagues). The case of Hongxin Entrepreneur Incubator in China ([Williams, 2019](#)) illustrates the role of learning in consultancy. The incubator was built around Qiang Li, an entrepreneur and leader who delivered consultancy in strategy and organizational development to clients. He invested in his own formal education (including a PhD in incubator business models) and embedded a culture of learning within the incubator organization as it grew based on its consultancy and investment in both small and large enterprises that required turnaround.

According to the *II literature*, learning capability is also vitally important for IIs. They operate in unpredictable technology markets ([Stewart and Hyysalo, 2008](#)), deal with evolving and complex grand challenges ([Gliedt et al., 2018](#)), and need constantly to understand and diagnose needs, as well as monitor and evaluate outcomes ([Kilelu et al., 2014](#)). [Stewart and Hyysalo \(2008\)](#) note how existing IIs may risk losing relevance – they may not be suitable for new technological domains or emerging practices. This puts a clear spotlight on why IIs need to learn to stay current. Others argue how IIs operate within the “unknown”, and how they identify new actors and actor networks as technologies and needs change and evolve ([Agogu e et al., 2017](#)). One of the key roles of IIs is to support learning in client organizations ([Bessant and Rush, 1995](#)), mainly through stimulation of knowledge transfer across disparate organizations ([Abbate et al., 2013](#)), including through university-industry linkages ([Rossi et al., 2022](#)). This facilitation of learning in other organizations is not possible unless the II itself has a learning orientation which allows it to maintain its knowledge base. II scholars describe the range of roles that IIs perform to all be knowledge intensive and underpinned by an ability to learn ([Abbate et al., 2013](#); [Howells, 2006](#)). The agricultural development project described in [Kilelu et al. \(2014\)](#) illustrates dynamic learning within a Commercial Village (CV) model deployed to support farmers in Kenya. The project established and trained up multiple CV facilitators as part of a continuous learning process that enabled innovation services to be matched with specific demands.

Given these similarities between the consultancy literature and the II literature on the theme of learning, we hypothesize.

**H3.** Performance of private-sector consultants as innovation intermediaries will be positively associated with their ability to learn.

#### 2.4. *Contrasting technology consultants and management consultants*

While these areas of commonality between the consultancy and II literatures are useful for understanding how consultants perform as IIs, we also consider the contrasting nature of sub-groups within consultancy. These sub-groups are defined by distinctive identity, functional expertise, and skillsets. Such differences are informed by the distinction made in the knowledge intensive business services (KIBS) literature between technology-oriented and traditional professional services ([Miles et al., 1995](#); [Freel, 2006](#)). Technology-oriented KIBS (t-KIBS; [Freel, 2006](#); [Rodriguez et al., 2017](#)) relate specifically to “production and transfer of knowledge about new technology” ([Miles et al., 1995](#), p. 27). A t-KIBS focusses on the search, development, and implementation of new technologies for clients, and involves activities such as engineering, IT-services, and R&D consulting ([Rodriguez et al., 2017](#)). Traditional professional services (referred to as p-KIBS; [Freel, 2006](#); [Rodriguez et al., 2017](#)) help clients negotiate complex systems, including social, organizational, business, and market challenges, and often include technological and digital solutions as part of a broader strategy to deal with these challenges. This includes management consultants that help clients deal with the organizational changes associated with digital transformation ([Tabrizi et al., 2019](#)). The literature stresses how these two categories differ in how they organize innovative

processes and service provision ([Doloreux et al., 2019](#)). [Rodriguez et al. \(2017\)](#) find that t-KIBS rely more on internal information in developing new-to-market innovations, while p-KIBS rely more on market information to develop new-to-firm innovations. Research also finds areas of similarity between t-KIBS and p-KIBS, such as university cooperation and strategic choices with respect to innovation and exporting ([Fernandes and Ferreira, 2013](#); [Doloreux et al., 2019](#)).

Differences between consultancy sub-groups are also reinforced in the PSF literature. [Von Nordenflycht \(2010\)](#) takes a broad perspective across PSFs. His analysis shows distinctive characteristics in terms of knowledge intensity, capital intensity and professionalized workforces and how these differ across four classes (technology developers, neo-PSFs – including consultancy, professional campuses, and classic – or regulated – PSFs). Similarly, [Malhotra and Morris \(2009\)](#) note important differences within PSFs in terms of how they manage knowledge, how they are controlled and the nature of their client relationships. Both [Von Nordenflycht \(2010\)](#) and [Malhotra and Morris \(2009\)](#) treat just one category of consultancy firms. Similarly, in the II literature, [Bessant and Rush \(1995\)](#), use the term ‘consultancy’ throughout without distinguishing between different types of consultancy. While they refer to the different roles that consultants may perform, they do not fundamentally distinguish between different types of consultant. Our interest is more fine-grained than this.

The distinction between management and technology consultants allows stylized exploration of how consultancy type matters in value creation for consultants as IIs. This distinction follows seminal work by [Christensen et al. \(2013\)](#) who noted three distinct models for innovation intermediation by consultants. These are “solution shop” – high-cost services based on consultants’ judgement, “value-added process business” – addressing defined scope problems with repeatable processes, and “facilitated network” – to exchange products and services with clients. It also builds on the established literature on practice area emergence in large consultancy firms ([Anand et al., 2007](#); [Gardner et al., 2008](#)). This literature shows how distinct practice areas have emerged within the broader consultancy industry to address different types of problems and client issues. Consultancy firms have increasingly bundled their activities into discrete organizational units – called practice areas – each having its own purpose, legitimacy, human capital, and way of working. This is perhaps most clearly seen in the new generation of digital transformation practice areas that have emerged in consultancy firms alongside the more traditional management consultancy ones (such as strategy consultancy).

Scholars have contrasted technology and management consultants, albeit not through an II lens. [Kirk and Vasconcelos \(2003\)](#) note that technology consultants tend to talk about the problem from the perspective of the technical expert. They focus on the problem definition, using their previous experiences and specific knowledge regarding the problem. Management consultants describe an engagement in process terms: who are the important stakeholders, who are the sponsors, what is the readiness for change. They attempt to define the context and the boundaries of the problem. [Kirk and Vasconcelos \(2003\)](#) conclude that technology consultants focus on content, while management consultants focus on the client. Similarly, [Fincham \(2006\)](#) compares IT consultancy with management consultancy. He notes that the skills of IT consultants are underpinned by solid competencies and a body of theoretical knowledge, whereas management consultants work from a ‘weak knowledge’ base ([Alvesson, 1993](#)) which they must legitimize towards their clients.

Key differences between technology and management consultants assuming an II role in [Table 1](#). Technology consultants are more likely to have training and knowledge in the latest digital technologies and provide value through advising on, building, and testing specific technological solutions for clients. Their principal contacts in the client organization will be other technologists and users, while they are also connected with diverse technology vendors internationally. They are more likely to have STEM training as opposed to holding MBAs, and any

**Table 1**  
Differences between technology and management consultants in an innovation intermediary role.

	Technology consultants	Management consultants
Value of II role to clients	Innovation and technology solution search to fill gaps for clients; Specifying, building and testing specific solutions	Building broader strategies and assisting with organizational development (including HR)
Principal contacts inside client organization	Technologists/CTOs	Board level directors/senior business unit managers
Relevant contacts outside client organization	Diverse technology vendor and R&D networks internationally	Thought leaders in strategy, innovation and organizational development (including HR)
University and higher education links	University R&D links, engineering, and computer science departments	Business and management schools; economics departments
Post-graduate training	More likely to have STEM training	More likely to hold MBAs
Professional certification	More likely	Less likely
Reflective practice	Evolving technology landscape	Latest management fads
Technological specialization	More likely	Less likely
Explaining technology in detail	More able	Less able

higher education links will more likely be with university R&D, engineering, and computer science departments. Their reflective practice will center on the evolving technology landscape as opposed to the latest management fads and they are more likely to specialize in specific technologies. Management consultants are more likely to interact with a broad base of board and senior managers within the client organization, to be engaged with sources of thought leadership, and have links with higher education establishments at business and management schools, and economics departments. They will focus on strategic and organizational developmental aspects of digital transformation, including HR strategy (Tabrizi et al., 2019). Their post-graduate training is more likely to be MBA based and they are less likely to be specialists in any one specific technological area.

These differences are likely to matter to how organizational variables such as client focus (H1), innovativeness (H2) and learning (H3) influence performance as an II. As noted above, IIs perform based on their possession of knowledge (Bessant and Rush, 1995; De Silva et al., 2018; Howells, 2006), as well as their networking capabilities (Janssen et al., 2014; van Leusen et al., 2016; Wu et al., 2009). Firstly, the nature of knowledge differs between the two types of consultants. For technology consultants, knowledge is more specific and technologically embedded. To perform, organizational variables that both reinforce, develop, and harness this specific knowledge effectively will be more pertinent. For managements consultants, knowledge is more generalized and less technologically embedded. In support of this, Rodriguez et al. (2017) reveal differences between t-KIBS and p-KIBS in terms of knowledge sourcing for innovation, the former having a range of sources related to new-to-market innovation and the latter having only a positive link between general sources and new-to-market innovation. Secondly, the nature of networks – both within the client organization and with other external actors – differs between the two types of consultants. For technology consultants, networks are technologically specialized (an example would be the global community of developers using .NET). Performance will be determined by organizational factors that reinforce, develop and harness technologically specialized networks. For management consultants, networks are independent from any single technology (an example would be a community of business leaders involving a national chamber of commerce and institute of directors). Because of

these differences in knowledge and the nature of networks that are central to the performance of IIs, we postulate.

**H4.** There will be differences between technology and management consultants in terms of how client focus, innovativeness and learning influence their performance.

### 3. Research method

#### 3.1. Sample

The data gathered for this research is part of a larger project where we focus on practices areas of professional services firms. PSFs are organized into discrete organizational units – called practice areas - each having its own purpose, legitimacy, human capital, and way of working. We targeted the directors and managers of these practice areas. Since this is a target population within organizations, there is no sampling frame to draw from. We used a purposive sampling approach for collecting data through institutional and personal networks, which has been shown to work well in such ‘hidden’ populations (Salganik and Heckathorn, 2004). We approached potential respondents through alumni lists from two global top 100 international business schools with established MBA programs, through networks of current executive students, and through our own business and professional networks, including by referral and through executives (Berg, 1988). We asked respondents to provide us with their job title, and the majority provided titles of Director, Partner, Senior Manager, Principal Consultant or Senior Consultant. Furthermore, over half of respondents voluntarily provided their email addresses in their responses, giving us additional confidence in the respondent quality. We selected two partitions: Technology consultants (n = 57) and Management consultants (n = 65).

#### 3.2. Operationalization

We measured performance using items addressing the current performance on market share, growth, customer satisfaction, and reputation (e.g., Morgan et al., 2009), and on the performance relative to comparable practices and expectations (e.g., Chandler and Hanks, 1993). We measured client focus by asking for the intensity of customer contact, and for the extent to which adjustments are made in the client relationship when circumstances require (Aulakh et al., 1996). Innovativeness is measured by items adapted from Capon et al. (1992), Hagedoorn and Cloudt (2003), and Miles (2006) with items such as the practice being first to market and being at the cutting edge of technology. Finally, learning is measured by six items from the team learning behaviour scale of Edmondson (1999).

To test for robustness, we ran additional tests using two measures relating to the role clients play on influencing the performance of IIs. The first of these relates to transparency. Transparency in collaborative networks is shown to be beneficial for trust and network stability, allowing for open knowledge transformation processes (Mirkovski et al., 2015). It helps attract and retain competent members in innovation networks (Lauritzen, 2017). We measured the transparency of the client relationship with two items based on Homburg and Stebel (2009). The second client variable is an indicator for the number of clients serviced by the practice. While a higher client base can be associated with greater administrative complexity, it is also associated with higher earnings and impact. Answer options were (1) Less than 5, (2) 5-9, (3) 10-24, (4) 25-100, (5) More than 100. We tested to see whether the coefficients for client focus, learning and innovation were robust after accounting for these client variables. As an exploratory extension we also examined twoway plots for additional constructs that are central to the II function and that have the potential to vary between consultant types (reported below). Survey items are listed in Table 2.

**Table 2**  
Scale items and standardized loadings (n = 122).

Item	Performance	Client focus	Innovativeness	Learning	Transparency
We have increased market share in the last 3 years	<b>0.717</b>	0.030	0.304	0.352	0.115
This practice has been able to grow in the last 3 years	<b>0.690</b>	-0.001	0.239	0.306	0.106
We achieve higher customer satisfaction ratings compared to other practices in this company	<b>0.663</b>	0.323	0.224	0.222	0.299
We have a reputation in this company as a high-performing practice area	<b>0.784</b>	0.356	0.292	0.378	0.276
How would you assess this practice's overall performance over the past three years relative to comparable practices of competing organizations	<b>0.747</b>	0.154	0.333	0.377	0.109
How would you assess this practice's overall performance over the past three years relative to the average performance of your organization	<b>0.816</b>	0.189	0.283	0.358	0.279
How would you assess this practice's overall performance over the past three years relative to your own expectations	<b>0.754</b>	0.153	0.342	0.446	0.213
There is a high degree of face to face contact with clients	0.198	<b>0.735</b>	0.006	0.086	0.307
We encourage our practice members to be physically co-located with clients during projects	0.183	<b>0.747</b>	0.047	0.058	0.325
In client relationships, our practice and our clients expect to be able to make adjustments in the ongoing relationship to cope with changing circumstances	0.155	<b>0.610</b>	-0.049	0.041	0.195
Flexibility in response to requests for changes is a strong characteristic of client relationships in this practice	0.100	<b>0.531</b>	-0.028	-0.017	0.185
Whenever some unexpected situation arises, we would rather work out a new deal with our client than hold each other to original terms	0.119	<b>0.481</b>	0.058	0.115	0.134
Our practice is often first-to-market with new products and services	0.276	0.023	<b>0.794</b>	0.472	0.093
Our practice is often at the cutting edge of technology	0.242	-0.020	<b>0.733</b>	0.306	0.055
We develop plans for products and services which span their expected life cycles	0.369	0.030	<b>0.773</b>	0.487	0.072
New ideas are always being tried out here	0.358	0.044	<b>0.782</b>	0.486	0.103
A discussion about the latest scientific inventions would be common here	0.135	-0.049	<b>0.624</b>	0.270	0.016
We regularly take time to figure out ways to improve our practice's work processes	0.338	-0.050	0.420	<b>0.719</b>	0.079
Practice members go out and get all the information they possibly can from others - such as customers, or other parts of the organization	0.095	0.160	-0.002	<b>0.342</b>	0.173
This practice frequently seeks new information that leads us to make important changes	0.339	0.154	0.565	<b>0.790</b>	0.223
In this practice, someone always makes sure that we stop to reflect on the practice's work process	0.339	0.050	0.294	<b>0.647</b>	0.183
People in this practice often speak up to test assumptions about issues under discussion	0.456	0.092	0.427	<b>0.800</b>	0.162
We invite people from outside the practice to present information or have discussions with us	0.215	0.080	0.293	<b>0.611</b>	0.042
During engagements, the client can easily verify whether we are performing well	0.238	0.435	0.041	0.225	<b>0.848</b>
Clients can easily assess the required level of inputs/costs to generate the services provided by this practice	0.234	0.203	0.127	0.123	<b>0.843</b>
Cronbach's alpha	0.863	0.627	0.801	0.751	0.601

**Table 3**  
Descriptive statistics.

	Full sample		Technology		Management		p ANOVA
	Mean	Std dev	Mean	Std dev	Mean	Std dev	
Performance	5.245	1.039	5.216	1.016	5.270	1.066	0.773
Client focus	5.907	0.710	5.832	0.717	5.972	0.703	0.276
Innovativeness	4.797	1.120	5.137	1.038	4.498	1.258	0.003
Learning	5.040	0.910	5.012	0.825	5.064	0.984	0.752
Transparency	4.918	1.123	4.684	1.183	5.123	1.035	0.031
Clients	3.588	1.245	3.536	1.361	3.635	1.140	0.500
N	122		57		65		

Notes: N = 119 for full sample, 56 for Technology, 63 for Management; Final column presents the p value of an ANOVA for the difference between Technology and Management consultants.

**Table 4**  
Correlations of latent variables for full sample (n = 122, correlations with Clients N = 119), square root of AVE in parentheses on diagonal.

	Performance	Client focus	Innovativeness	Learning	Transparency	Clients
Performance	(0.740)					
Client focus	0.250	(0.630)				
Innovativeness	0.392	0.019	(0.744)			
Learning	0.477	0.102	0.567	(0.669)		
Transparency	0.279	0.379	0.099	0.206	(0.846)	
Clients	0.319	-0.036	0.022	0.071	0.039	(N/A)

3.3. Analytical procedure and measurement model

Because of the small sample size, we use a Partial Least Squares (PLS) path analysis to test our hypotheses and explore differences in the path model between management consultants and technology consultants (cf. Bedford et al., 2022). Structural equation modelling has been used previously to examine job and organizational factors relating to the performance of technology consultants (e.g., Wallgren and Hanse, 2007). We use the *plssem* module available in Stata 17.0 (Venturini and Mehmetoglu, 2019). PLS simultaneously estimates the measurement model and the structural model. Table 2 evaluates the quality of the measurement model, which is adequate: the highest cross loading for each item is on its expected factor, even while some of the cross loadings are below 0.5. The Cronbach alphas are acceptable to good, with the alpha for client focus somewhat low at 0.627 and the remaining alphas

**Table 5**  
PLS results for main model, two-tailed significances based on bootstrapped standard errors with 1000 replications.

	Full sample		Technology		Management	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
Client focus - > Performance	0.209	0.053	0.071	0.698	0.343	0.019
Innovativeness - > Performance	0.193	0.019	0.321	0.010	0.126	0.364
Learning - > Performance	0.348	0.001	0.456	0.000	0.223	0.159
Client focus - > Innovativeness	-0.039	0.675	-0.213	0.195	-0.016	0.914
Client focus - > Learning	0.102	0.426	-0.007	0.978	0.230	0.178
Learning - > Innovativeness	0.571	0.000	0.546	0.000	0.621	0.000
Adj R <sup>2</sup> for Performance	0.276		0.435		0.228	
N	122		57		65	

well above 0.7.

4. Results

Tables 3 and 4 shows descriptives and bivariate correlations. The square root of the average variance extracted (in parentheses) is always higher than the largest correlation coefficient. Together, these results provide support for convergent and discriminant validity of our constructs. Table 3 also compares the mean for the technology and management subsamples. The mean for innovativeness is statistically higher for technology firms, but the other variables are comparable. Importantly, there is no difference on our dependent variable of performance. Thus, finding any differences in the relationship between our explanatory variables and performance is not due to performance differentials of the two subsamples.

Table 5 presents the PLS results for the full sample, and for the two subsamples of technology and management consultants. The full sample provides support for H1-H3: performance is significantly positively related to client focus, innovativeness, and learning. Furthermore, learning is positively associated with innovativeness, but client focus has no relationship with either learning or innovativeness. However, when we split the sample into technology and management consultants, we see markedly different patterns: among technology consultants, innovativeness and learning have a significant positive relationship with performance, but client focus is not significant. For management consultants, this pattern is exactly reversed: client focus is significantly positively related to performance, while innovativeness and learning no longer are significant. These patterns are shown in Figs. 1 and 2.

For robustness, we repeat our analyses including the transparency of the client relationship and the number of clients; due to missing values for these control variables, the sample size is marginally lower. As indicated, transparency in networks may support innovation through open knowledge transformation processes (Mirkovski et al., 2015). Table 6 shows that within the subsample of management consultants, transparency is positively related to performance, while there is no significant relationship with performance for technology consultants. This supports the argument that a client focus is more important for management consultants' success than for technology consultants. The size of the client base has a positive relationship for both consulting types, suggesting that both benefit from economies of scale as well as a



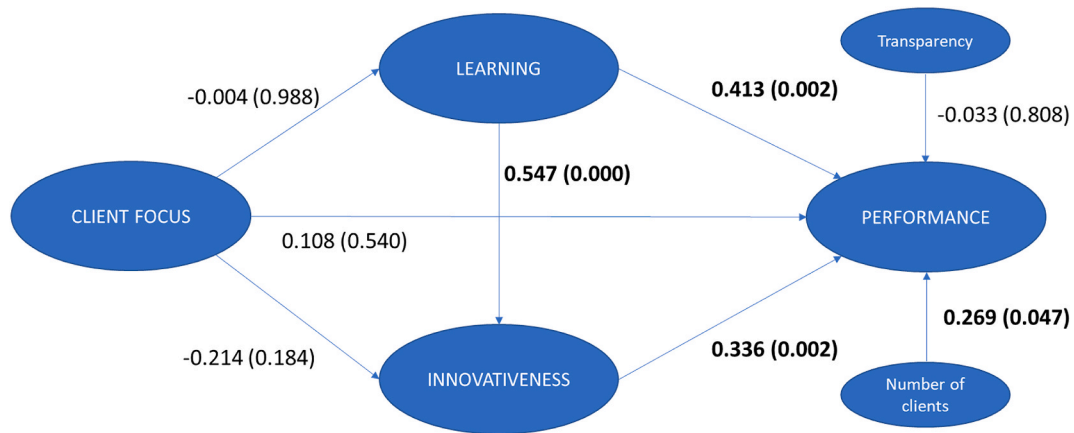


Fig. 1. Path model for technology consultants including client variables.

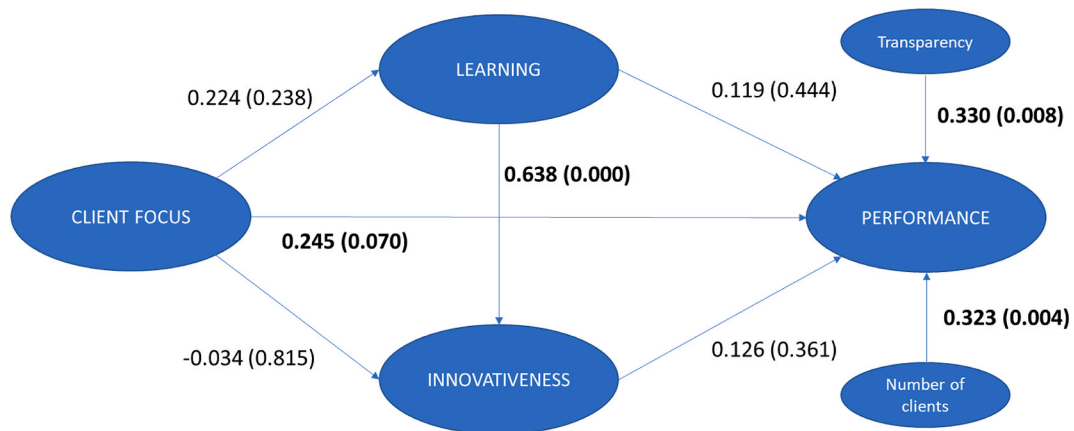


Fig. 2. Path model for management consultants including client variables.

stronger bargaining position vis-a-vis a client. Importantly, after controlling for these client characteristics, our main results remain unchanged in terms of signs and significances.

Fig. 3 shows twoway plots for both technology and management consultancy partitions for three additional single indicators for our constructs of interest that are central to the II function. Firstly, the possibility that unexpected situations occur within an II project that require adaption and that these can cause tensions between the intermediary and the client is very real (Randhawa et al., 2022). This is part of the construct of client focus. The left-hand side plot shows that management consultants are more likely to be able to adjust the terms of the deal with the client in such situations, compared with technology consultants. Secondly, the importance of undertaking discussion on the latest scientific inventions has been highlighted as a key capability for IIs, especially important given the uncertainties associated with new inventions (Lopez and Vanhaverbeke, 2009). This is part of the scale for innovativeness. The middle plot shows how technology consultants are better at transforming such discussion into higher performance, compared with management consultants. Thirdly, differences of opinion can occur in II projects, especially when there are multiple ‘opinion leaders’ involved (Bessant and Rush, 1995). We did not include this item in the learning scale, but see it as an extension of the learning ability. The right-hand side plot shows that technology consultants are more able to resolve these differences privately – an indication of their individual technological specialization – while for management consultants this is counter-productive. These differences broadly reinforce the main findings in Figs. 1 and 2 in terms of the key differences between technology and management consultants in an II role.

## 5. Discussion

The point of departure for the present study was the observation that, while private-sector consultancy firms have had a pivotal role to play in innovation intermediation in the modern era of digital transformation (Christensen et al., 2013), the professional services industry at large is highly diverse with much variation in the skills and expertise offered to clients (Malhotra and Morris, 2009; Von Nordenflycht, 2010, Williams and van Triest, 2021). These distinctions have been captured by a small and growing literature in the KIBS field, relating to the differences in function and performance between t-KIBS and p-KIBS firms (Doloreux et al., 2019; Freel, 2006; Miles et al., 1995). Much of the II literature has focused on public sector, think tank and third sector organizations (Bakici et al., 2013; Rossi et al., 2022; Williamson, 2014), and has not delved into the question of diversity within the private sector consultancy space as it pertains to the types of consultants that regularly offer innovation intermediation amidst digital transformation of both client organizations and whole sectors. Our approach has been to examine the correlates of performance of different types of consultants that have been shown to be instrumental in innovation intermediation amidst digital transformation (Krüger and Teuteberg, 2016; Tabrizi et al., 2019; Ulas, 2019), and to examine three factors that both II literature and consultancy literature have shown to impact performance. This approach has not been taken in the II literature nor the consultancy literature. By comparing how these three factors are associated with performance in these two types of IIs we shed new light on the role of the private-sector consultancy industry in a new way. Studies of the function of innovation intermediation have not sufficiently catered for II diversity

**Table 6**

PLS results including client-oriented control variables, two-tailed significances based on bootstrapped standard errors with 1000 replications.

	Full sample		Technology		Management	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
Client focus - > Performance	0.165	0.068	0.108	0.540	0.245	0.070
Innovativeness - > Performance	0.216	0.009	0.336	0.002	0.126	0.361
Learning - > Performance	0.282	0.010	0.413	0.002	0.119	0.444
Client focus - > Innovativeness	-0.046	0.599	-0.214	0.184	-0.034	0.815
Client focus - > Learning	0.097	0.483	-0.004	0.988	0.224	0.238
Learning - > Innovativeness	0.583	0.000	0.547	0.000	0.638	0.000
Transparency - > Performance	0.121	0.177	-0.033	0.808	0.330	0.008
Number of clients -> Performance	0.295	0.000	0.269	0.047	0.323	0.004
Adj R <sup>2</sup> for Performance	0.357		0.482		0.389	
N	119		56		63	

to date, despite the calls to do so from the KIBS field (Freel, 2006; Rogriguez et al., 2017). While some have indeed examined determinants of II performance (Colombo et al., 2015; Janssen et al., 2014; Lauritzen, 2017; Lopez and Vanhaverbeke, 2009), IIs are often treated as a homogeneous group within individual studies. Even Bessant and Rush’s important (1995) work treats consultants as a rather homogeneous whole (i.e., ‘consultants’).

Our work is important because it challenges this implicit assumption of homogeneity of private sector consultants that regularly act as IIs within digitalization projects for clients. We build on scant research in consultancy that does show these differences at play (Fincham, 2006; Kirk and Vasconcelos, 2003) and our findings lead to new implications for both II research and practice. At the heart of these implications is the insight that there are indeed important differences in how client focus, learning, and innovativeness are associated with performance between pure-play technology consultants and pure-play management consultants. These differences speak to the fundamental nature of the value created by the consultant in its engagement with a client organization within an II capacity. For technology consultants, specialist, relevant and up-to-date knowledge matters. For this reason, we see the need for a technological reflective capability and a focus on technical substance and content. Technology consultants will create value as IIs by guiding

clients based on what clients need to hear given their idiosyncratic circumstances and challenges. The technological embedment and specific nature of knowledge required within a rapidly evolving world of digitalization mean that the organizational factors that matter for success will be ones that reinforce this specific knowledge. We see this in the results for innovativeness and learning (Fig. 1), both of which have been shown to matter to organizations grappling with digital transformation. For instance, Su et al. (2022) identify a positive correlation (r = 0.13, p<0.05) between innovation capability and digital transformation in a sample of 1876 firms. Vey et al. (2017) see a culture of learning as playing a key role in overcoming problems caused by companies and individuals not recognizing the impact and opportunity of digitalization. These factors are entirely consistent with work on the role of technology consultants in digitalization (Krüger and Teuteberg, 2016; Ulas, 2019). Management consultants, on the other hand, perform based on a strong and trusting client relationship capability (Maister et al., 2021) and a focus on their client’s strategic issues and organizational development (Kirk and Vasconcelos, 2003). While they may have weaker knowledge from a technical standpoint (Alvesson, 1993), they are able to understand overall strategic imperatives, identifying organizational, HR and strategic issues that need to be resolved before a digital transformation can even go ahead (Correani et al., 2020). This is consistent with our finding that management consultants report higher performance when they have a higher client focus and is aligned with Tabrizi et al.’s (2019) insight that digital transformation is ‘not about technology’, but a range of organizational development issues that management consultants are typically well suited for.

5.1. Contributions to II research

Overall, the findings provide three sets of implications for researchers in the field of innovation intermediation. Firstly, the II literature that looks at performance outcomes from innovation intermediation through a client lens (Colombo et al., 2015; Janssen et al., 2014; Lauritzen, 2017; Lopez and Vanhaverbeke, 2009) can use our findings to delve more deeply into subtle but important differences between different types of advisors in terms of how those advisors perform. The internal organizational factors that matter to the performance of the II vary according to the type of II, and whether the II is pitching its services at a more strategic, organizational development level, or a more technologically specific level. The fact that we find a positive relation between content focus and performance for technology consultants is important. A culture of innovativeness and capabilities to learn as a team are important in a rapidly evolving era of digital disruption. For IIs such as management consultants that pitch more strategically and holistically, their relational capability with clients matters for their performance. The latter is supported by the positive relationship between client focus and performance for management consultants. This contributes to II literature as differences between different types of digital advisors that operate at different levels have not been included in prior II research. In this sense, II research can be

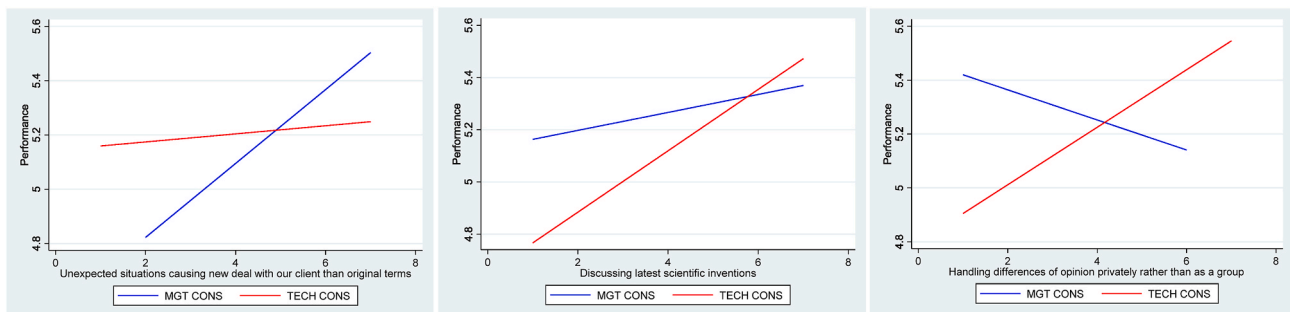


Fig. 3. Differences between technology and management consultants: selected indicators.

enriched by the consultancy literature (e.g., Kirk and Vasconcelos, 2003; Fincham, 2006) as well as the KIBS literature (Doloreux et al., 2019; Freel, 2006; Miles et al., 1995) to challenge how we treat consultants as IIs.

A second area of contribution lies in our path modelling for the three organizational factors under consideration (client focus, innovativeness, and learning). All three of these factors see resonance between II and consultancy literatures, despite these literatures growing up rather separately (there are exceptions, such as Bessant and Rush, 1995). The path modeling approach is useful for taking a holistic view of a set of variables. While we did not hypothesize for the effects of client focus on innovativeness and learning, we cannot reasonably expect there would be no relationship based on the social integration and client interaction lens (van Leusen et al., 2016; Wu et al., 2009). A client focus can help stimulate new learning through knowledge flow and tacit knowledge exchange with a client, especially a challenging client that ‘pushes’ a consultancy firm to perform. Similarly, a client focus can stimulate innovation through social capital ties and awareness of opportunities for new bids to clients (Williams, 2019). However, in neither of the models do we see significant effects for client focus on innovativeness and learning. Indeed, for technology consultants we see a negative coefficient for the link between client focus and innovativeness. While this is suggestive of a danger of blinkered attention to specific clients at the expense of the evolving digital landscape of suppliers, the more important point is that path modeling allows a more nuanced comparison between different types of IIs amongst a set of organizational variables that are inherently complex. Taking a more systemic view of these variables can lead to new insights in II research.

A third area of contribution that has implications for II research relates to how the II field can benefit from the PSF field. Our analysis shows key aspects of II literature and PSF literature that have much in common when we consider organizational factors that influence performance of the ‘consultant as II’. We see this in terms of client focus (e.g., van Leusen et al., 2016 [consultancy] vs. Dalziel Dalziel (2010) [II literature]), innovativeness (e.g., Williams (2019) [consultancy] vs. Williamson (2014) [II literature]), and learning (e.g., Christensen and Klyver (2006) [consultancy] and Abbate et al. (2013) [II literature]). These two literatures have grown up rather separately, but we would argue there is much to be gained in future work by bringing them closer together explicitly. One way of doing this is to examine how they each provide theoretical and empirical support for key relationships between constructs of interest, as we have done in the present study. We would argue that the II literature has not previously unpacked the important differences between technology consultants and management consultants acting as IIs in the private sector. The PSF field has been more useful in this respect as it highlights important differences between types of consultants based on the nature of knowledge and the nature of networks. II scholars can use insights from the PSF field to understand how different types of consultant perform as IIs.

It is also worth reflecting on the results for transparency – one of our two client variables used in the robustness tests. We note differences in the transparency – performance relationship between the two partitions, this being positive for management consultants and not significant for technology consultants. Opaque quality – the difficulty evaluating the quality of an expert’s knowledge – is an issue in knowledge intensive professional services (Von Nordenflycht, 2010). An important role of the II is to bridge opposing interests and paradoxes in innovation networks (Lauritzen, 2017). Having transparency with an II will allow a client organization to understand progress during an engagement, including how these tensions are being resolved by the II (Lauritzen, 2017). Our finding with respect to transparency (the differences in Table 3, as well as the path coefficients in Table 6) would suggest that management consultants have more of a role to play in these network management processes that technology consultants do, and that clients will want to have visibility on them and understand them. The result also suggests that when p-KIBS-type IIs seek knowledge for innovation from general

sources – such as trade fairs and industry associations (Rodriguez et al., 2017) – offering transparency to clients will allow the II to perform. In more technologically specialized areas reducing opaqueness is not necessarily beneficial for performance.

The findings can also be contextualized against the dichotomy noted in the innovation literature between informal ‘doing-using-interacting’ (DUI) and deliberate ‘science-technology-innovation’ (STI) modes of open innovation (Alhusen et al., 2021; Hervás-Oliver et al., 2021). DUI is informal by nature, tacit-knowledge oriented, and emphasizes experiential learning. STI is formal, codified-knowledge oriented, and involves R&D functions searching for and exploiting new scientific principles (Alhusen et al., 2021). The type of digital transformation discussed in the present study aligns with the DUI end of the spectrum rather than formalized STI. Scholars exploring the DUI – STI dichotomy will need to pay more attention to the type of IIs that serve clients and what they ‘do’ as intermediaries. Seen through a DUI lens, they ‘interact’ with many external agents on behalf of clients so that clients can ‘use’ newly created knowledge (Alhusen et al., 2021). Our research provides some guidance on how the ‘doing’ activity at the DUI end of the spectrum should be understood. It will vary between different types of consultants as IIs, with technology consultants performing through learning and innovation, and management consultants performing through client focus and transparency. Our results align with Alhusen et al. (2021, p. 11) model of the DUI mode, with technology consultants being more relevant for learning-by-doing (internally within the II) and learning-by-interacting (with other technology partners), and management consultants having more prominence in learning-by-using (i.e., the interface with clients).

## 5.2. Implications for II management and policy

Several implications for practice emerge from our study. First and foremost, when private sector consultants find themselves in an innovation intermediation role, they need to be self-aware in terms of the organizational variables that can influence their performance. Our findings suggest this will be influenced ultimately by the type of consultancy service they offer, for instance technology consultancy versus management consultancy. Our findings can help such individuals and units because by knowing what type of consultancy is being offered to a client in an II and digital advisory capacity, effort can be made to strengthen and harness certain aspects of the organizational system surrounding the client project. Technology consultants should be wary about devoting too much time and financial capital on client focus, whereas learning and innovativeness geared towards content and substance will be more important. This does not mean that client interaction and trustworthy relationships with clients are not important. They will still be necessary as with any professional services arrangement. What it means is that the relative emphasis on organizational variables that will strengthen specific knowledge and technology networks will be more important. The reverse is the case for management consultants, who should be wary about investing too much time on innovativeness and learning, and instead put the emphasis more on the client, their broader strategic and organizational issues.

A second implication for II practice relates to the types of organizational policy pursued by large international players with multiple practice areas compared to public institutions or much smaller niche players. Our sample consisted of larger, international players, and we concentrated on the practice as the unit of analysis as this defines identity, knowledge, and skills in such firms (Anand et al., 2007; Gardner et al., 2008). If we accept – as we see in the current study – that the relationship between client focus, learning and innovativeness on the one hand, and performance on the other hand will differ across types of consultancy units by virtue of their identity, knowledge and capabilities, the same is likely to hold for even more distinct forms of IIs, such as smaller niche players like NESTA (Williamson, 2014) and public sector ones common in UK and France (Rossi et al., 2022). Managers in markedly different types of II can execute the type of survey we did in

the current analysis to audit and understand how key organizational variables are pertinent to their specific II type and how these variables interact. This exercise can provide insight and guidance on where to place relative emphasis in terms of time and financial capital when developing the organization and in execution of digital transformation projects for clients.

Returning to the types of large, international players we examined in the current study, a third normative implication concerns managers of discrete practice areas in such firms. Some practices are directly engaged in digital transformation assignments in all their assignments by virtue of their identity and mandate (such as McKinsey Digital or KPMG Technology Consulting). For others, this level of engagement may vary. But given the fact that digitalization and transformation of client organizations based on digital technology has become ubiquitous, even the more traditional practice areas can learn from working on client projects with those mandated towards digital transformation. This learning process is often formally orchestrated in such firms, and we will not make recommendations in areas that such firms are already highly competent in. However, our findings do underscore the importance of joint work between practice areas, especially as it is recognized how organizational development needs to go together with systems implementation in order to avoid digital transformation risk (Tabrizi et al., 2019). Our findings dovetail with this recognition in the literature and underscore how important it is to develop cross-practice coordinative capacity for II projects that account for practice differences and allow practices to be continually developed.

### 5.3. Limitations and future avenues for II research

Despite these contributions to II research and implications for the practice of innovation intermediation, there are several limitations in the present study. These can be addressed in future work using methodological choices and carefully constructed data sets with access to primary data amongst appropriate actors. Firstly, we concentrated our attention on three main internal organizational factors to explain II performance, showing resonance between the consultancy and II literatures. There are likely to be additional factors, and subtle deviations from the operationalizations used here on the existing ones, that could be examined in future work. Secondly, to illustrate the point about markedly different types of private-sector consultants that regularly perform as IIs, we chose to contrast technology and management consultants. This helped us in developing our theoretical framework, but it limits the representativeness of our sample. Other types of consultants, including HR, operations, accounting and finance, and even CSR and social impact, might offer innovation intermediation on the basis of digital technologies for clients. While we think this will occur less often compared to the choices we made, it is still plausible. It is also possible that other types of consultants, including those operating on an in-house basis or in large public institutions, will see different profiles than the ones we find. Further work can untangle this in the future. Thirdly, we did not use externally audited or secondary sources for our dependent variable and opted to use a self-reported measure. While this comes with known limitations, it must be pointed out that no reliable and consistent objective performance data at the level of PSF practice areas exists, while previous research suggests that subjective self-reported measures are reasonable gauges of organizational performance (Singh et al., 2016). Furthermore, as noted in the methodology section, there is no difference in the average performance level reported by technology and management consultants, which suggests that there is no structural difference in how these groups assess their performance. Nevertheless, future work can consider how to avoid common method bias in this type of study. Fourthly, we do not have information on client-specific characteristics that may affect II effectiveness at the level of individual assignments, such as client size, age, or pre-existing capabilities. These client characteristics were not in our original research design. Finally, we used a cross-sectional approach that was not able to cater for

temporal or learning effects. Case based or ethnographic approaches can be used in the future to example the process of innovation intermediation involving different types of private sector consultancy firms, and to allow comparison between temporal brackets over time.

In addition to addressing these types of limitations, future work could address new questions raised because of our study. These include (1) how do different types of consultants (technology and management consultants) work together and with other actors in innovation intermediation? (2) how do the recipients of innovation intermediation view the contribution made by different types of private sector consultants to their digital transformation efforts? (3) how are the imperatives for client focus and content focus reconciled in complex innovation intermediation involving private sector consultants? We hope these and other questions can be investigated in future research and that this will further enhance our understanding of performance in professional services that regularly conduct innovation intermediation in an era of unprecedented digital transformation.

### Data availability

The data that has been used is confidential.

### References

- Abbate, T., Coppolino, R., Schiavone, F., 2013. Linking entities in knowledge transfer: the innovation intermediaries. *J. Knowl. Econ.* 4, 233–243.
- Agogué, M., Berthet, E., Fredberg, T., Le Masson, P., Segrestin, B., Stoetzel, M., et al., 2017. Explicating the role of innovation intermediaries in the “unknown”: a contingency approach. *Journal of Strategy and Management* 10 (1), 19–39.
- Alhusen, H., Bennat, T., Bizer, K., Cantner, U., Horstmann, E., Kalthaus, M., Proeger, T., Sternberg, R., Töpfer, S., 2021. A new measurement conception for the ‘doing-using-interacting’ mode of innovation. *Res. Pol.* 50 (4), 104214.
- Alvesson, M., 1993. Organizations as rhetoric: knowledge intensive firms and the struggle with ambiguity. *J. Manag. Stud.* 30 (5), 997–1015.
- Anand, N., Gardner, H.K., Morris, T., 2007. Knowledge-based innovation: emergence and embedding of new practice areas in management consulting firms. *Acad. Manag. J.* 50 (2), 406–428.
- Aulakh, P.S., Kotabe, M., Sahay, A., 1996. Trust and performance in cross-border marketing partnerships: A behavioral approach. *J. Int. Bus. Stud.* 27, 1005–1032.
- Bakici, T., Almirall, E., Wareham, J., 2013. The role of public open innovation intermediaries in local government and the public sector. *Technol. Anal. Strat. Manag.* 25 (3), 311–327.
- Bedford, D., Bisbe, J., Sweeney, B., 2022. Enhancing external knowledge search: the influence of performance measurement system design on the absorptive capacity of top management teams. *Technovation* 118, 102586.
- Berg, S., 1988. Snowball sampling. In: Kotz, S., Johnson, N.L. (Eds.), *Encyclopaedia of statistical sciences* 8, 528–532.
- Bessant, J., Rush, H., 1995. Building bridges for innovation: the role of consultants in technology transfer. *Res. Pol.* 24 (1), 97–114.
- Capon, N., Farley, J.U., Lehmann, D.R., Hulbert, J.M., 1992. Profiles of product innovators among large US manufacturers. *Manag. Sci.* 38 (2), 157–169.
- Chandler, G.N., Hanks, S.H., 1993. Measuring the performance of emerging businesses: a validation study. *J. Bus. Ventur.* 8 (5), 391–408.
- Christensen, C.M., Wang, D., Van Bever, D., 2013. Consulting on the cusp of disruption. *Harv. Bus. Rev.* 91 (10), 106–114.
- Christensen, P.R., Klyver, K., 2006. Management consultancy in small firms: how does interaction work? *J. Small Bus. Enterprise Dev.* 13 (3), 299–313.
- Colombo, G., Dell’Era, C., Frattini, F., 2015. Exploring the contribution of innovation intermediaries to the new product development (NPD) process: a typology and an empirical study. *R D Manag.* 45 (2), 126–146.
- Correani, A., De Massis, A., Frattini, F., Petruzzelli, A.M., Natalicchio, A., 2020. Implementing a digital strategy: learning from the experience of three digital transformation projects. *Calif. Manag. Rev.* 62 (4), 37–56.
- Damanpour, F., 1991. Organizational innovation: a meta-analysis of effects of determinants and moderators. *Acad. Manag. J.* 34 (3), 555–590.
- De Silva, M., Howells, J., Meyer, M., 2018. Innovation intermediaries and collaboration: Knowledge-based practices and internal value creation. *Res. Pol.* 47 (1), 70–87.
- Doloreux, D., Shearmur, R., Van Assche, A., 2019. Combined innovation and export strategies of KIBS in different regional settings. *Ind. Innovat.* 26 (6), 715–740.
- Edmondson, A., 1999. Psychological safety and learning behavior in work teams. *Adm. Sci. Q.* 44 (2), 350–383.
- Edmondson, A., Moingeon, B., 1998. From organizational learning to the learning organization. *Manag. Learn.* 29 (1), 5–20.
- Fernandes, C.I., Ferreira, J.J., 2013. Knowledge spillovers: cooperation between universities and KIBS. *R D Manag.* 43 (5), 461–472.
- Fincham, R., 2006. Knowledge work as occupational strategy: comparing IT and management consulting. *New Technol. Work. Employ.* 21 (1), 16–28.
- Fosstenlökken, S.M., Löwendahl, B.R., Revang, Ø., 2003. Knowledge development through client interaction: a comparative study. *Organ. Stud.* 24, 859–879.



- Freel, M., 2006. Patterns of technological innovation in knowledge-intensive business services. *Ind. Innovat.* 13 (3), 335–358.
- Gardner, H.K., Anand, N., Morris, T., 2008. Chartering new territory: diversification, legitimacy, and practice area creation in professional service firms. *J. Organ. Behav.* 29, 1101–1121.
- Gliedt, T., Hoicka, C.E., Jackson, N., 2018. Innovation intermediaries accelerating environmental sustainability transitions. *J. Clean. Prod.* 174, 1247–1261.
- Hagedoorn, J., Cloodt, M., 2003. Measuring innovative performance: is there an advantage in using multiple indicators? *Res. Pol.* 32 (8), 1365–1379.
- Hervás-Oliver, J.L., Parrilli, M.D., Rodríguez-Pose, A., Sempere-Ripoll, F., 2021. The drivers of SME innovation in the regions of the EU. *Res. Pol.* 50 (9), 104316.
- Hitt, M.A., Bierman, L., Shimizu, K., Kochhar, R., 2001. Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource-based perspective. *Acad. Manag. J.* 44, 13–28.
- Homburg, C., Stebel, P., 2009. Determinants of contract terms for professional services. *Manag. Account. Res.* 20 (2), 129–145.
- Hossain, M., 2012. Performance and potential of open innovation intermediaries. *Procedia-Social and Behavioral Sciences* 58, 754–764.
- Howells, J., 2006. Intermediation and the role of intermediaries in innovation. *Res. Pol.* 35 (5), 715–728.
- Janssen, W., Bouwman, H., van Buuren, R., Haaker, T., 2014. An organizational competence model for innovation intermediaries. *Eur. J. Innovat. Manag.* 17 (1), 2–24.
- Kilelu, C.W., Klerkx, L., Leeuwis, C., 2014. How dynamics of learning are linked to innovation support services: insights from a smallholder commercialization project in Kenya. *J. Agric. Educ. Ext.* 20 (2), 213–232.
- Kirk, J., Vasconcelos, A., 2003. Management consultancies and technology consultancies in a convergent market: a knowledge management perspective. *Electron. J. Knowl. Manag.* 1 (1), 33–46.
- Krüger, N., Teuteberg, F., 2016. IT consultants as change agents in digital transformation initiatives. *Proceedings of Multikonferenz Wirtschaftsinformatik (MKWI)* 1019–1030.
- Lauritzen, G.D., 2017. The role of innovation intermediaries in firm-innovation community collaboration: navigating the membership paradox. *J. Prod. Innovat. Manag.* 34 (3), 289–314.
- Lopez, H., Vanhaverbeke, W., 2009. How Innovation Intermediaries Are Shaping the Technology Market? an Analysis of Their Business Model. MPR Paper No. 20458.
- Maister, D.H., Galford, R., Green, C., 2021. *The Trusted Advisor*. Free Press.
- Malhotra, N., Morris, T., 2009. Heterogeneity in professional service firms. *J. Manag. Stud.* 46 (6), 895–922.
- Miles, I., 2006. Innovation in services. In: Fagerberg, J., Mowery, D.C. (Eds.), *The Oxford Handbook of Innovation*. Oxford University Press, Oxford, pp. 433–458.
- Miles, I., Kastrinos, N., Flanagan, K., Bilderbeek, R., Den Hertog, P., Huntink, W., Bouman, M., 1995. Knowledge-intensive business services: users, carriers and sources of innovation. In: Report to the EC-DG 13 SPRINT-EIMS.
- Mirkovski, K., Lowry, P.B., von Briel, F., Liu, L., 2015. The role of innovation intermediaries in collaborative networks of small and medium-sized enterprises. In: 19th Pacific Asia Conference on Information Systems (PACIS 2015). July, Singapore, pp. 5–9.
- Morgan, N.A., Vorhies, D.W., Mason, C.H., 2009. Market orientation, marketing capabilities, and firm performance. *Strat. Manag. J.* 30 (8), 909–920.
- Owusu-Manu, D.G., Badu, E., Holt, G.D., Edwards, D., 2015. Determinants of management innovation in the Ghanaian construction consulting sector. *Construction Economics and Building* 15 (1), 75–88.
- Randhawa, K., Wilden, R., Akaka, M.A., 2022. Innovation intermediaries as collaborators in shaping service ecosystems: the importance of dynamic capabilities. *Ind. Market. Manag.* 103, 183–197.
- Rodriguez, M., Doloreux, D., Shearmur, R., 2017. Variety in external knowledge sourcing and innovation novelty: evidence from the KIBS sector in Spain. *Technovation* 68, 35–43.
- Rossi, F., Caloffi, A., Colovic, A., Russo, M., 2022. New business models for public innovation intermediaries supporting emerging innovation systems: the case of the Internet of Things. *Technol. Forecast. Soc. Change* 175, 121357.
- Salganik, M.J., Heckathorn, D.D., 2004. Sampling and estimation in hidden populations using respondent-driven sampling. *Sociol. Methodol.* 34, 193–240.
- Shah, D., Rust, R.T., Parasuraman, A., Staelin, R., Day, G.S., 2006. The path to customer centricity. *J. Serv. Res.* 9, 113–124.
- Singh, S., Darwish, T.K., Potočník, K., 2016. Measuring organizational performance: a case for subjective measures. *Br. J. Manag.* 27 (1), 214–224.
- Stewart, J., Hyysalo, S., 2008. Intermediaries, users and social learning in technological innovation. *Int. J. Innovat. Manag.* 12 (3), 295–325.
- Su, H., Cai, F., Huang, Y., 2022. Institutional constraints and exporting of emerging-market firms: the moderating role of innovation capabilities and digital transformation. *Manag. Decis. Econ.* 1–16. <https://doi.org/10.1002/mde.3552>.
- Sundbo, J., 1997. Management of innovation in services. *Serv. Ind. J.* 17 (3), 432–455.
- Tabrizi, B., Lam, E., Girard, K., Irvin, V., 2019. Digital transformation is not about technology. *Harv. Bus. Rev.* 13 (March), 1–6.
- Taminiau, Y., Smit, W., De Lange, A., 2009. Innovation in management consulting firms through informal knowledge sharing. *J. Knowledge Management* 13, 42–55.
- Ulas, D., 2019. Digital transformation process and SMEs. *Procedia Comput. Sci.* 158, 662–671.
- van Leusen, P., Ottenbreit-Lefwich, A.T., Brush, T., 2016. Interpersonal consulting skills for instructional technology consultants: a multiple case study. *TechTrends* 60 (3), 253–259.
- Venturini, S., Mehmetoglu, M., 2019. plsem: a stata package for structural equation modeling with partial least squares. *J. Stat. Software* 88, 1–35.
- Vey, K., Fandel-Meyer, T., Zipp, J.S., Schneider, C., 2017. Learning & development in times of digital transformation: facilitating a culture of change and innovation. *Int. J. Adv. Corporate Learning* 10 (1).
- Von Nordenflycht, A., 2010. What is a professional service firm? Toward a theory and taxonomy of knowledge-intensive firms. *Acad. Manag. Rev.* 35 (1), 155–174.
- Wallgren, L.G., Hanse, J.J., 2007. Job characteristics, motivators and stress among information technology consultants: a structural equation modeling approach. *Int. J. Ind. Ergon.* 37 (1), 51–59.
- Williams, C., van Triest, S., 2021. Innovativeness in the professional services industry: a practice level analysis. *Eur. Manag. Rev.* <https://doi.org/10.1111/emre.12450>.
- Williams, C., 2019. *Management Consultancy for Innovation*. Routledge (Taylor & Francis Group).
- Williamson, B., 2014. Knowing public services: cross-sector intermediaries and algorithmic governance in public sector reform. *Publ. Pol. Adm.* 29 (4), 292–312.
- Wright, C., Sturdy, A., Wylie, N., 2012. Management innovation through standardization: consultants as standardizers of organizational practice. *Res. Pol.* 41 (3), 652–662.
- Wu, L., Lin, C.Y., Aral, S., Brynjolfsson, E., 2009. February). Value of social network—a large-scale analysis on network structure impact to financial revenue of information technology consultants. In: Winter Information Systems Conference, pp. 26–28. Salt Lake City, UT, USA, February.
- Dalziel, M. (2010, June). Why do innovation intermediaries exist. In *DRUID Summer Conference*.