

INNOVATION IN SERVICES

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EVIDENCE FROM THE UK INNOVATION RESEARCH CENTRE

Services span a diverse range of activities, including financial and business services, transport and communications, health, education, social care, retail, hotels and catering. Furthermore, manufacturing firms also engage in the provision of services.

The 'service sector', which in the UK makes up more than three quarters of output and employment, is sometimes seen as mainly involving menial tasks, but it also contains some of the most knowledge-intensive of all activities, including surgery, higher education and consulting of various forms. The same word 'service' relates to both the 'best' and 'worst' jobs in advanced, 'knowledge-driven' economies.

Given the importance of services for the future growth potential of the economy, it is vital to understand how service innovation happens. Yet until recently, research in this area has been far less developed than how to innovate physical products, production processes and the organisation of production.

A central stream of work by the UK Innovation Research Centre (UK-IRC) is responding to this need in a series of studies of innovation and performance in services. One key focus is on business services, in which researchers are collecting and analysing data on important groups of professional services providers, including design, architecture and engineering firms. Another key focus is on the relationship between service and manufacturing activities, particularly the growth of 'servitisation' strategies – in which manufacturing firms shift from 'making and selling products' to providing combinations of products and services.

FORMS OF SERVICE INNOVATION

Service innovations can involve the introduction of new or significantly changed services provided for the customer ('done for' services, which don't require their active involvement), services provided with the customer actively involved ('done with' services) or with the work effectively transferred to the customer (for example self-servicing). Service innovations are not generally organised through specific departments within a company (as product innovations are within R&D): typically, they are more distributed processes, involving staff in different functions, as well as users and complementary service providers (Tether, 2013).

For example, a grocery retailer might introduce a new service that not only delivers groceries but where they are also brought into the home and put in cupboards and fridges. Or a restaurant might offer a new service in which a chef comes to the customer's home and cooks meals there. Some degree of customer participation is required, but fundamentally these services substitute for the activities that customers would have previously done for themselves.

Other new services are done with the customer as an active participant. For example, for \$200,000 per person, Virgin Galactic will soon take people to the edge of space. The service involves two days of flight preparation, training and other activities: the customers will not be 'mere passengers'.

But most innovation in services is less radical than space travel, involving relatively minor changes to existing services. Much innovation has to do with finding ways to escape from the fundamental characteristics of services: their intangibility; their heterogeneity; their inseparability between what is provided and who is providing it; and their perishability. Because of these four characteristics, 'classic' or 'pure' services are usually provided in close physical proximity to the user and are difficult to scale. Various approaches to innovation seek to break these bonds, allowing services to be scaled, both in the volume of customers served and across geographical space (see Figure 1).

Characteristic	Meaning?	Examples of strategies and innovations aimed at addressing these
Intangibility	The essence of the service has no physical or material form (e.g., a music concert, or legal advice)	Include tangible elements that signify quality or values. This includes the use of brands and branded items – e.g., Platinum credit cards, or loyalty cards, these represent the service
Heterogeneity	Because services are acts or events, they are performed differently, or inconsistently, each time: this can be good (we expect and value variety) or bad (we can be disappointed by poor performance).	Use platforms, modules and other strategies to support "good variation" in provision – i.e., tailoring services to clients' needs, whilst trying to eliminate "bad variation", which annoys or disappoints customers. Service standardisation (e.g. McDonalds) is an extreme strategy to eliminate ('bad') variation.
Inseparability	Services are co-produced by the provider and customer working together (e.g., education – teachers help students learn; they cannot force students to learn)	Services can be 'done for' instead of 'done with' the customer. Self-help, or "self-service" strategies enable the customer to do more for him/herself. Also, use of information communication technologies allows services to be provided at a distance – this breaks the need for close physical proximity between provider and client
Perishability	Services are produced and consumed at the same time. Cannot be stored or stocked (e.g., airport runway 'slots').	Encapsulate services in 'always available' technologies (e.g., Bank ATMs; internet banking); try to manage demand (peak & off peak pricing helps to even out demand); develop flexible capacity management, which is able to rapidly increase service provision to accommodate an unexpected increase in demand (e.g., call centres with a 'reserve army' of operators based at home who can be brought in at short notice)

Figure 1: Characteristics of 'Classic Services' and Innovations that Address the Characteristics
Source: Tether, 2013

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Innovation in services tends to be more incremental and continuous rather than occurring in occasional big jumps, which points to the importance of continuous learning and adaptation. But the evidence suggests that carefully managed approaches to service innovation are less widespread than in otherwise similar product-based organisations. The evidence also indicates that the adoption of these practices is highly beneficial, indeed, possibly more beneficial than in product-based organisations precisely because they are less widespread.

But there is no single 'services pattern' of innovation, and there is a great deal of overlap between the behaviour of service and manufacturing firms. This is partly because many manufacturers have developed service

functions, while some services are structured around 'products' and are more akin to manufacturers. Ideas are also 'borrowed': for example, the 'just-in-time' system, which was so effectively developed by Toyota and other Japanese firms, has its origins in supermarket logistics.

At the same time, there is a clear mode of innovation that is especially prominent in services. That mode is focused around organisational change, often in conjunction with technological change and with an emphasis on social practices such as teamwork and problem-solving. New combinations of services and manufacturing are also emerging, as firms seek to reposition themselves in the value chain. Increasingly blurred boundaries between services and manufacturing make it difficult to think of two different 'worlds of innovation' (Salter and Tether, 2013).





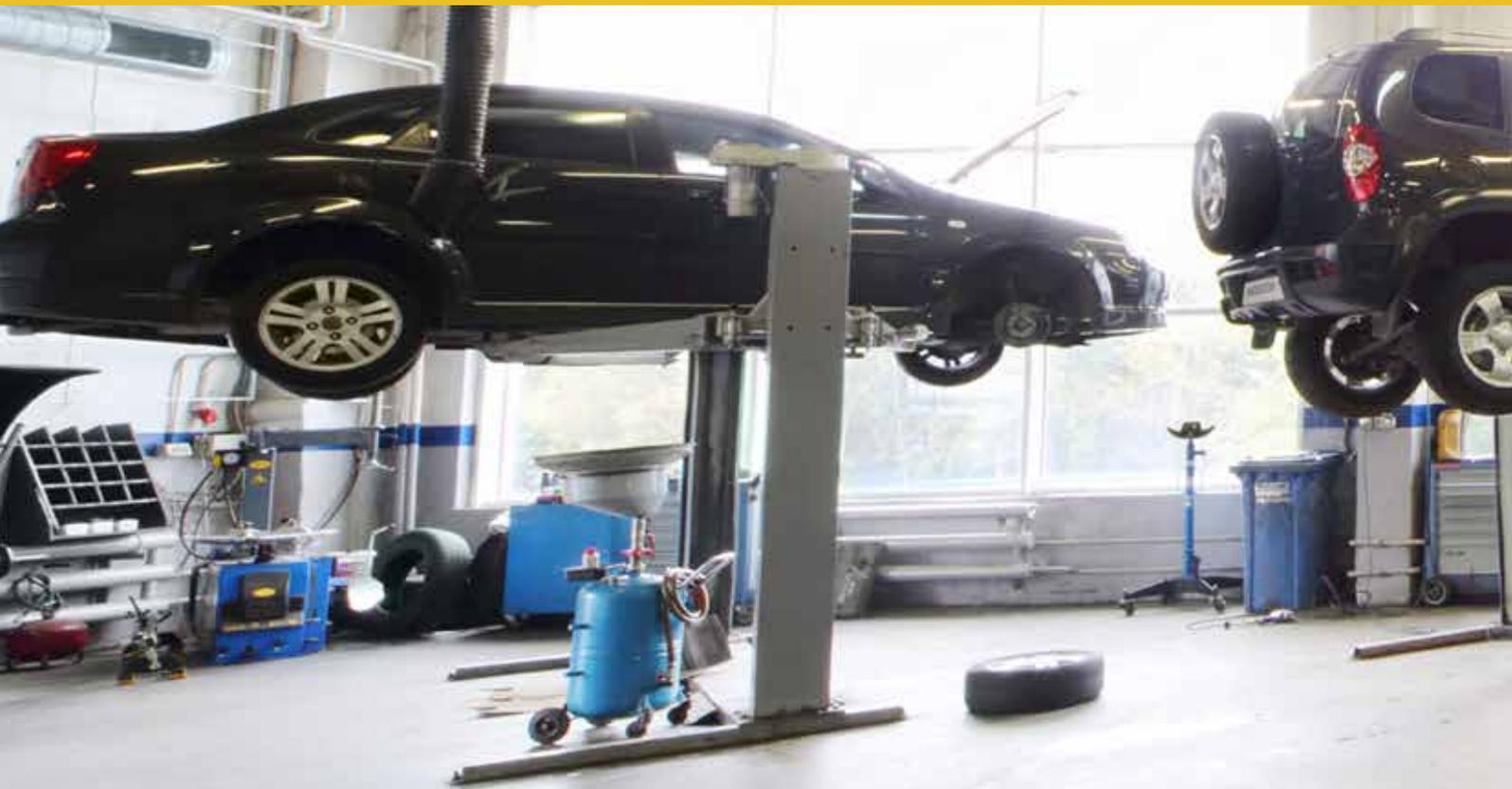
SERVITISATION: SERVICE INNOVATION BY MANUFACTURERS

Servitisation – the provision of services to customers by manufacturers – has long been advocated as a means for firms in high-cost locations to compete with lower-cost rivals elsewhere in the world. For example, a manufacturer might introduce a service to install and maintain its equipment within a customer’s business, ensuring that everything operates efficiently and perhaps even being paid by performance rather than in a one-off transaction.

Some manufacturers increasingly compete by focusing on the utility of their products (that is the service that they provide) rather than what they are. Rolls Royce, for example, now derives around half of its total revenues from services, and most of its aircraft engines are sold with service agreements, such as ‘Total Care’. This has required a shift in focus: the customer is not interested in

the technology per se, but rather in what it does and how efficiently it does it. That change has been accompanied by a stream of technical and organisational innovations, many of which do not involve the traditional hub of product innovation, the R&D department.

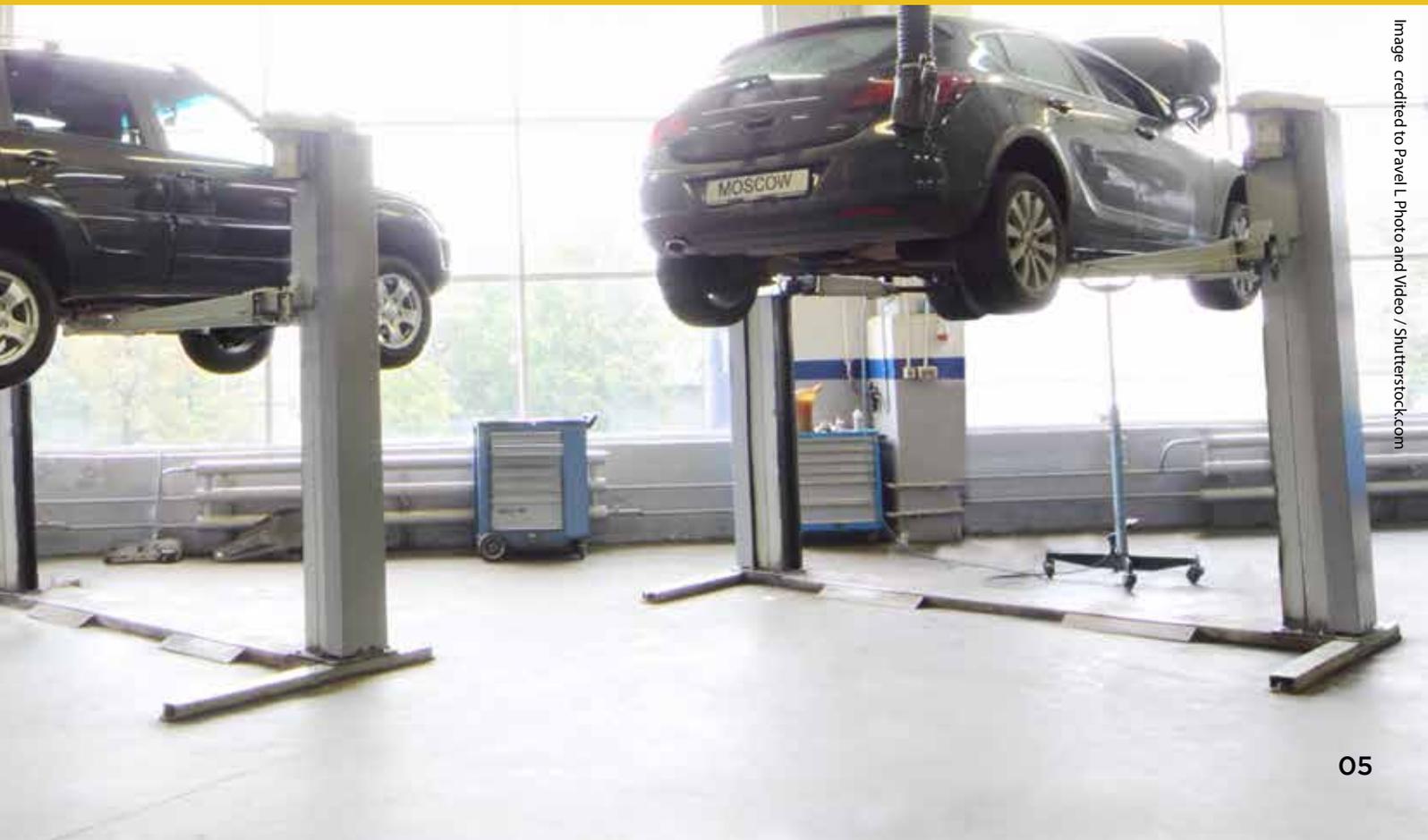
Similarly, the market for mobile phones is now less focused on the core product than on the service element of the technology. So, for example, the challenge for Nokia, a firm that dominated its industry but then fell away dramatically, is not due to its production of inferior products, but rather because it has become part of an inferior ecosystem, which needs to provide more attractive, value-adding services. While large firms like Nokia usually have the upper hand with product and process innovations, they do not appear to hold an advantage in service innovations.



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UK~IRC research on servitisation includes a bespoke survey of UK manufacturing firms, which provides unusually detailed evidence on the extent to which manufacturers are providing services, their motivations for doing so and the organisational implications (Tether and Bascavusoglu-Moreau, 2011). Among the findings is the fact that almost all manufacturers provide at least some services to their customers – the most common being delivery of products, followed by provision of spare parts and consumables, a customer helpline or support desk, and product or systems training.

But few firms report earning a large share of their revenues from the provision of services: just a tenth of income on average; and only 2.5% of firms earn at least half their income from services. This seems to be because most firms are packaging services with products and income is attributed to the product. Such a widespread practice is understandable with delivery and installation, though perhaps less so with training, consulting and other services. But it does suggest that services are rather more significant to firms than the share of income attributed to them would imply.



BUSINESS MOTIVATIONS FOR INNOVATING BY 'SERVITISATION'

The firms surveyed in the UK~IRC research cite both 'defensive' and 'offensive' reasons for providing services. Defensive reasons include tying customers in and benefitting from greater stability of turnover, while offensive reasons include learning about customer needs and increasing turnover and profitability. In general, the firms that are much more likely to provide services are manufacturers of high-value products, machinery, systems and, to a lesser extent, appliances.

This makes sense as low-cost products are normally discarded and replaced, rather than repaired and maintained. Another factor is likely to be the scale of the market: because there is strong demand for low-cost products, the scale of the market will tend to be large, encouraging an increased division of labour, with third party service providers often in a stronger position to provide services than the original manufacturer.

The number of competitors facing a firm does not generally influence the extent of service provision, nor does high dependency on one or a few customers. Firms that are motivated to learn more about their customers tend to be more likely to provide at least an average number of services, while those that have implemented service-oriented arrangements tend to provide the most extensive range of services.



A close-up photograph of a hand holding a thick, white, fibrous rope. The hand is positioned on the left side of the frame, with the fingers wrapped around the rope. The rope extends diagonally towards the bottom right. The background is a soft, out-of-focus blue and white, suggesting an outdoor setting. The overall composition is clean and modern.

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So what distinguishes firms that report earning nothing from services and those that earn a relatively large amount from those that earn an average amount? The evidence shows that metal products manufacturers are four times more likely than otherwise similar firms to earn nothing from services; while machinery firms are about four times more likely to earn at least 10% of their income from services. Firms that have introduced organisational arrangements for service provision are also significantly more likely to earn at least 10% of their income from services.

Again, it makes considerable sense for manufacturers of expensive systems to develop and implement a services strategy, while the same strategy would not be wise for a manufacturer of low-cost components or highly durable metal products. After all, change comes at a price: it has costs as well as benefits.

One final consideration for manufacturers is how they charge for services they provide. Explicit pricing is sometimes advocated, as it encourages both the provider and the customer to consider the costs and benefits of the services. But service provision can also have extra benefits that might make explicit pricing redundant. For example, by engaging in installation and training, a manufacturer can gain considerable insight into how its products are used, which can lead to further product improvements. The key is to exploit the complementarities that arise when offering both products and services.



PROFESSIONAL SERVICE FIRMS

A particularly dynamic and rapidly growing part of the service sector is made up of professional service firms. These organisations dominate industries such as law, accountancy, management consulting, design, architecture and engineering consulting. They are characterised by high proportions of professionally qualified staff, who use their skills and knowledge to deliver a range of specialised and often highly customised services to clients. Human capital also underpins their two other key resources: their reputations and their relationships.

The work of professional service firms spans different degrees of novelty and innovativeness. Much of their work involves projects that entail the relatively routine application of knowledge (for example, routine conveyancing by solicitors), while other projects may require new solutions. Some large professional services have attempted to develop repeatable solutions, creating operating routines and practices that allow them to offer a package of services that can be reconfigured easily for a wide range of customers. The development of repeatable solutions often involves the extensive use of 'knowledge management' systems.

Yet for many professional service firms, repeat solutions offer low margins and uninteresting work. Instead, they explicitly target complex, non-routine projects that build capability and reputation, and which command higher fees. Arup, for example, a leading design engineering firm, uses high profile projects to help maintain and enhance its reputation for solving challenging problems. These 'magnet' projects demonstrate Arup's problem-solving capabilities to existing and prospective clients. They also help the firm to attract and retain the best talent.

This gives an indication of the fundamental nature of innovation in professional service firms: the role of highly skilled labour and tacit knowledge in the creation of new solutions; the importance of new organisational practices, such as knowledge management systems, in supporting the realisation of new innovative opportunities; a 'generative dance' between clients and producers as capabilities are signalled and new solutions are co-produced between different actors; the key role of social networks in supporting knowledge creation; and their 'ad hoc' organisational forms (Salter and Tether, 2013).

THE PRACTICES OF KNOWLEDGE-INTENSIVE BUSINESS SERVICES

Innovation researchers often refer to professional service firms as providers of 'knowledge-intensive business services' – businesses that primarily involve the generation, absorption and diffusion of new knowledge. Often highly creative and innovative themselves, these firms also support their clients' innovative activities, and transfer technologies across a wide range of business fields. They are vital creators, shapers and carriers of technological, managerial and organisational innovations – and hence potentially big contributors to economic growth.

Within the broad area of 'knowledge-intensive business services', UK-IRC researchers have conducted detailed investigations into the operations of firms in a number of different fields. These studies explore how these firms approach the management of knowledge and innovation (including the balance between specialisation and diversification; and the balance between focusing on providing services within a local market and going global), and how that influences their financial performance.

For example, one study compares architecture practices and engineering consultancies active in the UK construction industry (Tether et al, 2012). Among the findings is the fact that architecture practices benefit by concentrating in inner London, while - overall - engineering consultancies do not benefit by locating in inner London and are therefore much more dispersed. This seems to emerge from the very different 'knowledge bases' on which the two kinds of professional services draw – broadly speaking 'symbolic knowledge' based on hard to explain tacit insights versus 'analytical knowledge' based on scientific models. The distinction has implications for where the two professions choose to locate and how they innovate (see Figure 2).

A related study of UK-based engineering consultancies examines their choices about both industrial and geographical diversification (Li et al, 2012). It shows that more specialised professional service firms are more likely to internationalise than firms with a broader scope of activities; that domestic geographical diversification aids internationalisation; and that diversification into more unrelated fields typically enhances a firm's international competitiveness.

A study of small UK design consultancies also considers why firms diversify (Wennberg et al, 2010). The researchers analyse the consultancies' decisions about entering the field of digital design between 1996 and 2009, a period characterised by the 'dot-com boom', 'bust' and recovery. They find that financial performance had little impact on diversification. Instead, most firms diversified into digital design because they were engaged in related activities, had strong internal growth aspirations or were following similar firms. But also interesting is that new and young firms were much more likely to diversify than their older counterparts: new opportunities are particularly attractive to those with much to gain and little to lose.

A final study looks at the strategies and impact of R&D service firms, highly dynamic knowledge-intensive businesses whose role in innovation systems is often underestimated relative to universities and other public research organisations (Probert et al, 2013). This is an in-depth study of the technology consultancies active in and around Cambridge, the UK's leading science and technology cluster.

The researchers document the exceptional ability of these firms to reconfigure their skills base and organisation constantly to take advantage of new waves of technology, and to pioneer developments in new industries as they emerge, in ways that product-based firms find difficult to imitate. This flexibility allows them to 'de-risk' technology development through portfolios of R&D contracts, while operating close to top-end market needs through engagement with lead customers. Combined with the long-term accumulation of proprietary know-how, this particular business model has enabled the pursuit of a range of growth strategies that include licencing, productisation and spin-off of some of the most successful start-ups in the cluster.

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	Analytical	Synthetic	Symbolic
Innovations and Solutions	Fundamental innovation by the creation of new knowledge. Solutions found by applying scientific models or equations	'Local' solutions developed by applying or combining existing knowledge. Occasionally these become general purpose 'killer applications'	Solutions based on hard to explain tacit insights. Major innovations often recognised ex post (as value is socially constructed)
Codified or Tacit?	Predominantly codified and "Scientific", based on deductive processes and formal models	Predominantly tacit and "applied, problem related". Largely practical, and often developed through inductive processes	Predominantly tacit and "Artistic". Importance of building and challenging conventions: the 'power of persuasion' matters.
Locus of new knowledge production	R&D departments and collaborations, including with the 'science base'	Interactive learning, especially with clients, but also in the community of practice	'Studio' projects, and learning through interaction with the professional/artistic community, and wider cultural interactions.
Exemplar industry	Biotechnology and other 'science based' industries (Pavitt, 1984)	'Low-tech.' engineering based industries and other 'specialist suppliers' (Pavitt, 1984)	Film directors and other 'cultural industries' (Scott, 1999)
Means of Sharing and Diffusing Knowledge	Patents, publications and the Internet, but also scientific conferences	Attending to 'field problems' (von Hippel, 1988), mainly through face-to-face interactions	Hard to share or diffuse. Developed in practice over time and 'possessed' by key individuals.
Applied to architecture & engineering consulting?	Highly analytical engineering services are here: e.g., fire and earthquake engineering. Others less so, but all have an analytical base.	Needed to get buildings built, & for different professions to coordinate. 'Low-order' architects and engineers are mainly here.	'Starchitects' are the 'high priests' of this. 'Strong idea' architectural practices are here. Strong delivery and service less so.

Figure 2: Characteristics of Different 'Knowledge-Bases' in Architecture and Engineering
 Source: Tether et al, 2012



FURTHER READING

Li, Cher, Bruce Tether, Andrea Mina and Karl Wennberg (2013) 'Diversification and Human Capital as Antecedents of Internationalization amongst Professional Service Firms: A Study of UK-based Engineering Consultants', Working Paper, University of Manchester.

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