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Innovation and the Service Economy

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This essay will be concerned both with Innovation in Services and Service Innovation. *Innovation in Services* refers to both product and process innovation in service firms, sectors and industries. It may involve the development of new or improved services, while *Service Innovation* specifically relates to the creation of new services—though this can involve service-providing organisations in all sectors. The phrases have these different meanings first, because the term “service” can refer to the service product or to the industries that specialise in such products; and second, because service products can be generated by organisations that do not specialise in services. Thus manufacturing firms may deliver all sorts of customer and after-sales services.

Both terms reflect themes that were long neglected by social and management researchers, but that have received increasing attention since the 1980s and especially since the 1990s. Table 1 displays data on the prevalence of various terms in publication titles. These results are certainly “noisy”, but point to a striking increase in attention to these themes. (The dramatic increase in use of “service innovation” in

the most recent period partly reflects use of this phrase in library service research and a range of computer and informatics contexts.) While innovation studies were taking off—almost 300 publications using “innovation” in their titles were recorded in 1970 alone, and almost 500 in 1975 alone—the overwhelming focus was on innovation in manufacturing industries. We can locate some earlier studies of innovation in health and local government, for example, but there was rarely much attention to services as a whole, or even to a broad range of types of service industry. Manufacturing industry provided the paradigm for innovation analysis, and services would thus be considered as deviant, low-innovation industries. Where there were technology-based services—such as telecommunications or indeed health—then the main source of innovation was seen to come from manufacturing industries such as electronics or pharmaceuticals. Service industries and organisations were largely passive receivers of these innovations. Thus in Pavitt’s (1984) classification of industrial innovation styles, service industries were all classified as “supplier-led”—though he had modified this view by the 1990s (Pavitt, 1994).

The growth of attention to innovation involving services has been driven by the rising significance of service activities in industrial societies and around the world, as well as the emphasis on service in the competitiveness of firms of all types. Recent research draws on many sources, including earlier traditions of work on service organisation and marketing, as will be indicated below. Some researchers stress the continuities between innovation in service and manufacturing industries (this is particularly the case with research using large-scale surveys) while others stress distinctive features of innovation in services (this is particularly prevalent in case study research). Two rather similar accounts of these various approaches were developed by Gallouj (1998) and Coombs and Miles (2000). Each account proposes that approaches to service innovation can be conveniently classified into three groups (they even give the same name to two of these groups). Each of these classifications has been adopted by several subsequent scholars, but in a recent overview of service innovation research Droege et al

(2009) proposed that the two classifications actually propose four approaches in all:

- Assimilation approaches (noted by Coombs and Miles)—The basic idea here is that most economic attributes of services are fundamentally similar to those of manufacturing sectors. What differences exist are more a matter of (often relatively minor) quantitative placement on one or other continuum. Both services and manufacturing can be effectively studied and statistically documented according to the methods and concepts developed for manufacturing. Such approaches assume that the theories and concepts developed in manufacturing contexts readily apply to innovation in services. Innovation can be measured in similar ways, and is liable to be produced and managed in similar ways. What differences there are reflect the fact that services tend to lag behind other sectors. Such an approach is apparent in many of the earlier statistical studies of innovation in services that deployed the data produced in the Community Innovation

Table 1. Publications located by using various search terms

YEARS	Terms sought for in document titles			
	Innovation in service	Innovation in services	Service innovation	New service development
1975-1979	0	0	1	0
1980-1984	2	0	5	1
1985-1989	3	6	2	9
1990-1994	5	5	4	6
1995-1999	12	45	20	12
2000-2004	24	92	83	69
2005-2009	57	99	417	81

Source: data produced by using terms for various time periods in Harzing's *Publish or Perish* (Harzing, 2010), searching all types of publications and examining title words only. An effort has been made to remove duplications by examining document authors and titles—while this had a major impact on a few cases (years with few publications, in particular), the overall trends are unaffected. There is some overlap between cases in the various columns, sometimes reflecting more than one of the terms being used; sometimes the search tool simply fails to differentiate between the terms. Because the term “service innovation” frequently received hits where formulations beginning “innovation in...” were used instead, the data in the fourth column come with the word “in” barred from the title.

Surveys (CIS). Such studies typically failed to reveal striking differences in the ways manufacturing and service firms set about innovating. A similar viewpoint is advocated in many mainstream accounts of topics such as trade and productivity, where it is suggested that existing instruments will work effectively to describe the service economy.

- Technologist approaches (identified by Gallouj. In Gallouj and Savona (2010) he suggests that these are actually the same as Coombs and Miles' assimilation approach, though Droege *et al.* consider the two approaches to be distinctive). Here stress is put on the important role of new technologies (especially Information technologies) in services. Gallouj and Savona see this as leading to an assimilation of ideas from studies of innovation in manufacturing, which also tend to stress technological innovation. But some authors have stressed technological innovation, while arguing that the trajectory of service innovation is distinctive. For example, the "reverse product cycle" proposed by Barras (1986, 1990) implies that service organisations follow a distinctive trajectory of technology-based innovation, beginning with use of new technology to render production of services more efficient, and culminating in the creation of new services. The emphasis on technology may resemble that of many assimilationists, but the upshot is more like the demarcation approach we discuss next.
- Demarcation approaches (identified by both sets of authors)—argue that service activities are highly distinctive. They may still be poorly understood, but what is clear is that in many respects they have dynamics and features that

require novel theories and instruments. This approach is displayed in many case studies of service activities. It suggests at one extreme that quite new instruments are required for investigation of service activities, or that the results of established instruments need to be interpreted in new ways. For instance, since services conduct little R&D (on the whole), R&D-intensity is a poor indicator for identifying "high-tech" or "knowledge-intensive" services, and new approaches are required (e.g. skill profiles of the workforce). Since much service internationalisation takes the form of investment, franchising and partnerships rather than conventional exports, the analysis of services "trade" has to pay more attention to such modes of presence. The distinctive features of services include intangible and unstoreable products, and high degrees of interaction with customers (up to the point where consumers are often seen as "coproducing" services). Such features not only mean that service industries lag behind in terms of innovation, but also that their types of innovation and innovation-management processes are very different from those seen in manufacturing. A case for demarcation is also made in much of the service marketing literature, and in some studies of productivity analysis that point to particular problems in assessing service productivity in conventional terms -- e.g. Gadrey, 2002, (Grönroosa & Ojasalo, 2004)

- Synthesis approaches (proposed by both sets of authors)—accept that studies of services bring to the fore issues that require examination. But the idea here is that these are not exclusive to service industries and organisations. Thus studies of service innovation have

highlighted features of innovation that have been neglected in most examination of manufacturing innovation, and the argument goes that a comprehensive analysis and more adequate indicators can provide an enriched understanding of innovation right across the economy. This will not only cover the service activities of manufacturing firms, but also help account for variations within and across goods and service innovation.

The idea that a synthesis of approaches to innovation in manufacturing and services can be achieved is a promising one. For one thing, many manufacturing firms actually sell services as well as goods, and all of them produce some services for internal or external use. It is likely that innovation in these service activities will differ from conventional manufacturing product and process innovations; for example, it is likely that the web portal of a manufacturing firm will develop along similar lines to, and pose similar issues to, that of a service firm.

Furthermore, it can be argued that in many respects there is convergence between manufacturing and service sectors (Miles, 1993). One aspect of this convergence is that there is a greater resemblance between manufacturing and the traditional view of services (for example, producing more customised products, having closer links with consumers, etc.). At the same time, many services are becoming like traditional manufacturing (standardised and mass production of services by large firms, for example).

Another aspect of convergence may be the increased emphasis on service on the part of manufacturers. Thus Howells (2001) is just one of many recent researchers who have studied the “servicisation” of manufacturing (and extractive) firms. (For

a survey-based study, see Avadikyan and Lhuillery, 2007, and an examination of small and medium-sized firms’ goods and service strategies by Susman *et al.*, 2006). More generally, there have also been many accounts of servicisation/ servitisation processes in recent years.) Typically, this involves providing services related to the goods manufacturers produce, or to their production processes. In the former case, the new services may be “product services” such as after-sales support, or other ways of redefining the product that is sold to include, or even to consist of, services, rather than merely the delivery of a material artefact. Sometimes servicisation involves complementing the goods with services such as finance, insurance, maintenance, software, etc. Sometimes it involves a shift to a service focus, in which the firm sees its job in terms of providing the outcomes for customers that the goods themselves would be used to create: the firm can then sell a promised amount of service rather than sell—or even rent—the goods. A famous case of this is Rolls-Royce contracting to supply hours of flight time rather than aircraft engines; and the efforts by computer companies to sell cloud-computing services rather than a computer kit itself can be seen in a similar light. Such servicisation strategies are liable to influence innovation pathways, as different costs are internalised and externalised by the partners. The manufacturer will need to pay more attention to the ways in which its goods are consumed—for example, by monitoring usage through new sensors and software—and in turn this might promote new product services in providing customer support and equipment maintenance and disposal.

Even without the phenomena of convergence and servicisation, the synthesis

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approach would argue for comparative studies of (various) manufacturing and service sectors, and examination of the service activities of manufacturing sectors; it certainly does not imply that there is no need for close examination of innovation in services and service innovation. Rather, the issues raised in such studies should be viewed in terms of their potential importance across the whole economy.

SERVICES: DIVERSITY AND COMMONALITIES

Just as service innovation was long neglected in innovation studies, so the service sectors were long neglected in economic analysis and, not least, in the development of economic statistics. For a long time indeed, there was very limited information available on the “tertiary sector” (which was even sometimes known as the “residual sector”).

Even now statistical data are often sparse, though this situation is being addressed very seriously by statisticians in many countries and international organisations. One achievement has been to establish a far more detailed classification of service industries than was available previously, and Table 2 outlines the current high-level structure of the standard industrial classifications (NACE Rev 2), in which service industries feature as sections G to R.¹ (“Section” is used by statisticians as less ambiguous than “sector”.)

This statistical classification demonstrates the range of activities that are covered by service sections. Some services store, transport and repair goods—and indeed catering services can also produce meals from raw ingredients. Some services deal directly with people—educating or healing them, providing haircuts and other personal services. Some are much more concerned with processing information—moving it around as in telecommunications services, creating new knowledge as in research services, and applying knowledge for business or personal use as in professional services.

This wide range of activities already suggests that we might find different sorts of innovation taking place in the various sectors: surgical or pharmaceutical innovations may be important for hospitals but not for supermarkets or hotels; new financial products may have little relevance for sports centres or garages, and so on. These different sections are engaged in very different sorts of activity, and may thus be undertaking quite different sorts of innovation—some supplier-led, perhaps, while others may be much more the products of the firms themselves. Additionally, there are important differences in terms of the way in which

¹ Section T actually includes the role of households as employers of domestic personnel, which was traditionally a major type of service employment—“domestic service”, household services.

the sections are typically organised. Many sections are dominated by smaller firms than is typical for manufacturing, and indeed there are many micro-businesses, involving just a few employees, in many services—family shops, freelance artists, consultants and accountants. But some sections are dominated by larger organisations—the financial services are typically composed of larger firms, and public services like health and education can be immense—the UK’s National Health Service employed practically 1.5 million people in 2010! The occupational profile of sections also varies widely—some sectors have high levels of unskilled employees, while others are the most

knowledge-intensive ones in the economy (in terms of educational credentials, at least). In innovation research, particular attention has been paid to two of the latter areas of service activity—public services (NACE sections O, P and Q), and Knowledge-Intensive Business Services (KIBS, mainly NACE section M). It is interesting to note, in contrast, that earlier explanations of the supposedly poor productivity growth in services related this to the low-skill nature of many of the industries (e.g. Fuchs, 1968). There are also differences in terms of the markets served—consumers, businesses, and public authorities. (For documentation of these variations, see Miles, 2008).

Table 2. Broad Structure of NACE Rev. 2 (NACE stands for “Nomenclature générale des Activités économiques dans les Communautés Européennes”)

Section	Title
A -	Agriculture, forestry and fishing
B -	Mining and quarrying
C -	Manufacturing
D -	Electricity, gas, steam and air conditioning supply
E -	Water supply; sewerage, waste management and remediation activities
F -	Construction
G -	Wholesale and retail trade; repair of motor vehicles and motorcycles
H -	Transportation and storage
I -	Accommodation and food service activities
J -	Information and communication
K -	Financial and insurance activities
L -	Real estate activities
M -	Professional, scientific and technical activities
N -	Administrative and support service activities
O -	Public administration and defence; compulsory social security
P -	Education
Q -	Human health and social work activities
R -	Arts, entertainment and recreation
S -	Other service activities
T -	Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use
U -	Activities of extraterritorial organisations and bodies

Source: Eurostat (2008)

Howells (2010) has even suggested that a “segmentalist” approach to innovation in services is emerging, reflecting the diversity of service activities and innovation patterns, and moving away from analysing services as a whole. Even a casual encounter with the literature on services is likely to reveal that for every generalisation that can be made about these activities, there will be numerous exceptions. (For example: Services only create intangible products—what then about this dental filling? Services cannot be stored—what about this website or computer software? Services are coproduced with their customers—what about this TV broadcast?, and so on.) But there are several features that are common to many services, even if many exceptions can be found. It is worth considering these commonalities. The foreground social and economic characteristics are quite distinctive from those typical of manufacturing, and the implications for innovation are significant.

There are many ways in which differences between manufacturing and services can be conceptualised—see Miles (1993) for an extensive list—but two interrelated features underpin most of these. The first of these features is the “intangibility” of the service product. While manufacturing is about making goods, service activities are about doing things—about changing (or reducing change in) the state of people, artefacts, symbols, etc. Intangibility is associated with such attributes of service products and processes as the difficulty in storing or transporting them, problems in patenting service innovations, and the difficulty in demonstrating the service in advance of purchase. This latter point accounts for the need for regulation of many services, and the challenge that can confront the service supplier when it comes to convincing

consumers about the superiority of innovative services.

As noted, some services have quite tangible outputs. But typically the material costs of the dental filling or the optical disc is a small fraction of the cost of the professional labour involved in tailoring the filling or creating the information content of the disc. It is the less tangible aspects of the service that typically count as most important, and which can be difficult for prospective purchasers or clients to assess. One result of this is that many innovations from service organisations involve adding more tangible elements to the service (loyalty cards, for example), while others involve the creation of demonstrator products (demo discs, movie trailers, free trials) or certification of various forms (quality standards, membership of professional bodies, etc.).

The second key feature of services is their “interactivity”—referred to in other studies by such terms as “consumer-intensity” (Gartner and Reissman, 1974), and “servuction” (Eiglier and Langeard, 1987). This reflects the high level of contact, exchange, and “touch” that is involved in most services (Miles, 2005). It is helpful to think of the client as coproducing the service, not least because this implies that service innovation (if not necessarily innovation in service organisations) is liable to involve learning and behavioural change on the part of the user as well as the nominal service supplier.

The extent of interactivity can vary considerably. In the case of a consultancy service, there may be protracted discussion about just what the problem is, there may be in-depth questioning and observation from the consultant, the final report and recommendations may be presented in a variety of face-to-face settings, and need to

be reflected upon and further explored by the client. In contrast, a bus ride may involve little more than turning up at the stop, buying a ticket, and sitting in a suitable seat until the destination is reached. Consultancy activities and bus trips can of course also vary immensely!

There are many forms that interactivity can take, for example:

- Since the interaction involves information exchanges, there is much scope for application of new Information Technology—from using powerpoints to support consultants' presentations and electronic whiteboards in teaching, to automated teller machines and online banking services. These new technologies are pervasive in service industries, and continue to be the site of considerable innovation, not least as the organisations learn new ways of enhancing their services through their application.
- Much innovation centres, too, on the distribution of activities between supplier and client, with "self-service" proving one popular approach—not simply because it can reduce labour inputs on the part of the service organisation, but also because it can improve the quality and efficiency of the experience for the customer. Such innovations require creation of a mutually acceptable framework for identifying and accessing the objects of the service, be this bank account details or consumables on supermarket shelves.
- The experience provided by many services is often dependent on the behaviour of multiple consumers, whether these are contributors to a social networking website, other passengers in public transport vehicles, or the other users of sports or cinema facilities. In some cases some sort of input from other

users is needed to make the experience worthwhile, while in other cases the consumer may really prefer to be alone.

One consequence of interactivity is that the service supplier and client often need to be at the same place at the same time, though the use of Information Technology may reduce the need for this in respect of information services, at least. Other important consequences of this feature of many services are that service quality will be a matter not only of supplier effort, but also of the clients' own inputs; that productivity as measured by labour inputs by the supplier may be achieved at the cost of more labour required from the user; and that there is liable to be much heterogeneity among the outputs of a service organisation. Some services may be relatively standardised, but many others are customised or at least mass-customised by the assembly of the service out of multiple modules, put together according to customer requirements. Some other services are completely bespoke ones, specialised to a particular client requirement. Manufacturing varies as well, between mass production, mass customisation, and small-batch specialised production (rapid prototyping is a rare case of a service industry that actually makes physical goods—though the objective is to test the viability of designs). The heterogeneity of outputs contributes to the difficulty in assessing service quality prior to service production, and to the difficulties confronting service productivity measurement.

One of the main trajectories of service innovation has been what Levitt (1972) recognised four decades ago as the industrialization of services. As service firms grew, they could adopt a "production line approach," with more standardized products produced on an almost mass production

basis, with high division of labour and use of technology. Increased standardization, we can now see, can accompany mass customisation, with standardised service modules combined in numerous ways to produce services whose quality varies little from branch to branch or franchise to franchise of hotels, fast food restaurants, supermarkets, and the like. Many firms in such sectors that adopt this model of service industrialisation are dependent on relatively high levels of low-wage and fairly unskilled staff, often working on part-time or insecure bases.

SERVICE INNOVATION AND NEW SERVICE DEVELOPMENT

This essay began by noting some ambiguities connected with the term “service”, and in addition there is one sense of the term that is particularly important in terms of these common features. This is the sense that a service is something done for somebody—that a service is about providing value to another human being or set of human beings. (There are inevitable exceptions. In informatics it is commonplace to talk of computer systems and components as providing services to each other, as in Service-Oriented Architecture. Then there are services that are oriented to the well-being of natural environments, which may directly affect no human beings though they may be thought of as providing some satisfaction to those people who know about them.) This sense of service comes to the fore in the recent stream of work on “service-dominant logic” (see, for example, Lusch *et al.*, 2008, Vargo and Lusch, 2006). This stream originally stems from service marketing studies, though it has achieved much wider influence. It sought to move beyond approaches to service marketing that saw services as simply intangible products

that could be dealt with by a little elaboration of the methods used for marketing goods. Instead, the focus is on service as a process: service is the process of applying resources to create benefits; and it is a coproduction process, where both “supplier” and “client” make contributions and gain benefits. All economic activity can be seen in this perspective as an exchange of services.

Of course, the amount and type of effort that is put in by the partners varies from service to service, but the point that service users are typically engaged in activities other than just purchase, and that these activities have a very important impact on the quality of the service that is produced and received, is important. This clearly relates to the notion of “interactivity” introduced earlier, and to research examining innovations involving these activities and the service relationship. Currently there is much interest in the ways in which service customers can be mobilised as “prosumers” to enhance each others’ experiences, for example in Web2.0 and social networking applications, but there has been earlier work on how innovation may centre on the servuction process (e.g. Belleflamme *et al.*, 1986).

Change in service relationships and associated experiences has also been a central theme in the emerging discipline of “service design”. Recent years have seen many established industrial design firms move to handling aspects of service design, as well as the appearance of specialised firms with this focus. Education and scholarly research have only recently begun to catch up with this, with a journal of service design—*Touchpoint*—being launched in 2009. But a few early pioneers had written on topics such as service design and quality (Gummesson, 1990), so that sufficient material has been produced for reviews to be available (Moritz,

2005; Saco and Goncalves, 2008).² Among the things revealed in such accounts are the distinctive techniques required for service design, so as to reflect the co-evolution of user and supplier behaviours and experiences in the course of service delivery. Such techniques include service blueprinting, storyboarding, and interface and interaction design. The need for quite different design strategies from those that have been prevalent in industrial product design reflects the importance for services of such features as intangibility and interactivity.

Den Hertog (2000) makes the point that service innovators need to be attentive to technological opportunities, but should avoid a technologist's view of New Service Development (NSD) ("technologist" is used herein the Gallouj sense). They should rather consider what changes might be effected in addition in terms of *service concepts*, *client interfaces*, and *delivery systems*. This suggests that any innovation can be thought of as a combination of, and possibly as changes in, these dimensions as well as in the technologies being employed.

Much in the same way that discussions of service design and innovation have emerged rather recently, so the study of New Service Development (NSD) is relatively young—but rapidly growing, and already the subject of several reviews. In this case, Johnes and Storey had already by 1998 been able to examine a range of studies, reflecting what we have earlier termed the interactivity of services. Customers and the understanding of their roles, expectations and experiences, are particularly important in NSD, given the likelihood that their cooperation is critical in shaping the quality of the service outcome. The employees who interact with customers also have to be taken into account—both as sources of insight and co-producers of the

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service; their informed cooperation is also vital. Typically studies of NSD attempt to identify which factors make for successful introduction of new services, with Martin and Horne (1993, 1995) also noting the need for customer and employee (and managerial) participation in the NSD process, together with strategic use of customer information. In the service firms they studied, specialized innovation functions were uncommon, and successful NSD was rarely achieved by a few experts. The NSD literature frequently pays attention to the strategies and characteristics of service-producing organisations. Considerable emphasis is placed on the role of service-employees training and broader learning opportunities, on the scope for sharing information and experiences, on the ease of establishing multifunctional project teams, and the like. Similar prescriptions also emerge from studies of manufacturing innovation, and it remains to be established whether successful NSD is really that different—and indeed, whether there are not huge differences across services of different types. But it is clear from numerous

² See also the service design network, at <http://www.service-design-network.org> (accessed 24 August 2010).

studies (reviewed in Miles, 2005 2010, and elsewhere) that new services are rarely produced through formal R&D departments and/or production engineering—though such an approach is used in some very large service firms and technology-related services in fields such as information technology and engineering. More commonly, service innovation is organised through transitory project management structures—and much innovation emerges from ad-hoc, on-the-job experimentation. Surveys of innovative service firms (e.g. Arundel *et al.*, 2007, IOIR, 2003) suggest that—perhaps surprisingly—such firms tend to report less use of suppliers and customers as sources of information for innovation than do manufacturing firms. (In contrast, consultancies and competitors seem to be more important sources of information for service firms than for manufacturers.) One sector that does report more use of clients as sources of information is Business Services—where there is often a very deep level of interactivity. Wholesale and retail trade services are more likely to see suppliers as influential, as might be expected.

Sundbo and Gallouj (2000) suggest that several different ways of organising service innovation can be differentiated (their analysis can be applied to process innovation in service organisations as well as to NSD). Miles (2010, pp. 523-524) summarises their approach as indicating seven broad patterns, while noting that particular service innovations may be organized in different ways within the same organisation:

1. The classic R&D pattern, with specialized departments conducting research of a strategic nature does exist in some service organisations—mainly large and/or technology-based ones, as noted above.

2. The Services Professional Pattern is often found in knowledge-intensive organizations such as KIBS, whose professionals frequently generate solutions for clients that are ad hoc and highly customized. Their innovations typically rely on employees' professional skills. Much innovation intelligence may flow through professional networks and associations, or other communities of practice. Many consultancy firms, and some "creative industries" (e.g. advertising and design) follow such a model. One major challenge for these firms is "capturing" and replicating innovations that are made in practice by professionals, and much attention in knowledge management is directed to this.

3. A Neo-Industrial Pattern lies between patterns (2) and (3): alongside a specialized R&D or innovation department, there is much more distributed innovation in the course of professional practice. This often characterizes, for example, health services and some large consultancies.

4. The Organized Strategic Innovation Pattern is encountered in large service firms, such as airlines, hotel chains, and retailers. Innovation is organized in the form of projects that are directed by more or less transitory cross-functional teams, working through distinct steps of project management, and often with strong leadership from marketing groups.

5. An Entrepreneurial Pattern characterises start-up firms that offer services based on more or less radical innovations: these may be technological or rely more on new business models: many so-called gazelles, online services, and others follow this pattern, across many sectors: typically it is short-lived and they move into one of the other innovation modes.

6. The Artisanal Pattern is found in many smaller-scale and low-tech physical (“operational”) services, such as clearing and catering. These are classic supplier-driven sectors, where major innovations are imported from other sectors (e.g. manufacturing), though innovation may also be driven by regulations and demand. Employees and managers may be sources of (typically incremental) innovation.

7. Finally, the Network Pattern involves a network of firms acting together, and adopting common standards or operating procedures. There may be a dominant company in such a network, and this has been the case in the rolling-out of such innovations as ecommerce, where often a major customer has requested that its suppliers use standardised means of electronic trading. Many services are organized in franchise networks through which such diffusion of innovations may take place: this is familiar in sectors such as fast food and hotels, and also in some professional sectors.

INNOVATION IN SERVICE INDUSTRIES

Overviews of innovation in service industries have been available for some years, too (e.g. Miles, 1994, and later reviews in 2005 and 2010), and much of the *Handbook of Innovation and Services* (Gallouj and Djellal, 2010) also considers this theme. These studies confirm the argument that the organisation of innovation in service organisations typically takes forms different from the R&D model supposedly characteristic of manufacturing. In fact, as already implied by Pavitt’s (1984) taxonomy, many manufacturing firms do not follow this model—it is most common in high-tech firms and in larger firms in other manufacturing subsectors. (And, we might add, such firms

do not always apply this model across their range of activities—the distribution and retail activities, and other product services, may evolve quite independently of the product innovation itself.)

Survey studies which allow for comparisons to be made across sectors have confirmed that service firms do introduce innovations, although overall the service sectors may have lower rates of such innovation than manufacturing firms overall. But there are high variations across different sections of services. The innovation budgets of service firms also tend overall to be lower than those of manufacturing firms, even when we compare firms of similar sizes (important because innovation behaviour tends to be strongly associated with firm size, and, as noted, most service sections are more dominated by small firms than is manufacturing). However, the various parts of the service sector differ considerably in terms of how frequently they innovate and how far they invest in innovation. While there are exceptions in all service subsectors, the general trend is for more physically-oriented services like transport and wholesale and retail trade to report lower levels of innovation, and for more information-oriented services, such as financial services and KIBS, for example, to be much more innovation-intensive. This result may be rather different from what might have been found had we undertaken such surveys in the 1920s, rather than the 2000s. In the first half of the twentieth century, the physical services were being transformed through the application of electrical energy and petroleum engines. By the turn of the century, it was the new information technologies that were being used to create new and improved services, and these were particularly important for activities such as financial and computing

services, and all sorts of professional activity. Technology-related KIBS in particular—firms providing computer, and engineering services, for instance—typically have large innovation budgets.

The availability of large-scale surveys makes it possible to apply cluster analysis and similar approaches to identify and classify distinctive sets of firms or sectors. Thus Hipp and Grupp (2005) differentiated between knowledge-intensive, network-intensive, scale-intensive and external innovation-intensive patterns in German service firms. There were clear tendencies for certain types of service industry to follow particular types of innovation dynamic. The knowledge-intensive pattern, for instance, was particularly marked in technical and R&D services and computer services. The network-based model was prevalent in banking, while the supplier-dominated model was especially important in other financial services. But Hipp and Grupp also warn against a simple identification of sectors with innovation patterns. Though there are more or less strong trends, all sectors have their exceptions—and indeed, some cases of each of the innovation patterns were located in each of the service sectors.

These studies typically focus on issues such as innovation expenditure and the sources of information for innovation. Less attention is given to the nature of the innovations themselves, but several studies indicate that service firms are somewhat more prone than manufacturers to report non-technological and organisational innovations. Howells and Tether (2004) report that while a substantial share of service firms considered their main innovative activities to have been solely organizational, this was very rare among manufacturing firms. Kanerva *et al.* (2006) report that service firms

(especially financial and wholesale sectors) are more prone to initiate organizational change; Schmidt and Rammer (2006) and Miles (2008) report that manufacturers and Information Technology service firms tend to emphasize technology-based innovation, while most services emphasize organizational innovation—though on the whole, sectors that are more technologically innovative sectors are also more organizationally innovative)

There are now numerous studies exploring the broad picture of service-sector innovation from CIS data (e.g. using CIS2 data for Europe, Tether *et al.* (2002; presenting CIS4 results, Arundel *et al.* (2007) and Eurostat (2008). Below, we shall focus on three particularly interesting services—KIBS, creative services, and public services.

KIBS

KIBS are generally classified into two groups—T-KIBS (technology-based ones) such as (computer services, architectural and engineering activities, technical testing and analysis, R&D services, etc—and P-KIBS, more traditional professional services such as legal and accountancy support, market research and management consultancy. Many studies have shown that KIBS overall tend to have high levels of innovation, and have suggested that they behave more like high-tech firms than other services. But Rodriguez and Camacho, (2010) analysed Spanish CIS4 data to show that there are actually quite different types of KIBS innovators. Some are like high-tech manufacturers—“hard innovators” who develop product innovations, largely based on internal R&D. But there were three other groups. “Knowledge diffusers” are those KIBS who act as agents of knowledge transfer, who have close relationships with other agents across the innovation system, including

universities and public research institutes and technological centres. The other groups were “lonely innovators”—with few collaborations, reliant on their own innovation capacity for developing technological and/or organisational innovations—and a small group of “soft innovators” that mainly develop organisational and process innovations, often largely based on acquisition of machinery and equipment. Clearly we need to be cautious in generalising about KIBS.

Equally clearly, the innovative activity of KIBS can be important for the whole economy. Even those KIBS whose primary role is not “knowledge diffusion” are active in providing solutions for their business clients’ problems. Often these will involve helping the client to undertake innovations in practice or technology. Sometimes this involves a coproduction of innovation on both sides (den Hertog, 2000), as new knowledge is produced through the combination of the KIBS firm’s generic understandings and the more local knowledge of the client. Through negotiation concerning the nature of the problem and the potential solutions, both service supplier and client can learn: the challenge is for these organisations to capture this learning and replicate the innovations.

Creative Services

In recent years, much policy attention at national and local levels has been focused on the “creative industries”, which are mostly activities defined by their focus on end-user experience and production of creative content (though typically some sorts of entertainment—theme parks, sports—and cultural service—museums—are omitted from the classifications, while computer software is often included!). Some of the services here are aimed at businesses, and a category of C-KIBS might be added to the T-

and P-KIBS, covering for example advertising, design, and graphics and multimedia services supplied to organisations. Until recently, such activities were seen as more the domain of media studies and cultural criticism than of innovation research, and there are certainly difficulties in trying to specify the innovativeness of a new fashion design or TV format, for example.

But we are now beginning to see studies focusing on innovation strategies in experience industries (e.g. Voss and Zomerdijk, 2007), and evidence is accumulating that demonstrates that creative industries engage both in familiar sorts of product and process innovation, and in many other forms of organisational and business model innovation (e.g. Miles and Green, 2007). With a few exceptions, these industries have been neglected in innovation surveys, despite being the focus of a good deal of policy rhetoric. Some of them play important roles in relating businesses to changing social milieux; some of them contribute to the creation of more innovative and creative milieux, as argued in many accounts of the creative city and economy.

Public Services

Finally, we briefly consider public services, which are at the centre of policy concern (with persistent concerns about their productivity and cost), and also have been neglected in innovation surveys (which almost always only examine private services). At a time of considerable reform of public services, and redrawing of the boundaries between public and private sectors, there is a striking absence of evidence on which to base policy.

It is widely argued that public sectors are less innovative than private firms (though the evidence on this is mixed—see Halvorsen *et al.*, 2005).³ This is often seen to result from

³ Online resources on public service innovation include the PUBLIN project (<http://www.step.no/publin/>), the *Innovation Journal* (<http://www.innovation.cc/>) and NESTA studies on public services (http://www.nesta.org.uk/assets/documents/ready_or_not) and numerous other publications at NESTA’s website. The ServPPIN project is an interesting recent effort to explore public-private innovation networks—see <http://www.servppin.com/> (all accessed 20/07/2010).

lack of competition and bureaucratic (and political) control structures, so one very popular solution has been the reforms known as the “New Public Management”, that introduce market-like structures and more entrepreneurial management into the public sector—with some moves towards public-private partnerships and privatisation (there is now a sizeable private “Public Services Industry” in some countries—Julius, 2008). Most public services consist of multiple “branches” of very large organisations, in many cases requiring highly skilled staff (doctors, teachers, etc.), though other cases involve more low-skill operational staff (cleaners, security staff, etc.). As large organisations, there is scope for economies of scale, and public sectors were early pioneers in the use of information technology for back-office functions. There is also scope to influence the innovation system more generally through public procurement, and “innovative procurement” has been a recent theme. However, the proliferation of local bodies and specialised professions, dealing with complex social issues, may create a risk-averse attitude to innovation, push it in inappropriate directions, or restrict the diffusion of innovations created in the course of practice. New Public Management alone is unlikely to resolve all of these problems, and thus we see numerous efforts to create new institutions that can identify and disseminate ideas for and examples of good practice and creative solutions.

CONCLUDING REMARKS

With service sectors being the bulk of the economy, and service forming an even larger share of all economic activities, it is difficult to present a succinct account of service innovation. What the studies reviewed here do point to is the need to

explore innovation processes and trajectories that go well beyond those familiar from studies of automobiles, electronics and pharmaceuticals. They suggest, too, that we should be prepared to uncover a very wide range of different structures and strategies, which are evolving as the service economy continues to develop.

This has considerable implications for policy—one size will not fit all, and innovation policies will need to pay attention to the challenges of service innovation in a competitive world (as well as in public services). Likewise, new management capabilities, and training to support their development and deployment, are needed. Often the issue of cross-disciplinary and cross-professional team working rises to the fore, as innovations involve the combination of multiple goods and services in what has been dubbed a “product-service system”, requiring knowledge of technologies, social institutions and regulations, and specific types of client and client interface.

Service innovation and innovation in services were themes that remained neglected for a surprisingly long time. Now they have risen to the fore, and are engaging the attention of researchers and practitioners of many kinds. One of the striking developments in the recent past has been the commitment of IBM and several other large firms—mostly but not exclusively those dealing with Information Technology services (and hoping to apply Information Technology within a huge range of service activities) to the creation of a new “science of service” or SSME (Services Science, Management and Education). This has been manifest in the foundation of a new journal of *Service Science*, the organisation of numerous conferences,⁴ and several substantial publications (e.g. Maglio *et al.*, 2010) outlining new concepts

⁴ See for example <http://www.ibm.com/developerworks/spaces/ssme> for links to conferences and online resources of many sorts, including curricula for new training programmes. A network of SSME researchers is organised through <http://www.ssmenetuk.org/> and a symposium on “Succeeding through Service Innovation” is described at <http://www.ifm.eng.cam.ac.uk/ssme/> (all sites accessed 31/10/2020).

of service systems and the various elements that might comprise a service science. The notion of a service science is a formidable challenge; even information-processing services take a wide range of forms, engaging suppliers and users in many ways. But the concentration of effort is already beginning to yield promising perspectives on the analysis and design of service systems, and we may well see the new thinking about service and services being reflected in new forms of, and strategies for, service innovation over the coming years.

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