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The growth of services

Towards a better understanding of service measurement,
performance and innovation



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The Advanced Institute of Management Research (AIM) develops UK-based world-class management research. AIM seeks to identify ways to enhance the competitiveness of the UK economy and its infrastructure through research into management and organisational performance in both the private and public sectors.

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- Expand the size and capacity of the active UK research base on management
- Engage with practitioners and other users of research within and beyond the UK as co-producers of knowledge about management

contents

AIM – the UK's research initiative on management	2
About AIM	3
AIM research themes	4
Executive summary	5
Introduction: understanding the importance of services	8
Defining and classifying services	10
Performance and innovation	16
Policy issues	20
Conclusion	24

Current AIM research projects focus on:

UK productivity and performance for the 21st century.

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National productivity has been the concern of economists, government policymakers, and corporate decision-makers for some time. Further research by scholars from a range of disciplines is bringing new voices to the debates about how the productivity gap can be measured, and what the UK can do to improve the effectiveness of UK industry and its supporting public services.

Sustaining innovation to achieve competitive advantage and high quality public services.

How can UK managers capture the benefits of innovation while meeting other demands of a competitive and social environment?

Innovation is a key source of competitive advantage and public value through new strategies, products, services and organisational processes. The UK has outstanding exemplars of innovative private and public sector organisations and is investing significantly in its science and skills base to underpin future innovative capacity.

Adapting promising practices to enhance performance across varied organisational contexts.

How can UK managers disseminate their experience whilst learning from others?

Improved management practices are identified as important for enhancing productivity and performance. The main focus is on how evidence behind good or promising practices can be systematically assessed, creatively adapted, successfully implemented and knowledge diffused to other organisations that will benefit.

In an increasingly globalised world economy, firms in the developed world are encouraged to move up the value chain in order to remain competitive. In many cases this means offering services, either as a stand alone, or increasingly as a complement to existing products, either alongside or directly incorporated into those products.

Indeed, services are hugely important to the UK making up about 75 per cent of GDP. It is a significant contribution; even allowing for the fact both business financial records and national statistics tend not to incorporate the service component of a product, leading to an under-reporting the contribution of services.

As a result, service innovation is important in terms of creating or co-creating more value from services. Yet, despite the importance and the rapid growth of the service economy over past decades, there has not been a commensurate development of policies and collection of data to support to promote innovation in business services.

The reason for this is most likely because of the comparatively poor understanding of services, both in terms of the definition, classification and measurement of services, service innovation, and service performance.

Our research set out to highlight some of the issues involved relating to the lack of clear standardised guiding policies aimed at sustaining the growth of services and in encouraging and promoting innovation practices in services. Based on our findings we also make some policy recommendations that might help maximise the contribution of services to the UK economy.

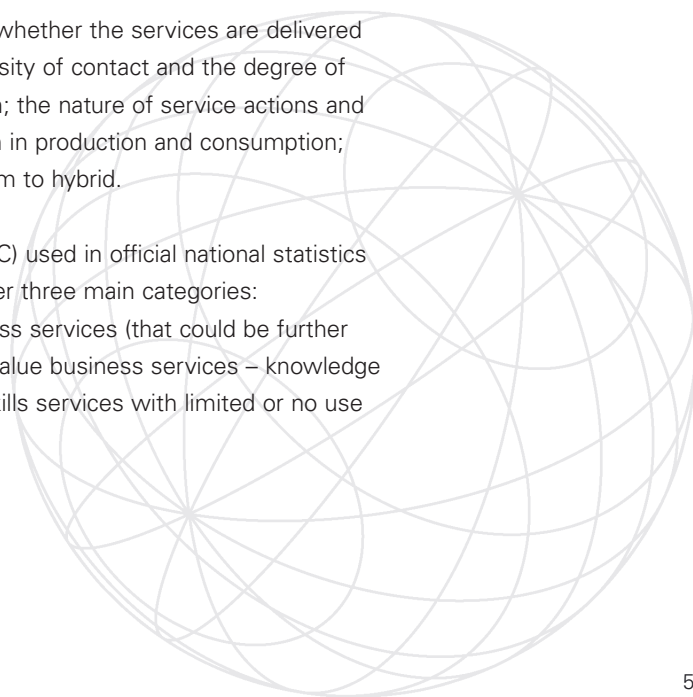
Classification, definition and measurement

Measuring and defining services is not easy. Services are mostly intangible, heterogeneous and often perishable. There is frequently no product-process distinction to separate the service component of a product. Services are variously described as an offering, a sector, or as different types of economic activities, and poorly distinguished from manufacturing.

Current classifications focus on factors such as: whether the services are delivered using equipment or through people; on the intensity of contact and the degree of separation between production and consumption; the nature of service actions and the type of recipients; time and space separation in production and consumption; any relationship with a product i.e. from pure form to hybrid.

The existing Standard Industrial Classification (SIC) used in official national statistics classifies companies at quite detailed levels under three main categories: manufacturing sector, public services and business services (that could be further differentiated as high skills, R&D intensive high-value business services – knowledge intensive business services or KIBS – and low skills services with limited or no use of technology).

Services are variously described as an offering, a sector, or as different types of economic activities, and poorly distinguished from manufacturing.



A significant issue for policymakers is how (and whether) to protect service innovation.

Without clarity of definition, though, designing service performance measurement metrics or policy tools to support services becomes difficult. A new rethinking of the fundamentals of classifications along the lines of industrial organisation and economic activities in the modern era is needed. For example, there is a clear need for a more diverse array of survey instruments and a greater accountability of manufacturing-service interaction in industrial classifications.

Service performance and innovation

Service performance and service innovation also present challenges in relation to definition and measurement. There are several approaches to service performance measurement, for example. Some focus on the quality and delivery aspects of service performance, while others concentrate on technical outputs using various accounting measures. Both approaches have drawbacks.

Defining and measuring the output of services is also problematic, due to the intangible, heterogeneous and inseparable nature of services, as well as the difficulty in distinguishing between goods innovation, business model innovation and process innovation in a product service offering. Complicating matters further, there are differences in the way service output is measured across the private and the public sectors, making policy decisions on resource allocation a challenge.

Service innovation also lacks standardised definition. Some definitions focus on outputs such as patents and R&D, resulting from the use of inputs such as IT hardware, knowledge, and investment in staff training and marketing. Others define patents and R&D as inputs to the innovation process. However, patents and R&D are not valid measures of either service innovation or service innovation performance.

One way to understand service innovation dynamics might be to use tools such as the Community Innovation Survey (CIS), which could be a basis for the development of an integrative measure of service innovation. In the future, however, specific and distinctive measures of innovation in services must be developed, measures that allow comparisons across time, as well as across different national settings – with important implications for both policy and research.

A significant issue for policymakers is how (and whether) to protect service innovation. Service innovation is often imitated by competitors in a very short period of time, yet the use of conventional measures, such as patents and intellectual property rights (IPR) with services is difficult. In services, for example, the non-technological (e.g. organisational, marketing, management) input, is often as important (if not more important) as the technological input, i.e. software or ICT. This suggests a need for implementation of innovation policies away from traditional R&D subsidies and IPR such as patents, widely used in manufacturing and for (tangible) product innovations.

In the meantime firms might best protect service innovations through alternative means other than IPR; through the in-house development of unique service related systems and applications, for example.

Policy

Managers and policymakers have mostly focused attention on manufacturing and high tech manufacturing innovation. This must change. The imbalance in policies directed towards boosting manufacturing and those directed at services must be redressed. There must be renewed efforts to focus on the role of services and service innovation.

Instead of organising vertical policies supporting and promoting innovation in specific manufacturing or service sectors, policymakers may need to revisit the basics and rethink innovation policies along several dimensions of service activities.

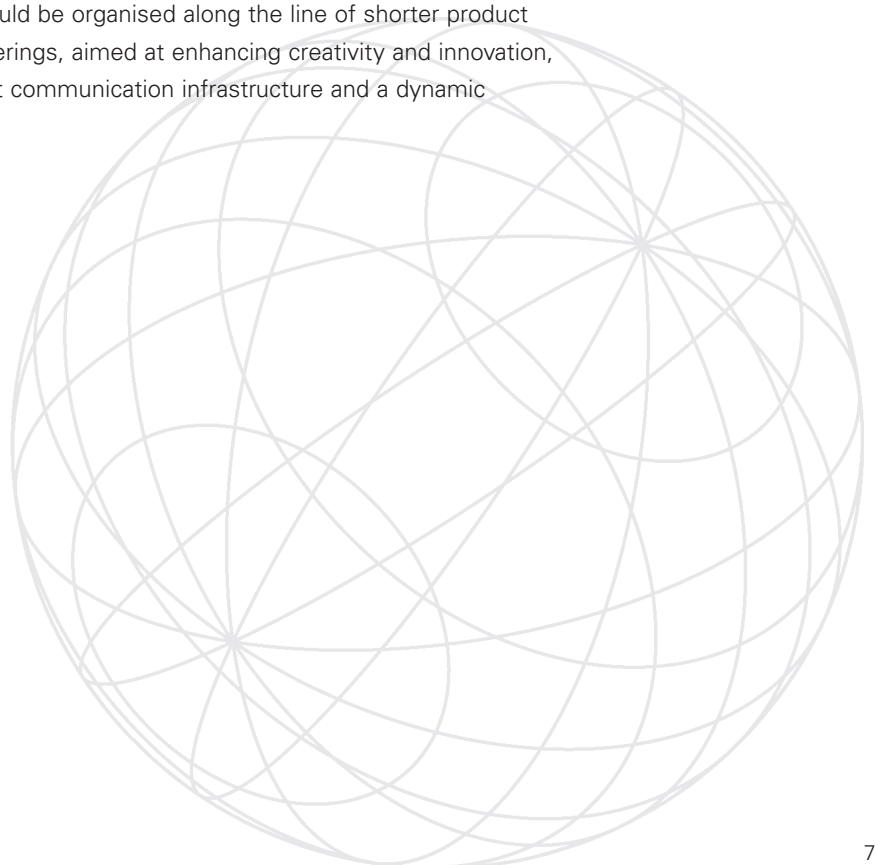
These include:

Technology intensity: Policy should facilitate the development and the adoption of ICT technologies such as customer relationship management or material and stock ordering systems, not activities currently seen as R&D by policymakers.

Value chain position: Ad hoc policies should be organised alongside the value chain position within a wider eco-system approach.

People intensity: Policies should focus on the supply and availability of skilled personnel in different areas of the organisation i.e. whether people intensive or knowledge intensive.

Product life cycle: Policies should be organised along the line of shorter product life cycles typical of service offerings, aimed at enhancing creativity and innovation, new managerial forms, efficient communication infrastructure and a dynamic workforce environment.



introduction: understanding the importance of services

In an increasingly globalised world economy, greater competitive pressure, coupled with low cost production inputs from developing countries, means that many firms in developed economies are attempting to move up the value chain, whether it is through outsourcing or by repositioning within the production chain, for example.

This indeed was the claim of the Sainsbury Review of Science and Innovation (HM Treasury, 2007) and later the Innovation Nation government white paper (DIUS, 2008), suggesting that Innovation and creativity are essential if business and industry are to compete internationally. Therefore, firms need to focus on adding value to the final product, whether it is a good or service, rather than merely focusing on cost minimising strategies in a world where it is increasingly difficult to compete on this basis.

A good example of the move to add value is how greater numbers of manufacturing companies are offering services, either alongside or directly incorporated into their final products. In some cases, companies have used services to completely reposition themselves in areas of higher value. So, for example, IBM is no longer a computer manufacturer but a supplier of 'computing and business services', while IKEA is now classified as a service company in Swedish national statistics.

Services are nothing new and they have played a major, although neglected, role in the industrial revolution and hence in long-run growth (e.g. financial services). The reasons for the neglect are several. However, the fact that companies like IKEA – the world's biggest furniture producer – are now classified in Sweden as a service firm suggests that wrapping products in services is having a significant impact and should lead to a rethink of services in industrial statistics.

Dr Keith Smith, Director of Science and Innovation Analysis group,
Business Innovation and Skills Department), *February 2010*

Today, services account for about 70 per cent of economic activity in the European Union, about 80% of the USA gross domestic product and a similar, very substantial proportion of UK economic activity and employment share. The importance of services, both to the EU and UK economy, means that there is a greater need to understand, promote and sustain the growth of the service economy.

Historically, academic research and government policy has tended to focus on traditional manufacturing activities, rather than services. As a result, innovation policies are primarily based upon aspects of innovation that relate to manufacturing, including technology research and development (R&D) and patents.

More recently, however, a number of projects at both national and international level have been launched in order to gain a better understanding of the nature of service activities, and also to identify the role that government might play in promoting a broad range of innovative activities in sustaining a service driven economy.

In 2006, for example, the EU competitiveness council identified service innovations as a strategic priority for innovation policy. Similar conclusions were reached by the 'Innovation in Services' report committed by the Business Innovation and Skills Department in 2007, as well as in the report commissioned by Alistair Darling and the CEO of NESTA in 2008 on the importance of promoting innovation in a service driven economy and to develop the most appropriate tools of support.

Many of these reports also acknowledged the complex, heterogeneous nature of services, and the difficulty in identifying services. They highlighted the need for a broader definition of innovation that incorporates concepts of modern service innovation that are not easily quantifiable and which tend to go undetected by traditional official innovation statistics and general innovation metrics.

While the increasing importance of services is well established, at the same time it is difficult to understand how government and policymakers might best help sustain a service driven economy. This is because there are a number of barriers which prevent a better understanding of services, in particular: the lack of a standard definition and classification of services; problems in protecting, sustaining and measuring service innovation; problems in measuring service performance.

While the increasing importance of services is well established, at the same time it is difficult to understand how government and policymakers might best help sustain a service driven economy.



This report looks at services definitions and classifications, service performance measurement, and service innovation statistics, and highlights limitations and advancements in our understanding of their nature. A final section discusses policy implications.

defining and classifying services

Traditionally, a service has been described as a 'deed, act or performance.' Today, however, that definition seems far too vague and limited to be of real use. In reality, defining and classifying services is problematic, for many reasons. Because of the non-capital intensive nature of services, for example, it can be very difficult to separate out the (production) process and the operation management from the final product. Add to this the heterogeneous, intangible nature of services, and it is no surprise that policy and management experts define and classify services in numerous different ways.

An increasing number of manufacturing firms worldwide embark on service based strategies to increase their sales. However, the variety of services offered by the servitised manufacturing firms often go undetected by current statistics. For example, 58% of US firms with manufacturing SIC codes offer services. In this case, SIC codes based upon pure manufacturing and pure services are not particularly helpful.

Professor Andy Neely, Deputy Director at the Advanced Institute of Management (AIM) Research, Cranfield School of Management and Cambridge University, *February 2010*

So, for example, while some consider service as an offering when it is a complement to a good or service, others regard services as a sector, or as different types of economic activities ranging from pure services to hybrid services. The boundaries are even more blurred when distinguishing services as an economic activity from manufacturing.

Without clarity of definition, it is difficult to design specific metrics for service performance measurement or policy tools in support of services. For example, given some consensus on what a service is, it might be possible to create and validate a single service specific metric and policy tool. Without such agreement, however, the notion of such a metric becomes less tenable.

The difficulties involved are highlighted by the Standard Industry Classification (SIC) code which is used in official national statistics. This classification, however, is criticised for being unrepresentative of the nuanced classifications in the service economy. Thus this traditional type of classification allows firms to be classified according to their main economic activity, i.e. only manufacturing or only services, with no room for hybrid or servitised firms.

Moreover, even if a hybrid classification was introduced, it would be difficult, if not impossible, for many companies to separate the revenue stream derived from the sale of the service, from the revenues derived from the sale of the tangible product that comprises the final good. Indeed, if you adopt a co-creation of value perspective, it can be argued that service is actually any final output delivery of any tangible or intangible good, irrespective of whether a pure service, a manufacturing product or a process. That perspective would clearly rule out services as a separate economic activity in standard classification.

While the definition and classification of services is not an easy task, it is useful to have more clarity in terms of the existing definitions and classifications (see Table 1).

- i Services can be defined depending on whether they are delivered using equipment or through people. Thus one category for classifying services is primarily 'equipment based services', which includes: automated services, such as a car wash, for example; those monitored by unskilled operators, such as a cinema; and those operated by skilled personnel, such as an airline. The second category is for primarily people-based services including unskilled labour, such as mowing lawns, skilled work, such as mechanics, and professional staff, such as lawyers.
- ii Another way of characterising services is on the basis of the intensity of contact and the degree of separation between production and consumption. Services can be classified on the basis of the type of goods they are integrated with. This includes categories such as rented goods services, owned goods services – the repair or improvement of goods owned by the customer, and non-goods services, such as personal experiences. The main criticism of this classification is that the third category 'non-goods services' is too broad to adequately encompass many modern day services like insurance, banking, legal advice and accounting.



Services can be defined depending on whether they are delivered using equipment or through people.

Table 1: Definition of service as a product and/or as an economic activity

Chronological Classification and Definition of Service	Categories
Neely (2009) The servitisation of manufacturing: an analysis of global trends <i>Operations Management Research</i>	<p>Based on concept of different economic activities:</p> <ul style="list-style-type: none"> a Design and development services b Systems and solutions c Retail and distribution services d Maintenance and support services e Installation and implementation services f Financial services g Property and real estate h Consulting and operating services i Procurement services j Leasing services and k Transportation and trucking services <p>Based on services as complement to a final product:</p> <ul style="list-style-type: none"> – Integration oriented product-service systems – Product oriented product-service systems – Service oriented product-service systems – Use oriented product-service systems – Result oriented product-service systems
Miozzo and Soete (2001) Internationalisation of Services, <i>Technological Forecasting and Social Change</i>	<p>Based on core sector/economic activity:</p> <ul style="list-style-type: none"> – Supplier dominated: Personal services, (e.g. Restaurants, Beauty) and Public and social services (e.g. Health, Education) – Scale-intensive physical networks (Transport and Wholesale) – Information networks (Finance, Insurance and Communications) – Specialised suppliers/science based (Software and Specialised business services)
Stell and Donoho (1996) Classifying services from a consumer perspective, <i>The Journal of Services Marketing</i>	<p>Based on consumer perspective on level of perceived: risk and purchase efforts and consumer involvement</p> <ul style="list-style-type: none"> – Convenience services – Preference services – Shopping services – Speciality services
Melvin (1990) Time and Space in Economic Analysis, <i>Canadian Journal of Economics</i>	<p>Based on time and space separation:</p> <ul style="list-style-type: none"> – Intermediation Services – Contact Services

Chronological Classification and Definition of Service	Categories
Lovelock (1983) Classifying Services to Gain Strategic Marketing Insights, <i>Journal of Marketing</i>	Based on the nature of service and the direct recipient of the service: <ul style="list-style-type: none"> – Services directed at people's bodies – Services directed at people's mind – Services directed at goods and other physical possessions – Services directed at intangible assets
Thomas (1978) Strategy is different in service businesses, <i>Harvard Business Review</i>	Based on medium of delivery: <ul style="list-style-type: none"> – Primarily equipment based – Primarily people-based
Chase (1978) Where does the customer fit in a service operation? <i>Harvard Business Review</i>	Based on degree of separation between consumption and production: <ul style="list-style-type: none"> – High Contact – Low Contact
Judd (1964) The case for redefining services, <i>Journal of Marketing</i>	Based on integration of services with 3 types of goods: <ul style="list-style-type: none"> – Rented goods services – Own goods services – Non-goods services



Services that overcome the separation of time or space between consumers and producers are termed intermediation services.

- iii A more recent approach is to use the nature of service actions and the type of recipients as factors to characterise services. In this way services can be divided into four categories: services directed at people's bodies including healthcare, beauty salons, exercise clinics, restaurants and haircutting; services directed at people's minds, such as education, broadcasting, information services, theatres, and museums; services directed at goods and other physical possessions, including freight transportation, industrial equipment repair and maintenance, laundry and dry cleaning; and services directed at intangible assets, including banking, legal services, insurance and accounting.
- iv An alternative classification uses time and space separation in production and consumption. Services that overcome the separation of time or space between consumers and producers are termed intermediation services. This includes services such as transport, retailing and some finance services. Contact services, on the other hand, include services such as haircuts, education, medical and financial advice.

Contact services can be sub-divided into high and low contact services categories, based on the premise that it is difficult to control product variability in high contact services. In high contact services customers have greater involvement in the service and exert a higher degree of influence on timing of demand and service features. Examples of high contact services include healthcare, hotels and restaurants. Low contact services include postal services and wholesaling.

- v Services can be classified depending on their relationship with the product. So they can be in pure form, integrated within the tangible products, such as with a satellite navigator built in cars, or offered alongside a product, such as with financial or insurance services. A total of about 12 different types of such services have been identified that are offered in either hybrid or in pure forms. Also based upon the level of integration of service into the manufacturing product is a classification of product-service systems that uses the following categories: product, service, use, result and integration oriented.
- vi The existing Standard Industry Classification (SIC) used in official national statistics classifies companies at quite detailed levels under three main categories: manufacturing sector, public services and business services. Business services includes: wholesale and retail trade; hotels and restaurants; transport, storage and communication; finance and banking; real estate and renting; as well as business activities such as consultancy and research firms.

Recently, many government reports and research agencies have further differentiated business services into high skills, which are R&D intensive high-value business services (also known as knowledge intensive business services – KIBS) and low skills services with limited or no use of technology. Examples of the former are environmental testing and professional services, while examples of the latter are cleaning services and call centres.

- vii Finally, there are other more complex taxonomies of services based, for example, upon the linkages with manufacturing and other services sectors, and that distinguish among supplier dominated, scale intensive physical networks, information networks, and specialised suppliers/science based sectors.

Alternative suggestions have been made for classifications to be based on the concept of service as an economic activity that creates value for a firm. This would distinguish between pure manufacturing (non-service) firms, pure service firms and hybrid firms that provide services, either incorporated or complementary, to the manufacturing product.

These are, of course, just a few of several available definitions and classifications. Such a wide variation in services classification indicates the strong heterogeneity in their nature. Some have suggested that services is a classification where it might be appropriate to revisit the fundamentals, and engage in a complete rethinking along the lines of industrial organisation and economic activities in the modern era. Alternative views suggest thinking of services as a market that has the potential to generate revenue or profits in an input and output model.



Alternative views suggest thinking of services as a market that has the potential to generate revenue or profits in an input and output model.

i Performance

a Measuring service performance

Just as there are numerous proposed classifications and definitions of services, so too there are several possible approaches to service performance measurement.

Some approaches focus on the quality and delivery aspects of service performance, in particular elements such as: tangibility, reliability, responsiveness, assurance and empathy. Others focus on technical outputs using accounting measures including revenue, profits, value added and productivity.

Whilst the first set of approaches may be appropriate as they avoid any ambiguity or subjective way of evaluating performance in measurement, the second set excludes the explicit measurement of intangible benefits such as: the overall quality of the service; speed of response by the service provider to customer requests; empathy of the service provider towards the customer; and the range of services offered whether small or large. These intangible benefits may easily be hidden in the final output price, along with any potential mark up as a result of different market power.

A further complication is that prices may not only provide an inaccurate reflection of quality due to the market structure, but may also fail to reflect input costs such as land and capital, which differ due to tax, technology, and geography. That affects the validity of comparisons over time as well as across firms.

b Service performance in private and public sectors

Defining and measuring the output of services is also problematic, due to the intangible, heterogeneous and inseparable nature of services, as well as the difficulty in distinguishing between goods innovation, business model innovation and process innovation in a product service offering.

So, for example, the financial records of businesses do not usually incorporate the service aspect of a product in their books. Nor is this captured in national statistics.

Many firms are classified as manufacturing firms rather than hybrid firms despite a service offering element, such as maintenance, support and installation and financial services. And few manufacturing companies that provide such supporting services, include or breakdown the value of those supporting services in their financial statement.

As a result, national statistics classify these manufacturing hybrid firms as manufacturing firms by default. The result is that the output of manufacturing companies is over evaluated, while the output of service companies is under evaluated, failing to capture or reflect the realities that exist in the competitive marketplace.

To complicate matter further, differences also exist in the way that service output is measured across the private and the public sectors. With public sector health and education services, for example, output is generally measured through the level of attainment in these sectors in the UK versus, for instance, other European countries, returns on incremental services, and so on. Private sector output, however, is usually measured by overall revenue.

Most service innovation does not necessarily take place in formalised R&D labs or research centres...

This difference in measurement between public and private sector is extremely important when it comes to policy decisions on resource allocation. In particular, in principle, the performance measures of public services tend to be under evaluated as issues such as the level of attainment in the education and health sector, for instance, may not be reflected in the overall revenue of these sectors.

ii Innovation in services

a Defining service innovation

Service innovation is a relatively recent topic, as innovation has traditionally been associated with tangible products and in particular, with high-tech manufacturing. The intangible nature of services has made the definition and measurement of innovation rather complicated, leading to several definitions of service innovation.

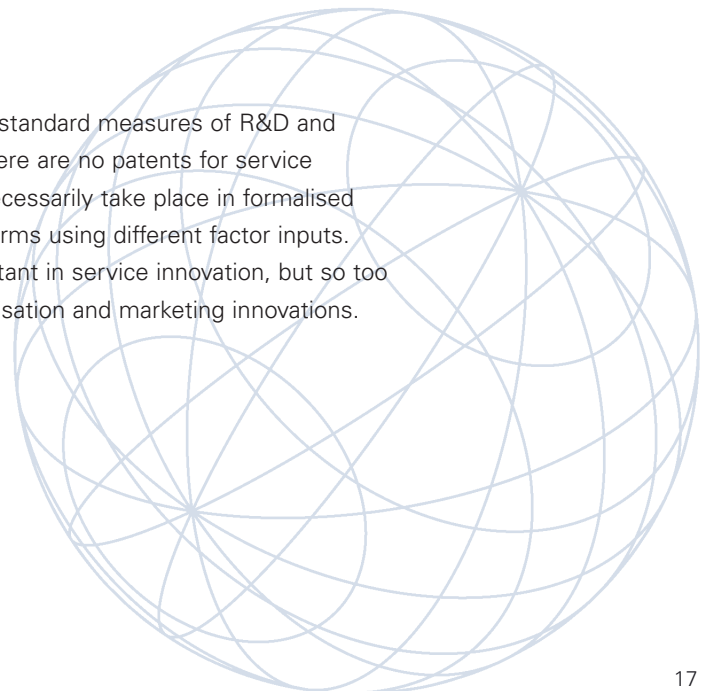
Some definitions focus on inventions, as output resulting from the use of inputs such as IT hardware, knowledge, and investment in staff training and marketing.

Others define innovation as the creation of stakeholder value through new or enhanced service concepts and offerings, service processes, such as service delivery systems, and new organisational forms and client interfaces, such as on-line only banks, for example.

This diversity of definitions reflects the difficulties associated with the conceptualisation of service innovation. Nevertheless, it is important to remember that defining service innovation and its metrics is the starting point for its application in private and public sector businesses.

b Measuring service innovation

Measuring innovation performance through the standard measures of R&D and patents is problematic, as in some industries there are no patents for service processes. Most service innovation does not necessarily take place in formalised R&D labs or research centres, but in different forms using different factor inputs. Technological innovations such as ICT are important in service innovation, but so too are non-technological innovations such as organisation and marketing innovations.



Traditionally, the manufacturing sector was the source of many of the technical product and process innovations that are adopted by business service firms. However, a growing awareness of the role of non-technological innovation, software, and logistics in innovation has meant that the service sector is no longer (if it ever was) a passive adopter of manufacturing innovations.

Arundel, Kanerva, van Cruysen and Hollanders, 2007

In some cases, services can be innovative per se as with business consultancies employing creative solutions, for example. In other cases, services can be the result of bundling existing services together, either outsourced or produced in-house. Additionally, whilst some researchers regard R&D as an input variable in the innovation process, others regard R&D as an outcome of the service process.

These and other factors make it difficult to use patents and R&D as objective measures of either service innovation or service innovation performance.

One way to gain better understanding of service innovation dynamics might be to use tools such as the Community Innovation Survey (CIS), the main survey of innovative activity in the UK and in Europe. This survey has been employed primarily to measure product innovation across several European Union countries, but could be a basis for the development of an integrative measure of service innovation.

It is important to bear in mind that, similar to many issues in services, product measures, instruments and models should only be used as a reference point. Specific and distinctive measures of innovation in services, versus innovation in products, must be developed. On the other hand, the use of a single measure of service innovation would allow studying service innovation causes and outcomes more systematically. Ultimately, the development and agreement on a measure of service innovation would allow comparisons across time as well as across different national settings with important implications for both policy and research.

c Protecting service innovation

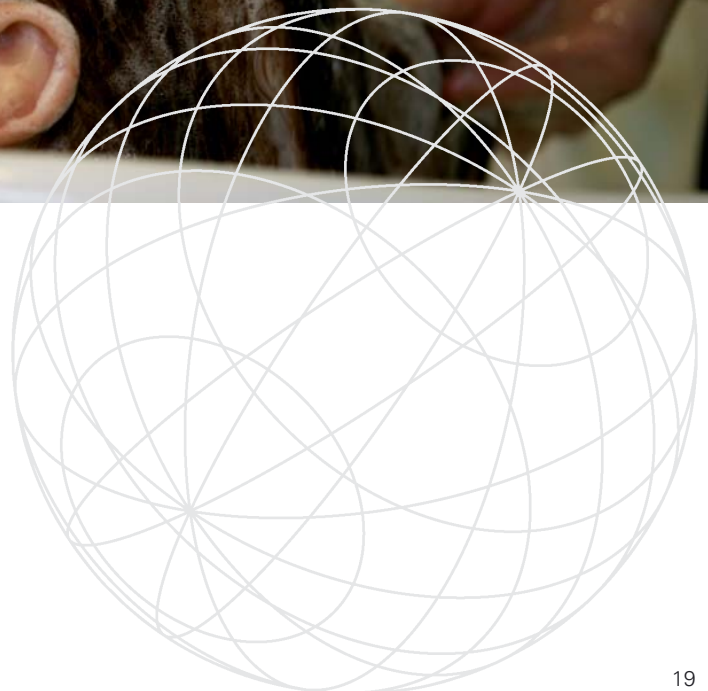
There is no trace of the innovation that nearly destroyed Western capitalism (subprime mortgages) in traditional innovation statistics... (financial) services' innovation often goes undetected when using traditional indicators such as R&D and patents.

Professor Jonathan Haskell, AIM Senior Fellow, Imperial College, *February 2010*

One of the major issues relating to services is how to protect service innovation, assuming it is either possible or desirable to do so. It is a question of crucial importance, yet the solution is far from straightforward. First of all, the degree of difficulty in protecting service innovation differs, depending on the nature of the service provided. Secondly, there is a substantial lack of adequate use and provision of patents and intellectual property rights (IPR) in services. Often innovation in services can be imitated by competitors in a very short period of time and that raises questions on the sustainability of high rates of innovation and competitive performance in the long run.

It may be possible for firms to protect service innovations through alternative means other than IPR. They can, for example, support the service offering by encouraging service employees to develop specific and unique skills sets. By creating barriers to copying a firm's innovative systems, companies could protect and sustain service innovation. Nevertheless, such an alternative may not be effective in situations where the firm largely develops and implements systems with the help of an outsourcing partner, either by outsourcing the system itself or by buying or leasing standard applications to support new services. In-house development of systems and applications might potentially protect innovations for a longer period of time.

...the degree of difficulty in protecting service innovation differs, depending on the nature of the service provided.



In retail banking, innovation takes place in terms of using technology to improve the customer interface and to increase service productivity.

There is a traditional view of innovation which holds that it needs to be protected for it to take place. The argument is that a high rate of imitation diminishes the benefits derived from the generation and the adoption of innovations and this works as a disincentive to further innovate. This is seen to be particularly true for hard (usually technological) innovations where patents are often used to allow the benefit derived from the generation of innovations to compensate for the cost of their generation, i.e. research and development expenditures.

However, unlike innovations incorporated into capital goods, service innovations are often intangible and difficult to protect. In retail services, such as large supermarkets, for example, the introduction of automated stock systems and customer relationship management tools have led to productivity increases and growth. These advances have been adopted across the industry by competitors.

In financial institutions, there are teams of analysts, technology personnel and product managers who work to construct innovative financial products for corporate treasury and private investors. In retail banking, innovation takes place in terms of using technology to improve the customer interface and to increase service productivity. Yet typically, many service innovations relating to financial service provision or new service products seem to be duplicated within a matter of months. They do not meet the requirements for protection through patenting, as reflected both by the fact that UK financial services shows almost no patents, as well as by the relative percentage of innovative firms that applied for patent, registered design or trademark, or claimed copyright between 2002 and 2004 (see Table 2).

Table 2: Percentage of innovative firms that applied for patent, registered design or trademark, or claimed copyright between 2002-2004

	Patents	Design	Trademarks	Copyrights
Manufacturing	20.4	18.8	18.7	5.4
All services	8.3	16.3	9.8	5.9
KIBS	12.0	17.6	8.7	12.5
Services excluding KIBS	6.7	15.5	10.0	3.2

The complexity and heterogeneity of services is compounded by the role of technology and consumer-user power in innovation process, such as with Knowledge Intensive Business Services. KIBS are R&D intensive leader and service solution providers where the customer is delivered tailored products that can often be considered innovations in their own right. At the other end of the spectrum there are non-technology, non R&D intensive, low-skills services that only indirectly involve new technologies. This is the case of services innovation resulting from the combination of existing services and technologies, but perceived as value adding by final users.

This suggests that technological R&D oriented at technologies incorporated into capital goods such as machinery and ICT, are as important as non-technological service based R&D, such as organisational and marketing innovations and the strategic role of intangible assets. The latter, however, are often neglected by innovation policy suggesting the need for a rethink of the role of patents, trademarks and general IPR regimes in non-technological service innovations.

i Dimensions of service innovation and policy support

The question is how to encourage pervasive innovation across the broad sectors providing services. This is especially important when innovation is not easily protected, and as such does not encourage service firms to innovate. As noted previously, it may not be necessary to distinguish services as the boundary between product and service becomes less clear and more intermediation services arise that are part of a larger production process. On the other hand, there are pure contact services such as education and medical services.

Services are almost completely neglected in current growth/innovation policy discussion. The focus seems to remain on high-tech manufacturing and there is a clear need to change this.

Professor Andy Neely, Deputy Director at the Advanced Institute of Management (AIM) Research, Cranfield School of Management and Cambridge University, *February 2010*

In supporting and promoting service innovation we may need to rethink the main dimensions of service activities:

a Technology intensity: Investments in ICT such as customer relationship management or material and stock ordering systems can be considered as inputs to enhance a firm productivity. Depending on the nature and size of the business, such systems are especially effective when adopted in large retail supermarkets with international business presence or multi-store activities, for example. Smaller or single retail organisations may benefit less in economic terms from large investment in ICT, however. Often, the investment and work carried out in these areas by service organisations are not seen as R&D by policymakers, where capital and manpower invested do not count as R&D work. Financial institutions can invest millions of pounds in financial innovation and ICT which do not count as R&D, and do not receive much in the way of policy support.

...Ad hoc policies aimed at supporting the growth and the innovative effort of services should be designed in line with four areas: Technology intensity; Value chain position; People intensity in the product and service delivery and Product life cycle.

Professor Andy Neely, Deputy Director at the Advanced Institute of Management (AIM) Research, Cranfield School of Management and Cambridge University, *February 2010*

ICT is an enabler of increased innovation and productivity but the technology intensity varies, depending on the nature of the business and industry. Policy providing technology and R&D grants, both for low and high technology sectors, can allow industries to reap shared economic benefits in service productivity.

Dimensions	Spectrum	
Technology Intensity	High	Low
People Intensity	High	Low
Product Life Cycle	Long	Short
Value Chain Position	Close to User	Far from User

b Value chain position: The distance from the end-user or consumer is one way to view the value-added dimension of services, in order to provide policy support in enhancing productivity and innovation in services. The intermediation or upstream activities need to be innovative and competitive in order to add the greatest value to the product's final value surplus.

Policy planners may need to ensure that specific policies are designed and catered for in the eco-system to support other enterprises that are responsible for delivering competitive final product to the end-user. Yet a different set of policies may also be necessary, in terms of providing experienced and trained personnel to support contact services close to the end-users, so that service delivery can ultimately be seen as professional and service productivity can be enhanced. Hence, policy organisation alongside the value chain position, within a wider eco-system approach, can be more suited to catering for service innovation.

c People intensity: In delivering excellent services and engaging the end-user, whether it is in retail, accountancy, or architecture, the service sectors depend largely on skilled personnel. Hence, both the supply and availability of skilled personnel to different areas of the organisation are of considerable importance. Whereas, in some services, such as in call centres, the quantity of active contact personnel, the people intensity that is, is a key success factor, other services require more advanced skills such as project management or skills in terms of following through a customer case file. Therefore, different skill sets are required and the performance criterion may be based on quality of personnel.

Perhaps it is time for policies to be organised along these lines, despite a number of schemes and grants already in place for workforce training and upgrade in the economy. There ought to be a larger number of grants available, with a smaller value, catering for people-intensive service organisations, and smaller number of grants available, with a larger value, for long-term skills development projects in service management, including innovation.

d Product life cycle: A fourth dimension for promoting service innovation can be organised along the line of shorter or longer product life cycles, as products are often bundled services. This sector depends on key success factors such as efficient creation, marketing and distribution. Investment in service innovation in such sectors can, therefore, have a quicker return than, for instance, the investment in service innovation in a capital-intensive sector, such as the nuclear industry, which is characterised by longer-term development needs.

In sectors with a shorter product life cycle, policies aiming at enhancing creativity and innovation in the way that the company is managed, and also at providing an efficient communication infrastructure and a dynamic workforce environment, may assume a greater importance.

... policies
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In contrast, sectors with a longer turnaround cycle have different policy requirements, such as a consistent and long-term strategic investment in providing the supply labour pool, and in infrastructure and research capacity needed for the industry.

conclusion

In recent years there has been significant growth in the contribution that services make to the economic output of developed nations. Since 1970, for example, the service sector's contribution to the economic output of the UK has grown from 53 per cent to 73 per cent. Contrast this growth with a decline in the contribution of the manufacturing sector from 33 per cent to 16 per cent (Source: ONS).

The increase in importance of services is partly due to greater numbers of manufacturing companies offering services, either alongside or incorporated into their final products. As a result, the need to define and classify services, to understand and measure service performance and service innovation, assumes a greater significance. A greater understanding of these issues would allow more effective creation and targeting of policy.

There is no question that extra research is required. Despite the rapid growth of the service economy there has been a substantial delay in the collection of innovation statistics for services and in the development of policies relevant to business services.

Definition and measurement

To date, there is no consensus on a standard definition and classification of services or on the best way to measure service performance. This is reflected in the lack of clear, standard, guiding policies aimed at sustaining the growth of services, and at encouraging and promoting innovation practices in services.

Measuring services is not an easy task. Services are highly heterogeneous. There is frequently no product-process distinction. In their current format statistical instruments such as the Community Innovation Survey (CIS) or the standard industrial classification are not appropriate to deal with services. Despite the increasing servitisation of manufacturing, the financial records of businesses rarely incorporate the service aspect of a product in their books. Both CIS and official national statistics fail to capture the increasing servitisation of manufacturing.

Although it might be argued that it is not necessary to distinguish a service from a tangible product, as the boundary between them is increasingly blurred, there is a clear need for a more diverse array of survey and statistical instruments, as well as a greater accountability of manufacturing-service interaction in industrial classifications. Clearly, a rethinking of the fundamentals of classifications along the lines of industrial organisation and economic activities in the modern era is needed.

Service innovations

The existing diversity of definitions of services and their performance measures reflects the difficulties associated with the conceptualisation of service innovation. Some definitions focus on inventions and the generation of new ideas as an output derived from the use of inputs such as IT hardware, knowledge, and investment in staff training and marketing. Others consider inventions and new ideas as an input to, rather than an output of, the innovation process. They focus on the implementation and the exploitation stage of new ideas and the creation of stakeholder value for the company through new and enhanced service concepts and offerings, service processes, new organisational forms and client interfaces.

However, it is often neither possible nor straightforward to distinguish what is an input from what is an output in service innovation. For some companies service innovation is any final product delivered to customers, such as in the case of financial services, environmental services and other consulting activities.

The variety of service offerings and the nature of service innovation raises obvious questions as to whether the service economy and service innovations are subject to market failures and whether, as a result, they require government intervention. If this is the case, another obvious question would be which policy instruments are the best for supporting service innovation and the growth of the service economy.

Policy

The challenges relating to the definition, classification and measurement of services and service innovation raise a number of important policy issues that are yet to be addressed adequately.

For example, with regards to policy discussion, exploring how the UK can drive growth more effectively though innovation in services is almost completely neglected with the focus tending to remain on high-tech manufacturing. There is a clear need to change this.

Indeed, services present unique challenges for policymakers. They can be imitated by competitors in a very short period of time. While in some cases that can be desirable (standardisation can increase diffusion), in others that can make it difficult for firms to sustain high rates of innovation and competitive performance in the long run.

R&D incentives and IP protection are the most commonly used government policy tools in support of innovative activities. However, most of service innovation does not take place in formal R&D laboratories. In many cases, the applicability of intellectual property rights (IPR) is quite limited. That suggests the need to rethink of policies that are not only designed to sustain the UK science base, but that stimulate the development of systems and applications to protect service innovations for a longer period of time.

For some companies service innovation is any final product delivered to customers, such as in the case of financial services...

By some, services are seen as any value creation or co-creation activity associated with the final delivery of any tangible good or service...

By some, services are seen as any value creation or co-creation activity associated with the final delivery of any tangible good or service, irrespective of whether outsourced or internally produced. This view encompasses the various forms of services offerings and would favour the development of horizontal rather than vertical policies supporting and promoting service innovation across service sectors and service offerings. That requires policymakers to revisit the basics and rethink innovation policies along the key dimensions of service activities and the role they play in enhancing productivity and competitiveness, namely: technology intensity, value chain position, people intensity and product life cycle.

Technology intensity: Policy should facilitate the development and the adoption of ICT technologies such as customer relationship management or material and stock ordering systems. They play a key role in enhancing services productivity and competitiveness. Currently, the investment and work carried out in these areas by service organisations do not tend to be seen as R&D by policymakers.

Value chain position: Ad hoc policies should be organised alongside the value chain position within a wider eco-system approach. For example, policies oriented at increasing the performance of contact services (close to the end-users) would increase demand and generate obvious benefits along the whole supply chain.

People intensity: Policies should focus on the supply and availability of skilled personnel in different areas of the organisation i.e. whether people intensive or knowledge intensive. Schemes and grants already in place for workforce training and upgrade should set aside grants for people-intensive service organisations along with grants for more long-term skills development projects in service management, including innovation.

Product life cycle: Policies should be organised along the line of shorter product life cycles typical of service offerings. They should aim at enhancing creativity and innovation, new managerial forms, efficient communication infrastructure and a dynamic workforce environment. These are different policy requirements than for longer life cycle products, typical of manufacturing and that require strategic investment for the provision of the supply labour pool, infrastructure and research capacity.

Services are a major contributor to UK economic prosperity. The issues raised in this briefing, regarding existing approaches to the classification and measurement of services and service innovation and performance, highlight serious deficiencies in the current approaches. Only by focusing on these issues, and addressing them, will policymakers ensure that the contribution of services to the UK economy and UK economic competitiveness are maximised.

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