

Service innovation and non-technological innovation

Rationale and objectives

In the face of lagging productivity and job creation, many OECD governments are looking for new sources of growth and have recognised the importance of services in this regard. Services already account for around 70% of gross domestic product (GDP) and most employment across the OECD. Services also contribute half or more of all the value added in total exports (OECD, 2013).

The boundaries between services and manufacturing are also increasingly blurred. Indeed, successful manufacturers often combine services with manufactured products in innovative ways. For example, during the global crisis, Hyundai managed to grow its share of the US automotive market in part by introducing income-loss insurance for buyers. And Caterpillar has introduced a charging framework based on the volume of material moved by its machinery.

In spite of the overall growth in services, productivity in this sector has risen slowly in many OECD countries. Because of the economic weight of the sector, raising its productivity is clearly an important step in achieving higher aggregate productivity growth (it is recognised, however, that, all else being equal, raising productivity in services will put pressure on employment over the short term). Policy makers are therefore giving greater attention to promoting innovation and productivity in services through the design of appropriate framework conditions, such as regulation and competition policy, and targeted innovation policies.

OECD analysis shows that innovation in services relates positively to employment and firms' turnover growth. Furthermore, positive spillovers from services innovation are found to be no less important than those from other types of innovation (OECD, 2015).

Services innovation has some particular characteristics. Services firms typically invest less than manufacturers in R&D, but a high proportion of services firms still innovate. Indeed, knowledge-intensive services firms have levels of innovation comparable to firms in high-tech manufacturing. Service industries also tend to innovate in interaction with customers, suppliers and competitors. Service companies likewise use a wide range of mechanisms to appropriate the benefits of their innovations. These mechanisms include formal protection of intellectual property, through design rights, trademarks, copyright and patents (although patenting occurs predominantly in knowledge-intensive services). Informal protection is also used, ranging from confidentiality clauses in employment contracts to lead-times in innovation cycles.

On average, market services use as much fixed capital per employee as manufacturers, but this capital is more skewed towards buildings and ICT. Service industries raise their productivity by combining investment in fixed capital with intangible assets such as computer software, human capital, design and new business models. Big differences exist across countries in the scale of business investment in intangible assets, and many policy settings play a role (OECD, 2013). Much of Europe, for example, lags behind the United States with respect to intangible investment. Policy must ensure that good framework conditions exist so as to facilitate business investment in both tangible and intangible assets.

Some OECD work has found that service-sector firms are under-represented in innovation programmes. Policy should thus ensure that these firms enjoy equal access to non R&D based forms of innovation support (OECD, 2015).

Major aspects and instruments

In some countries, policies to support innovation have been developed mainly from an R&D or manufacturing perspective. Policy makers need to ensure that policies are well adapted to the specific characteristics of services innovation (e.g. more direct involvement of users) and to the market and that they deal with systemic failures that inhibit service innovation. Policies for service innovation cover a broad range of strategic objectives (Table 1), from reinforcing public research capacity to advancing knowledge in non-technological fields or service-related domains, to encouraging service innovation by firms, to strengthening business capacity to implement organisational and marketing changes, to supporting innovative entrepreneurship in services, to adopting a sector-targeted approach by supporting service industries, etc.

Australia, Austria, France, Germany, Denmark and Finland are examples of OECD countries with targeted instruments for service innovation. Instruments focusing on services include:

- *Making R&D support more relevant to the service sector:* Across countries, relevant approaches have included establishing R&D programmes related to the needs of the more R&D-intensive segments of the service sector, such as computing, software and telecommunications services, and promoting R&D for the application of ICT to service industries such as health care, financial intermediation, wholesale and the retail trade.
- *Support for the application of ICTs:* ICT-related service businesses have received strong support in many countries (for instance for e trade). Such support sometimes has a human capital dimension. For example, the Danish Ministry of Science, Technology and Innovation has implemented measures to help ICT staff with short-cycle higher education (such as multi-media designers) to gain credits towards a university education.
- Support for services-oriented industries, including software.
- *Fostering start-ups in services:* New firms effectively serve as a platform for experimentation with service-sector innovations (as they do in manufacturing).
- Securing transparent regulation of the transfer of public data (maps, meteorological data, etc.) for commercial use.
- Integrating service innovation in policies to better link industry and public research (commercialisation policies).
- Adjusting demand-side innovation policies and instruments such as public procurement (Finland, United Kingdom) and regulations to better facilitate services innovation (Sweden, Denmark, Germany, United Kingdom).

Table 1. Service innovation: Typology of national policy initiatives and country examples

Policy instruments		Selected country examples
Strategic objective: Improving policy governance		
Direction and	Dedicated strategy or plan	Norway (Health&Care21),
priority setting	As part of a broader strategy or plan (incl. industrial plan)	Colombia (National Policy on STI CONPES 3582 and Production Transformation Programme), France (Plans for Industrial Recovery), Netherlands (Top Sectors), Poland (National Cohesion Strategy), Sweden (National Innovation Strategy), UK (UK Industrial Strategy, Productivity Plan)
	As part of a smart specialisation strategy	Chile (Technologies and Services in Health Programme), Croatia (Health and quality of life).
	As part of an Open Data Strategy	Australia (Data Sharing for Innovation).
Multistakeholders' participation		Colombia (Knowledge Networks initiative), France (National Industrial Council and dedicated sectoral strategic committees), Germany (Services Task Force), Greece (Innovation Platforms), Ireland (Services Strategy Group)
Monitoring and evaluation	Programme evaluation	Austria (mid-term evaluation of the Service Innovation Initiative).
Strategic objective: Strengthening public research capacity		
Financial support	Revised public funding mechanisms	Ireland (Innovation 2020: new challenge-based funding system)
	R&D funding programmes	Germany (Innovation with Services, Innovations for Tomorrow's Production, Services, and Work), Sweden (VINNOVA Sectoral R&D programmes)
Platforms and infrastructures	Centres of excellence	Netherlands (Leading Technological Institutes-Novay)
Strategic objective: Strengthening business capacity to innovate		
Direct funding (grants, subsidies, etc.)	Service-related R&D projects	Austria (Service Initiative), Sweden (VINNOVA Sectoral R&D programmes)
	Non-technological and services innovation	Ireland (Business Innovation Initiative, Credit Guarantee Scheme),
	Eco-innovation schemes	Lithuania (Eco-innovation schemes for SMEs), Netherlands (Green growth policy), Turkey (Green Future Accelerator Fund)
	Software development, ICT solutions	Czech Rep. (ICT and shared services programme)
	Service innovation in start-ups and young firms	Croatia (Grants for Innovation in entrepreneurship), France (French Tech Grant), Greece (New Innovative Entrepreneurship)
Public procurement		Iceland (Better service for less), Italy (Pre-commercial procurement of innovative solutions for the public administration)
Tax incentives	Expenditure-based (e.g. eligibility of software development costs, preferential treatment of software companies)	China (Business and VAT reduction), Netherlands (WBSO tax credit), Spain (SSC exemption)
	Free-tax zones	Turkey (TDZ exemptions)
Non-financial support	Standards, training, networking and knowledge services (vouchers)	Colombia (Innovation Locomotive for Enterprises, Colombia 3.0 summit), Denmark (Service Innovation Centres), Peru (Technology and Innovation Center)
		Belgium (Flanders' Care Invest),
Sector-targeted support	Health and healthcare	Greece (Innovation Platforms)
	Culture and creative industries	Colombia (Vive Digital plan)
	ICT	

Strategic objective: Improving knowledge transfers and interactions		
Platforms, networks and infrastructures	Technology platforms	Argentina (Technology Platforms Projects), Ireland (network of Research & Technology Organisations)
	Networking infrastructures (incl. one-stop shop)	Argentina (Demand and Technology Transfer Platform), Ireland (IVI Innovation Value Institute for IT best practices)
	Accelerators	Korea (Global excellator programme)
Reform and regulation		Japan (collective examinations for IP portfolio)
Strategic objective: Strengthening skills for innovation		
Education and training (supply-side)		Denmark (short-cycle ICT training), Slovenia (UPI Programme)
Labour market policies (demand-side)		Ireland (Innovation 2020: appointment of "star" researchers)

* See also the *STI Outlook Policy Profiles on Public-sector innovation, Open Science, Tax incentives for business R&D and innovation*.

This table draws upon recent analytical work on the innovation policy mix carried out for the *OECD STI Outlook* under the aegis of the OECD Committee for Scientific and Technological Policy (Kergroach et al., forthcoming). Country information is drawn from the EC/OECD International Science, Technology and Innovation Policy (STIP) Database, edition 2016, <https://www.innovationpolicyplatform.org/topic-menu/sti-policy-database>.

As many policy instruments for services are relatively new, impact assessments are rare. A lack of indicators and measures of service innovation also hinders an understanding of the impacts of service innovation and policy. A key challenge for policy makers is to identify and adapt best practices for promoting service innovation. Measurement has improved, but many challenges remain:

- Surveys and measurement guidelines must keep up with the increasing complexity of how R&D and innovation activities are organised within and across firms.
- The coverage of services in innovation surveys has improved, but little information is collected on services innovations: new questions/indicators should be developed and tested.
- In addition to surveys, other information sources should be further exploited (e.g. administrative data).
- The data infrastructure for analysing services-based innovation must be strengthened, and access for researchers to data (micro-data, public sector data, etc.) should be facilitated.
- More quantitative and qualitative information is needed to inform the design of new or improved policy instruments for services innovation.

Recent policy trends

In recent years there has been a shift to include policy support for service innovation in mainstream instruments such as R&D tax credits. Indeed, the churning rate in national services-targeted policies between 2014-16 is much lower than in other STI policy areas, meaning that policy intervention to renew, streamline or revise policy programmes targeted to services remains comparatively limited (Figure 1). New programmes have been introduced, primarily in support of health and education services.

In fact, rather than creating instruments specific to new services, most OECD countries are in the process of changing the scope of existing instruments. For instance, in 2016 Ireland launched Innovation 2020, a programme which among other goals aims to increase capacity in the higher education sector by appointing researchers with a proven track record of solution-driven research in services and business processes, in collaboration with business leaders.

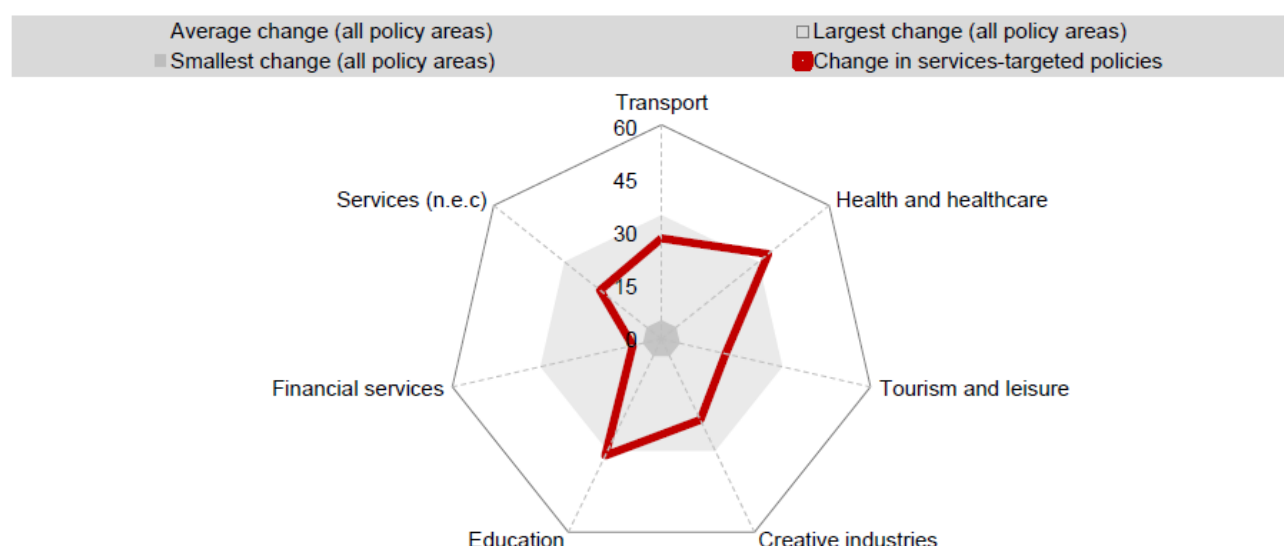
A growing number of countries also have some type of service innovation strategy, either as part of a broader vision on innovation, or a smart specialisation strategy, or in relation to social challenges and innovation in the public sector (Table 1). In Germany, for instance, the Services Task Force deals with a range of topics, including endowing university chairs, developing the "Service made in Germany" brand, establishing services-related qualification and promoting services-relevant research. The Services Task Force is included in the Science and Industry Research Union

(Forschungsunion Wirtschaft Wissenschaft), which aims to support the government's High-Tech Strategy.

Tax incentives are also increasingly being expanded to include services innovation, as in the Netherlands and Australia. In some countries public procurement procedures are being modified with the aim of spurring services innovation.

Figure 1. Services-targeted policy among other areas of STI policy change, 2014-16

Percentage of policy initiatives that have been newly introduced, revised or repealed over the period



Note: The EC/OECD STI Policy survey 2016 aims to review major changes in national policy portfolio and governance arrangements for STI. The survey builds on the conceptual work carried on under the aegis of the OECD Committee for Scientific and Technological Policy (CSTP) for mapping the policy mix for innovation and therefore covers a broad range of policy areas (Kergroach et al., forthcoming-a). 52 economies participated in 2016, including OECD countries, key emerging economies (e.g. Argentina, Brazil, the People's Republic of China, Colombia, Costa Rica, Egypt, Indonesia, Malaysia, Peru, the Russian Federation, South Africa and Thailand), non-OECD EU Member States, and the European Commission. Taken together, countries covered in the STIP survey 2016 account for an estimated 98% of global R&D. Responses are provided by CSTP Delegates and European Research and Innovation Committee (ERAC) Delegates for EU non-OECD countries.

This is an experimental indicator that accounts for the number of major policy initiatives implemented, repealed or substantially revised during 2014-16 as a share of total policy initiatives active at the beginning of the period. Although simple counts do not account for the magnitude and impact of policy changes, this ratio reflects STI policy focus and activity in specific policy areas and over specific periods of time. The chart above shows the intensity of changes in the policy area(s) under review as compared to the whole policy mix for innovation. Changes in the whole mapping are represented by the smallest, the largest and the average changes observed in all policy areas taken together.

Source: Based on EC/OECD (forthcoming), *International Database on STI Policies (STIP)*; and Kergroach et al. (forthcoming-b).

StatLink  <http://dx.doi.org/10.1787/888933445065>

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