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Measuring design  
Design Council briefing  
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Measuring innovation and R&D has helped policymakers around the world develop policies that enhance competitiveness and encourage investment by firms. There is growing recognition that design helps both companies and nations compete; but there have been few efforts to measure its scale or impact nationally.

Recent research led by the University of Cambridge has attempted to bridge this gap by producing an initial 'International Design Scoreboard'. This work provides a proof of principle that design can be measured on a national level.

Over the next five years, the project will continue collaborating with institutions around the world to provide a more robust and complete picture of international design capabilities.

## Nations now compete on design

### The UK design landscape is changing – but remains strong

The UK has well-established capabilities in design education and design employment. However, some evidence suggests that the design services sector has reduced in size over the past eight years, following a period of growth towards the end of the 1990s.<sup>1</sup> The UK remains effective in the education of designers, with a comparatively high number of design graduates, although a growing number of them originate from overseas. But if the design services sector is shrinking, there remains a question about the long-term employment prospects of these graduates.

### East Asian countries are emerging as design powerhouses

Nations which have in the past competed on price are increasingly competing through design. It has previously been speculated that design will follow manufacturing to the emerging economies, and new research appears to confirm this trend.<sup>2</sup>

In both Singapore and Korea, sustained public investment is beginning to result in clear design capabilities. Public support in both nations is exceptionally ambitious, with substantial funding to support an explicit national vision for design. In both nations, the design services sector is still developing, but is already well established and internationally competitive. Korea is well positioned to be a future design powerhouse.

## But measuring design poses serious challenges

### Design is hard to define

It is acknowledged that difficulties in providing consistent definitions of design make it hard to measure. This is a real issue when seeking data at a national level, as responsibility for design often falls between government departments. In some nations, design is viewed as supporting technical innovation; in others, it is a part of the creative industries.

These ambiguities in defining and positioning design reflect its integrative nature as the interface between art and science; between technology and experience; and between firms and their customers. However, they also create genuine difficulties in establishing comparable data at a national level.

### The International Design Scoreboard project is tackling these challenges

To address these issues, a recent study has compiled the first international design scoreboard. The study compares national design capabilities using a framework comprising four elements: enabling conditions, inputs, outputs and outcomes. These are considered in both absolute and relative terms. The 'relative' indicators (e.g. number of design graduates per million population) help to show the relative intensity of design capabilities within a nation.

The 'absolute' indicators (e.g. total number of design graduates) show the overall scale of the design capability in each country. This framework has been used to collate data on 12 countries and provide initial rankings (see figure 1).

**Figure 1: National ranking based on absolute and relative indicators**

	Rank based on absolute measures	Rank based on relative measures
USA	1	11
Korea	2	2
Japan	3	10
<b>UK</b>	<b>4</b>	<b>6</b>
Canada	5	5
Singapore	6	1
Sweden	7	4
Hong Kong	8	12
Norway	9	8
Denmark	10	7
Finland	11	9
Iceland	12	3

## Better measurement will help policymakers

### National scoreboards help governments set the right targets

There is a strong international interest in the comparison of national performance, for a variety of reasons. Perhaps the most well-known comparative study is the World Economic Forum's Global Competitiveness Report, which provides a 'comprehensive and authoritative assessment of the comparative strengths and weaknesses of national economies.'<sup>4</sup> Measurement of both R&D and innovation through national scoreboards has been instrumental in encouraging both firm investment and the setting of national targets.<sup>5</sup>

## Measuring R&D has raised its importance

### The R&D Scoreboard unleashed R&D policy

In the late 1980s, the House of Lords science and technology select committee urged increases in R&D. Standard accounting procedures were created for financial reporting of R&D, enabling the government to introduce the first R&D scoreboard in 1992. This annual scoreboard ranks firms by R&D expenditure in the UK and abroad, based on self-reported spending taken from company accounts. The R&D Scoreboard has enabled comparison across the EU and other nations; helped raise the importance of R&D investment; and resulted in the establishment of national targets.

### R&D was previously considered 'too creative' to measure

While the standards on capturing R&D spend are now well established, this was not always the case. Early attempts to measure R&D were hindered by the perception that it was too creative and unstructured to be measured. Design is arguably even more 'creative and unstructured' than R&D. However, there is a growing recognition of the need for design spend to be better understood.

<sup>1</sup> Based on the annual BDI Valuation Survey. However, the survey does not include freelance designers, who make up a significant part of the design industry.

<sup>2</sup> Moultrie, J., Livesey, F. (2009) 'International design scoreboard: initial indicators of international design capabilities.' Cambridge: University of Cambridge

<sup>3</sup> Ibid.

<sup>4</sup> [www.weforum.org/en/initiatives/gcindex.htm](http://www.weforum.org/en/initiatives/gcindex.htm)

<sup>5</sup> Tether, B. (2006) 'Design in Innovation: Coming out from the Shadow of R&D, An Analysis of the UK Innovation Survey of 2005.' Manchester: University of Manchester

## **Innovation measurement has followed suit**

### **Innovation metrics are now well established**

Innovation is increasingly viewed as a key driver of economic growth. In response, there are a number of approaches to measuring national innovation capability, which provide international comparisons. The annual European Innovation Scoreboard is based on 29 measures.

Raw data is taken from the Community Innovation Survey, other R&D Surveys, and national/EU statistics agencies. Data is compiled to provide an overall index for an individual nation; the resulting index is also used to compare performance with Japan and the USA.

Other approaches to measuring national innovation capability exist, including an EU and US benchmarking of Innovation and Competitiveness.<sup>6</sup> This study is based on a mixed set of 16 indicators, focusing on human capital, innovation capacity, entrepreneurship, IT infrastructure, economic policy and economic performance. Data is currently available for 40 nations.

### **New innovation is driving new metrics**

NESTA has identified areas where policy lags behind innovation in the UK, arguing that more sophisticated metrics are needed to capture 'hidden innovation'. Its collaborative 'Innovation Index' project is helping to bridge this gap.<sup>7</sup> Countries including Australia and Canada have also begun developing improved innovation metrics.<sup>8</sup>

## **Design must now be measured with the same focus**

### **Existing scoreboards have loose definitions of design**

Design is related to, but also different from both innovation and R&D. The Community Innovation Survey describes design rather loosely as being 'for the development or implementation of new or improved goods, services and processes'.

Similarly, the guidelines on accounting for R&D treat design as 'an essential part of the innovation process that covers plans and drawings; technical specifications; and operational features necessary for the conception, development, manufacturing and marketing of new products and processes.'

### **Design is not merely a 'subset of innovation'**

So design is often viewed narrowly as a sub-set of innovation and specifically as the 'aesthetic' element of new product development. But design is also important in firms that are not engaged in R&D – or who are not viewed as traditionally innovative. Design has a wider role in ensuring that a firm is user-focused in their delivery of experiences, services, brands, products and communications.

Design is different from both R&D and innovation and should therefore be treated independently for analysis and international comparison.

## **Why measure design?**

### **There are clear financial benefits to design**

Since the 1980s, there have been a number of landmark studies that have aimed to determine the benefits of investing in design from a firm's perspective.

Studies have demonstrated that: firms using industrial design grow at faster rates than those that don't;<sup>9</sup> design-conscious or design-led firms outperform their competitors;<sup>10</sup> and firms that invest in design are more profitable or successful than those that do not.<sup>11</sup>

But common difficulty with these studies is ambiguity in defining design. Design is often viewed as synonymous with new product development, and frequently viewed as the activities associated with industrial design professionals. This narrow view of design fails to capture the benefits of investing in design relating to other aspects of the business, such as brands, communications and environments.

### **Design also brings intangible gains**

There are also a range of non-financial benefits of adopting effective design practices. Designers bring a unique perspective, which not only influences products and services, but also offers strategic benefits. In some cases this leads to entirely new market models, such as the UK pay-as-you-go car hire business Streetcar.<sup>12</sup> Design enables the communication of corporate and business values. It also challenges preconceived ideas or established assumptions to produce creative solutions to existing problems.

A strong design culture may enhance teamwork and communication, through effective and early concept visualisation. An effective design process pays close attention to customers and market trends to support idea generation, naturally placing the customer at the centre of design decisions.

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<sup>6</sup> Atkinson, R., Andes S. (2009) 'The Atlantic Century: Benchmarking EU and US Innovation and Competitiveness.' The Information Technology and Innovation Foundation

<sup>7</sup> [www.innovationindex.org](http://www.innovationindex.org)

<sup>8</sup> IBM – Melbourne Institute (2007) 'Innovation Index of Australian Industry.' Melbourne: IBM – Melbourne Institute

<sup>9</sup> Black, C., Baker, M. (1987), 'Success through design.', *Design Studies*, Vol. 8, No. 4

<sup>10</sup> Hertenstein, J., Platt, M., Brown, D. (2001) 'Valuing design: enhancing corporate performance through design effectiveness.' *Design Management Journal*, Vol. 12, No. 3

<sup>11</sup> Danish Design Centre (2003) 'Economic effects of design: Report for National Agency for Enterprise and Housing.' Copenhagen: National Agency for Enterprise and Housing

<sup>12</sup> See case study: [www.livework.co.uk/our-work/streetcar](http://www.livework.co.uk/our-work/streetcar)

### **But more evidence is needed**

Studies have shown the importance of industrial design as part of product development, but have failed to suitably demonstrate the financial benefits of investing in design throughout the business. There is strong anecdotal evidence for the non-financial benefits of design to firms, but a lack of research to support this claim.

### **New research shows national spending on design can be captured**

#### **Survey of design spend in firms – Cambridge University/Design Council**

To build reliable evidence on the economic impact of design in firms, it is first necessary to have a reliable means by which the 'inputs' might be measured. A recent project was conducted to measure design spend in firms,<sup>13</sup> taking a wide view of design as contributing to both product/service development as well as communication, branding and promotions.

Using this model, a survey of 358 UK firms was conducted towards the end of 2008. The total design spend for the companies surveyed was £92 million, representing 2.1% of turnover.

#### **UK design spend could outstrip R&D**

The relatively small sample size means developing a national estimate for private-sector spending on design is difficult. Estimates range from £50 billion to £60 billion. Of this, around £40bn is spent on design relating to the technical and engineering aspects of developing new products and services. This compares with private sector R&D spend at around £21bn. This high technical design spend in comparison with R&D is surprising, and further work is required to validate this value.

The study provides a proof of principle that reliable and comparable data on design spending can be collected across the economy. This is important if more reliable evidence is to be generated on the financial benefits of design in firms.

### **But the national impact of design must also be measured**

While there is some evidence to demonstrate the value of design to the firm, there are very few studies that have successfully demonstrated the value of design at a regional or national level.

#### **Design shapes societies**

Design plays a huge role in shaping society, and the experiences and behaviours of the general public. The design of media and communications has a daily impact on consumption and access to information.

The design of public spaces influences both general well-being and also how we behave. The design of workplaces affects productivity and creativity. The design of public services has a substantial impact on user experience and public satisfaction. Well-designed products and services delight and are usable by all.

### **Research suggests design helps nations compete – but more evidence is needed**

In 2003 the New Zealand Institute for Economic Research<sup>14</sup> compared the competitiveness ranking of nations against a 'design-index' derived from the Global Competitiveness Report. They found an almost linear relationship between this compound design index and national competitiveness. However, the authors acknowledge that the indicators were chosen due to convenience and do not provide a rich picture of design capability. In addition, flaws in the methodology mean that the correlation between design and competitiveness is not reliable.

However, there are currently no reliable means of comparing either the national economic or non-economic benefits of investing in design.

### **What next?**

#### **More work is needed to provide robust international rankings**

The international design scoreboard highlights the difficulties in providing a comprehensive international comparison, as reliable data is sparse. For this reason, several important and emerging nations for design are not included in the detailed analysis (e.g. China, Spain, Italy, France, Germany, and Taiwan).

#### **Collaboration will be vital**

To take this work further it will be necessary to encourage discussion and international agreement on a consistent set of measures. This will enable more effective measurement and comparison in the future. The Design Council will be facilitating these discussions under the umbrella of its Design Research Forum.

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To download the reports 'International Design Scoreboard' and 'Company Spending on Design' please visit: [www.designcouncil.org.uk](http://www.designcouncil.org.uk).

If you would like more information – or you are interested in collaborating on the second phase – please contact James Moultrie ([jm329@hermes.cam.ac.uk](mailto:jm329@hermes.cam.ac.uk)) or Mel Taylor ([mel.taylor@designcouncil.org.uk](mailto:mel.taylor@designcouncil.org.uk)).

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<sup>13</sup> Livesey, F., Moultrie, J. (2009) 'Company spending on design: exploratory survey of UK firms 2008.' Cambridge: University of Cambridge/ Design Council

<sup>14</sup> Walton., M, Duncan, I. (2003) 'Building a case for added value through design: report to Industry New Zealand.' Wellington: NZ Institute of Economic Research