



Company spending on design: Exploratory survey of UK firms 2008

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Foreword

When the bottom fell out of the stock market at the end of last year, I received an interesting e-mail from a stockbroker friend. While licking his wounds he remembered a FTSE design index that we published showing that plc's that used design integrally outperformed their competitors by 200% through bull and bear markets.

Our own survey of 1,500 firms would indicate that business leaders in the so-called "real economy" recognize what many city analysts have ignored. Prosperity comes from turning real ideas into commercial realities. Most recently we observed that business leaders are increasing their spend on design as they seek to out-compete and out-innovate in the toughest of market conditions.

There are lessons to be drawn from our national repository of economic evidence on design. In 2005, our Chairman Sir George Cox, drew from this well of data to provide the then Chancellor of the Exchequer with recommendations on R&D tax credits, design-led support for UK firms, and changes to business education.

In 2009, the imperative to harness our design capabilities is even more compelling. The recent national strategies on Innovation, Manufacturing and Enterprise from the UK government indicate that government is aware of the role that design can play. For instance, Secretary of State, John Denham recently announced new measures to use design to drive innovation in the public sector as well as funding to support design's use in commercialising university science research.

This is why we are delighted to support Cambridge University in their new work. It will add to the national evidence base on design and its role in the economy. It provides us all with some new methodologies to test and over time could add significantly to our common understanding of design in industry.

A handwritten signature in black ink, appearing to read 'David Kester', written in a cursive style.

David Kester
Chief Executive
Design Council

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Executive summary

This report presents the results of an exploratory survey of company spending on design in the UK, based on 358 survey responses from companies across the economy collected in 2008. The total design spend for the companies surveyed was £92 million, representing 2.1% of turnover.

The relatively small sample size means developing a national estimate for private-sector spending on design is difficult. Estimates range from £50 billion (based on size analysis) to £60 billion (based on sectoral analysis). For this analysis we use the £50 billion estimate, to acknowledge the possibility that those companies more likely to respond are also more likely to have a higher design spend and to reduce the risk of over-estimation as much as possible. It should be noted that a 95% confidence interval for the sample ranges from £30 billion to £120 billion.

This survey captures design spend using an inclusive model of design that categorises spending by purpose rather than by a strict definition of design. This includes design in developing products and services, and design in promoting products or the company.

This leads to four categories of design spending:

- *Technical*: design is used to solve technical issues, for example in mechanical engineering or software design
- *User*: considers the user experience, user interaction and aesthetics of products and services
- *Promotional design*: design of advertising and promotional activities for specific products and services
- *Identity design*: design focused on company identity, including branding

Few previous estimates of national private-sector design spending exist due to the difficulties in collecting such data. The estimate resulting from this work is similar in order of magnitude to previous work, but there are significant differences based on how design is defined and how the data was collected.

Including technical design is important, as it allows companies to report a wide variety of design-related activities that so far have not been well captured. It also provides a link to R&D and innovation that has not been well represented in past work. There is a distinct spend above and beyond R&D spending which is captured in the technical design category, as just over 8% of companies indicate that they claim R&D tax credits while over 33% have a technical design spend.

Technical design spending represents 81% of the total design spend reported by the companies surveyed and thus dominates the value of design spending. However, in terms of the proportion of companies reporting each type of spend, promotional design is the highest, with over 66% of companies having such a spend.

Sectoral differences in design spending are strong, with other business activities (Standard Industrial Code division K) reporting the highest average percentage of turnover spent on design, both overall (6.4%) and in each category. Manufacturing (SIC division D) has a strong average spend on technical design (£698K per company) but does not lead in terms of percentage of turnover (3.6%). Wholesale (SIC division G) has a surprisingly high percentage of turnover spent on technical design (2.1%) and promotional design (1.4%), while construction (SIC division F) has a low percentage of turnover spent in all four categories (1.2% overall). These results indicate that significant work remains to be done to better understand the importance of each type of design in various sectors.

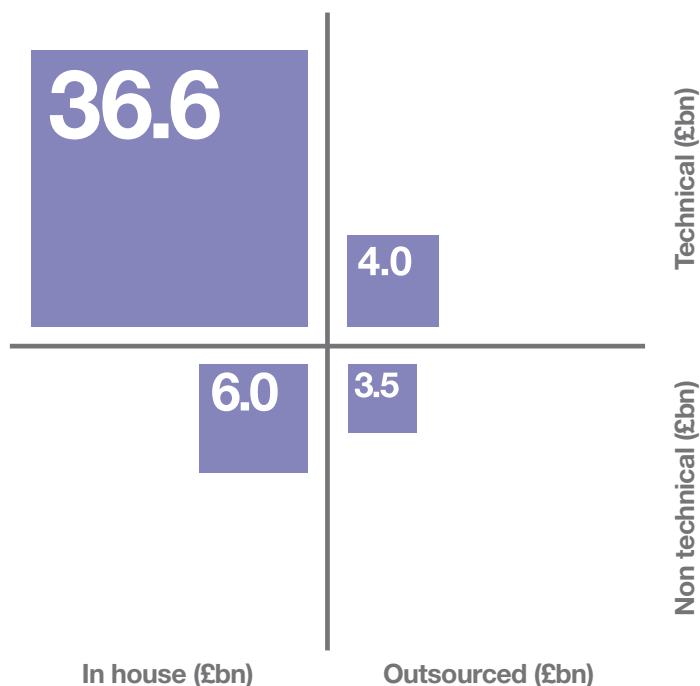
A high level of skew occurs in the data reported, as over 15% of companies claim no design spend and 37% have a design spend of between zero and £10K. This high skew means these results need to be interpreted carefully and further data collection is necessary to verify and expand them.

This report is seen as a proof of principle that reliable and comparable data on design spending can be collected across the economy. It is hoped that it will act as a catalyst to further work and the development of a standard for the reporting of design spending, akin to the standards for R&D spending.

The following recommendations are made for further work:

1. Developing a standard for design spending that is applicable across sectors and size of company, developed in consultation with company managers and policymakers.
2. Investing in further surveys of private-sector spending in the UK to establish a baseline and to improve the accuracy of national estimates of design spend.
3. Instigating surveys in key competitor countries to enable comparison between nations.

Figure 1 – Estimate of national design spending by category



Part one: Approach





Introduction

The role of design, both at the company and country level, is increasingly being recognised as important. As the Department of Trade and Industry (DTI) commented in 2005: “Design, as a structured creative process, is an important competitive tool for firms in many sectors...”¹ Some consider it to be an important driver of innovation, acting as a bridge between technical and customer-oriented functions. In the broadest sense, design has been described as linking creativity and innovation.²

Measuring what companies spend on design, however, has been problematic due to a lack of an agreed framework for such measurements or a bounded definition of design. Without the ability to measure design spend, it is impossible to understand its impact on company and national performance.

This report directly addresses this issue, presenting the results of an exploratory UK-based survey of company spending on design. The primary aim of the survey is to demonstrate that reliable and consistent data can be collected on what companies of differing sizes in different sectors spend on design. The secondary aim is to provide a national estimate of private-sector spending on design in the UK.

Design spending data for 358 UK companies across the economy is presented and an estimate of national design spending is developed. This data, based on a four-part model of design spending, is the first comparable data for design spending in UK companies and is an important first step in understanding how such spending affects company and national competitiveness.

Existing data on design spending

A small number of attempts to quantify company spending on design have been made already. These have either defined design in a very narrow sense or left the decision on what to include as design up to the survey respondent. Neither approach allows a comprehensive and repeatable picture of design spending to be developed.

At the company level, the most comprehensive data is from a 1997 study by Sentance and Clark.³ They surveyed around 800 manufacturing firms in the UK, a sample they felt represented approximately a fifth of the UK’s manufacturing industries. They captured spend as a percentage of turnover, by giving respondents a range of banded options. As a result, they estimated that UK manufacturers invested around £10 billion on product development and design. Interestingly, this compares with the official figure of £7 billion spent on R&D during the same year. However, the survey was restricted to the manufacturing sector and so did not capture any spend elsewhere in the economy. Furthermore, it used a narrow view of design focused on product development.

¹ DTI (2005) Creativity, Design and Company Performance: DTI Economics Paper 15, November 2005.

² Cox, G. (2005) The Cox Review of Creativity in Business, HM Treasury available online at http://www.hm-treasury.gov.uk/coxreview_index.htm.

³ Sentance, A & Clark, J (1997) The contribution of design to the UK economy. Design Council Research Workshop 1997. The Design Council, London.

⁴ Design Council (2005) The Business of Design, Design Council, London.

In 2005, the Design Council estimated the size of the design industry based on 2,433 telephone interviews with designers from design consultancies, freelancers and in-house teams.⁴ They estimated the turnover of the design sector to be £11.6 billion, with £5.1 billion in turnover from design consultancies, £2.0 billion for freelancers and £5.5 billion for in-house teams.⁵ While this is a reliable national estimate for the design industry, it is a supply-side rather than demand-side estimate and does not allow us to discuss what individual companies are spending on design.

Unfortunately, while the Community Innovation Survey (CIS) asks whether companies spent on “design functions for the development or implementation of new or improved goods, services and processes,”⁶ the analysis papers available do not provide a national estimate for design based on these estimates.

Finally, as part of the CoInvest project,⁷ Jonathan Haskell estimates the total expenditure and investment in architecture and engineering design activities. For 2004, private-sector spending on purchased architecture and engineering design services is estimated to be around £17 billion while spending on own-account (i.e. in-house) architecture and engineering design services was £27 billion. However, this is again a narrow interpretation of design, bounded by the existing Standard Industrial Code (SIC) structure.

The relatively small number of studies that attempt to estimate design spending, either at the company or country level, highlights the difficulty of this task. Also, the results that are available show high variation depending on what is included and what is excluded from the definition of design (for example, architecture). The following section outlines the model developed for the survey of design spend, and it is hoped that this acts as a first step towards a common framework for estimating design spending at a company level.

⁵ These values do not sum to £11.6 billion due to outsourcing of some work, which was taken into account by the Design Council in arriving at the national estimate.

⁶ Further details on the UK responses to the CIS can be found at <http://www.berr.gov.uk/dius/innovation/innovation-statistics/cis/page10957.html>.

⁷ See <http://www.coinvest.org.uk/bin/view/CoInvest> for further details.

Measuring design spending

The varied definition and interpretation of ‘design’ makes collecting data on design spend very difficult. This lack of an agreed, concise and usable definition for design is problematic both in industry, where it creates misconceptions which lead to mistrust and misuse of design skills, and in research, where the lack of precision makes interpreting potentially useful data difficult.

It is clearly possible to determine any number of classification schemes for design, each of which is valid, given the context and the purpose of that classification. The challenge for measuring company design spend is to have a model that can flexibly apply across sectors and contexts.

As part of the Design Scoreboard project,⁸ a review of relevant literature and several detailed case studies were carried out to better understand how companies think about and use design. From this, a model for capturing design spend was developed based on the purpose of the activities – whether they were in support of creating products and services or to promote the company and its products. At this early stage of developing an estimate of design spending, we have not tried to distinguish between investment and expenditure, and have just focused attention on how much firms spend. This is because it is unclear what could or should be categorised as investment as opposed to expenditure. Once a framework for capturing design spending is established, further refinement may be possible. The following sections discuss these concepts and provide an overview of the model used.

Design in the creation of products and services

Design plays a key role as products and services are being developed. Bruce & Bessant suggested that design is the “purposive application of creativity to all the activities necessary to bring ideas into use either as product (service) or process innovations.”⁹ This is the key reason for confusion in separating what is design and what is R&D.

As products and services are being created, there are two distinct focuses for the use of design. The first is when design is used to resolve technical issues. This might include engineering skills such as mechanical engineering, electrical engineering and software design. It might also include the design of production processes and technologies necessary to deliver services.

The second is user-focused design, which has its basis in the arts or in the consideration of the user experience. This might include product aesthetics, ergonomics, interfaces with software and the experience of the overall service.

This distinction can be seen in software development, where software engineers design the functional aspects of a software package (technical) as well as designing the interface between the user and the software (user).

⁸ Funded through the Designing for the 21st Century initiative www.design21.dundee.ac.uk

⁹ Bruce, M & Bessant, J (2002) Design in Business: Strategic Innovation Through Design, New York: Financial Times/ Prentice Hall.

Design in promoting products, services and the business

Design also plays a role in other aspects of the business, specifically in communications and branding activities. These aspects of design are relevant in all firms, including those that do not frequently engage in developing new products and services.

In the British Standard guide to managing design,¹⁰ distinction is made between two aspects of design not specifically related to product or service development:

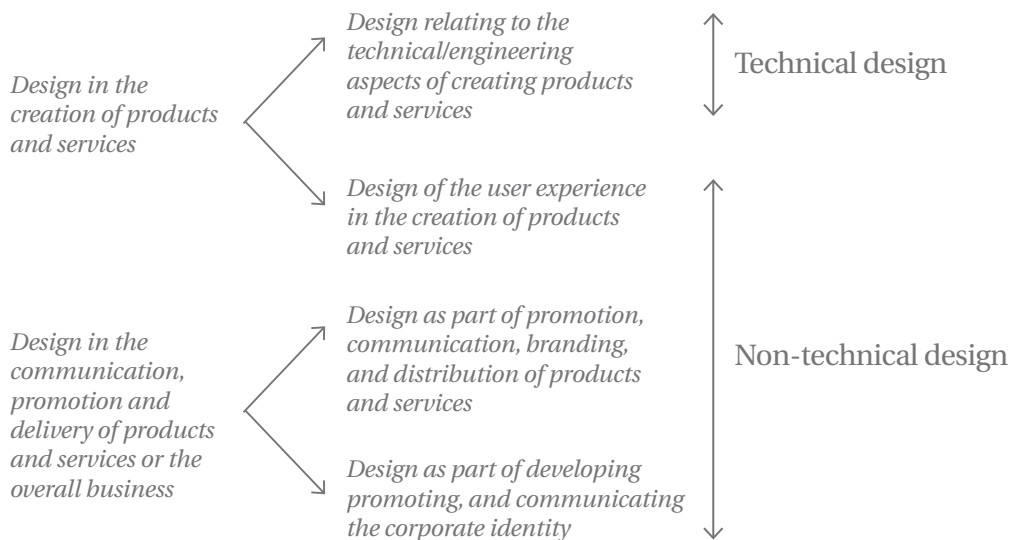
- *Identity design*: physical, operational and human features and values that give the organisation its unique personality
- *Promotional design*: advertising, promotional literature, packaging, instructions, manuals, presentations, showroom environments, displays in stores, the appearance, courtesy and knowledge of staff, professionalism of delivery, helplines, web-help, service workshops etc

This distinction is interesting, in that the former category applies at a corporate level, while the latter can be considered for individual product/service lines.

Model of design spend

The model of design spend developed for this survey (outlined in *figure 2*) does not try to provide an exhaustive list of types of design or design activities (e.g. industrial, graphic, fashion, multimedia etc.). Instead, by focusing on the key activities of developing new products and services and communicating brand and identity, we are able to discuss design in a manner which is flexible and applies across sectors.

Figure 2 – A conceptual model of design spend



¹⁰ BS 7000-10:1995, design management systems — part 2, London: British Standards Institute

Design is perhaps most commonly perceived as relating to the visual and experiential outputs from firms, including product aesthetics, ergonomics, promotion and branding. However, in many firms, there is also significant design work relating to the technical aspects of new products and services. The model used to capture design spend brings together both of these sides of design, and provides a way for the breadth of design activities to be recognised, in order to provide a realistic estimate of design spending in a company.

The model clearly highlights the overlap of design with R&D, due to the inclusion of technical design. Pure research, as included within R&D, may never reach the market place, and encompasses more speculative and long term work. Technical design work is much closer to market, and will result in the products and services produced by the company. It is recognised that it is difficult to draw a clear line between design, R&D and innovation, although this categorisation is intended to clarify the distinction.

Methodology

The purpose of this survey is to demonstrate that data on design spend in companies can be collected and to use that data to develop an estimate of national private-sector design spending. Collecting such data on design spending in companies across the UK economy is a very difficult task. To date, there have been no requirements for companies to report design spending and so there is a lack of understanding and interest in providing the data. In addition, design permeates an organisation and therefore is not the responsibility of any one budget-holder. Furthermore, companies are naturally reluctant to provide financial data in surveys.

The initial development of the survey instrument was based on an in-depth literature review and eight company case studies investigating how they perceived design spending. The initial survey instrument was piloted in 10 companies, and after further revisions an attempt to trial the final instrument was made using a two-step approach, where companies were asked for a relevant contact and then emailed the survey instrument. Due to difficulties in generating responses, the instrument was revised and simplified for use in direct telephone interviews.

The improvements to the survey instrument were key to achieving acceptable response rates for the final survey. We realise that direct telephone interviews reduce data quality, as respondents do not have time to consult records or colleagues. However, as our aim was a proof of principle this was thought to be acceptable.

Companies were asked the same question on design spend in each of the four categories (technical, user, promotional, identity) and at the same time were asked to provide an estimate of the precision of their answer (see *figure 3*). This allows us to understand the confidence level of the respondent and to develop a self-reported error for the national estimates of design spend.

Figure 3 – Structure of design spend question

	Estimate of design spend	Precision of estimate (please tick as appropriate, to indicate the relative precision of your estimate)				
		Within £1K	Within £10K	Within £50K	Within £100K	Can't estimate
In House	£K					
Outsourced	£K					

Data collection was carried out by Stratagia Limited in association with Synchronicity Consultants and QA Research, under contract to the research team. Overall 3,334 contacts were used, leading to 834 successful contacts and 428 responses, a base rate of 12.8%. This set was reduced to 358 responses for analysis because:

- 61 companies did not report turnover and their turnover could not be obtained via Companies House due to their size
- Six companies had a reported design spend as a percentage of turnover greater than 1
- A further three companies were removed because their reported design spend as a percentage of turnover was greater than 0.5 and these companies could not be contacted to confirm their responses

The final data set of 358 companies is broadly representative of the UK economy, with an over-representation of manufacturing firms (see *table 1*).

The overall size of the sample means national estimates will potentially have a significant error and therefore the estimates should be used with care. Also, the dominant group in division K is Other Business Services, and so this is the title that will be used for this section of the sample in further analysis.

Table 1 – Survey population by Standard Industrial Code (SIC)

Division	Industry description	Whole economy	Survey
A, B	Agriculture, Hunting and Forestry; Fishing	4.0%	0.0%
C, E	Mining & Quarrying; Electricity, Gas & Water Supply	0.2%	0.3%
D	Manufacturing	7.3%	22.6%
F	Construction	20.6%	15.6%
G	Wholesale and Retail Trade; Repairs	13.0%	19.0%
H	Hotels and Restaurants	3.1%	9.5%
I	Transport, Storage and Communication	6.1%	0.6%
J	Financial Intermediation	1.5%	1.1%
K	Real Estate, Renting and Business Activities	24.8%	21.2%
M	Education	2.9%	0.8%
N	Health and Social work	5.5%	2.8%
O	Other Community, Social & Personal Service Activities	10.9%	5.9%
Total numbers of companies		4,466,700	358



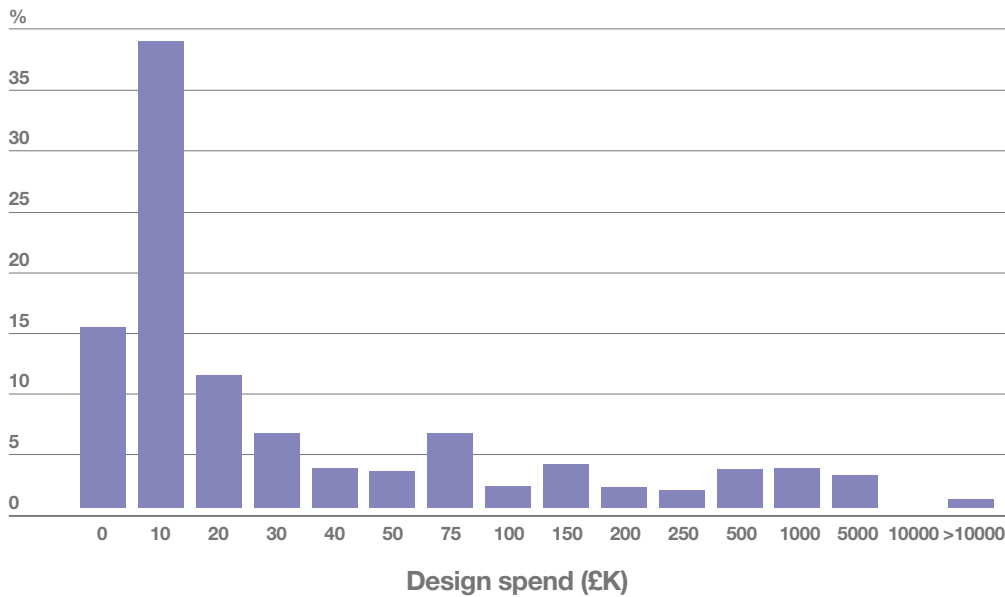
Part two: Company spending on design



Company spending on design

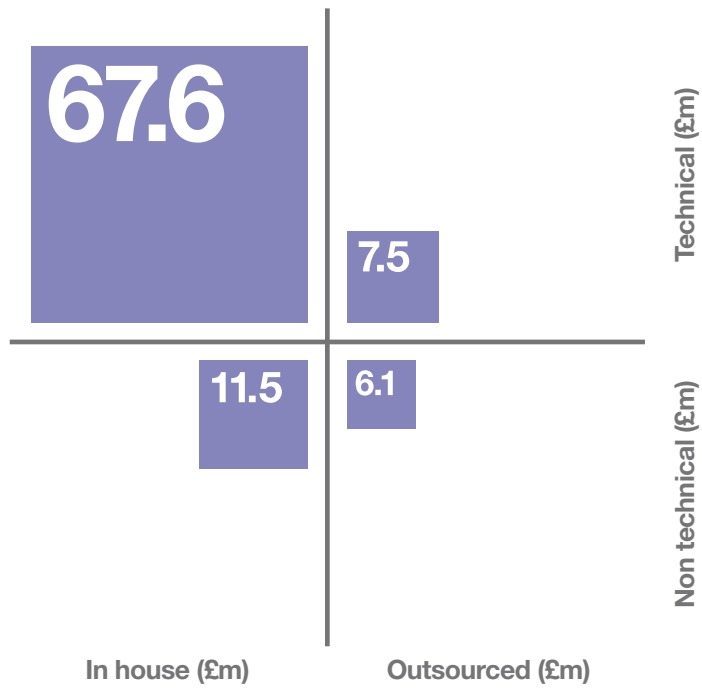
The total spend on design reported by the 358 companies in this survey was £92 million, with an average spend of £260K. However, there is significant skew in the sample, with just over 15% of companies reporting no design spend and 37% of respondents indicating a spend of between zero and £10K. The average of design as a percentage of turnover is just below 4%, higher than the ratio of total reported design spend to total turnover for the whole sample (2.1%) due to the skewed nature of the reported spend.

Figure 4 – distribution of companies' reported design spend



The reported spend is highly unevenly distributed between the categories of technical and non-technical design and whether that spend is in-house or used to buy in services (outsourced). As *figure 5* indicates, 81% of the reported spend is technical in nature and 85% of total spend is in-house.

Figure 5 – Design spending (£M) for survey sample of 358 companies



Spending on technical design

The definition of technical design used in this survey includes the production of drawings and prototypes or the design of IT systems to enable services. This type of spend is the closest to R&D and most commentators believe there is an overlap. As noted above, spending on technical design dominates the total spend on design for the companies surveyed, with 81% of the total design spend categorised by respondents as technical. However, it appears that the companies surveyed do not consider there to be a significant overlap between R&D and technical design, as only 8.6% of companies in the sample indicated that they claim R&D tax credits whereas 33.4% report internal technical design spend on developing products and services. This may indicate that companies who could claim R&D tax credits do not do so, or that technical design is reliably distinct from R&D spending. Given that four times as many companies indicate a technical design spend than claim R&D tax credits, this remains an important open question.

Overall, these results show a complicated picture for technical design spending. The average spend on technical design tells the expected story, with manufacturing having the highest average spend. However, in comparing design spend as a percentage of turnover, there is a similar amount of technical work in wholesale and other business activities, which was not expected. The varied nature of companies responding is highlighted by the fact that 205 companies out of 358 reported no technical design spend.

Average technical design spend

Average technical spend for all companies was £211K, with just over 10% of that spend being outsourced. The highest average spending by some margin was in manufacturing, at £698K compared to the next highest average of £171K in wholesale and retail.

Looking at how average spending on technical design varied by size of company, it is immediately apparent that average technical design spend increased significantly for larger companies (see *figure 7*). As the number of companies over 250 employees is low (18 for this sample) this average could be overstated. However, the rise is marked and it can be expected that this pattern should hold for a larger sample.

Technical design spend as a percentage of turnover

In terms of design spend as a percentage of turnover, manufacturing is second to other business activities (2.3% compared to 3.0% of turnover) in this sample. There is surprisingly little technical design spend as a percentage of turnover in construction and a significant element of technical design spending in wholesale.

By size of company, there is an interesting U-shaped pattern, with small (0 – 9 employees) companies' relative spend at 1.6% of turnover and large companies (more than 250

employees) double that at just over 3% of turnover (see *figure 9*). In between, companies with 10 to 49 employees had a relative spend of just under 1% and those with 50 to 249 employees had an intensity of 1.3%. This may reflect the need for new young companies to move from a prototype to a working product and for large companies to carry out significant technical design to produce large volumes or complex systems.

Figure 6 – average absolute technical spending (£K)

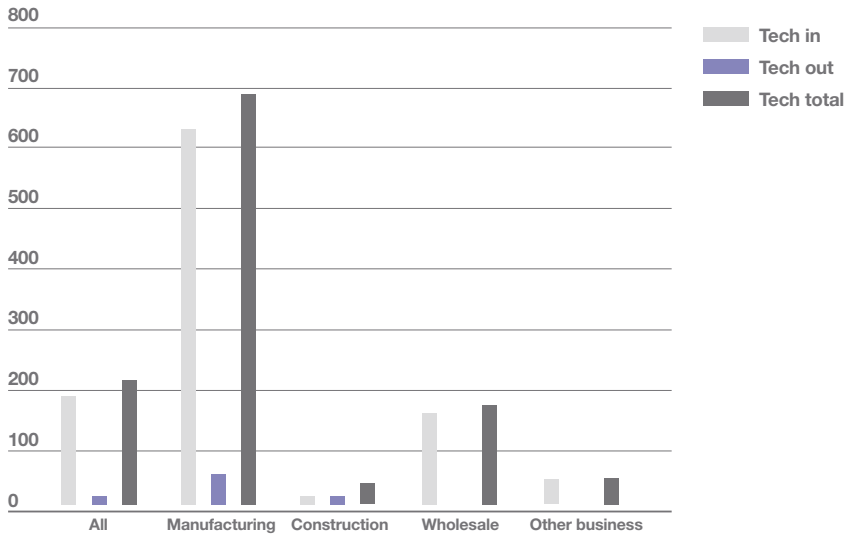


Figure 7 – average technical spend (£K) by size of company

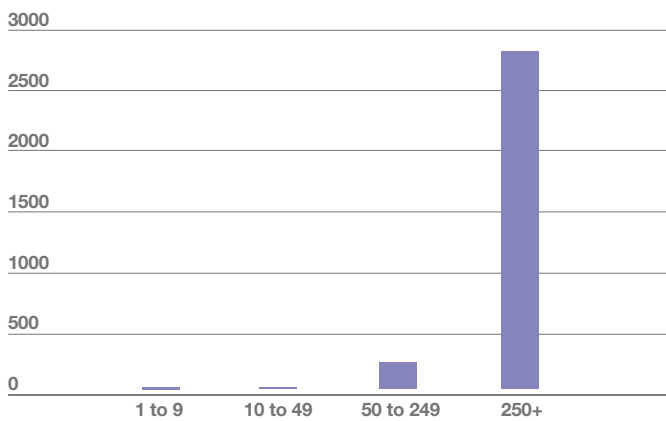


Figure 8 – average technical spend as a percentage of turnover

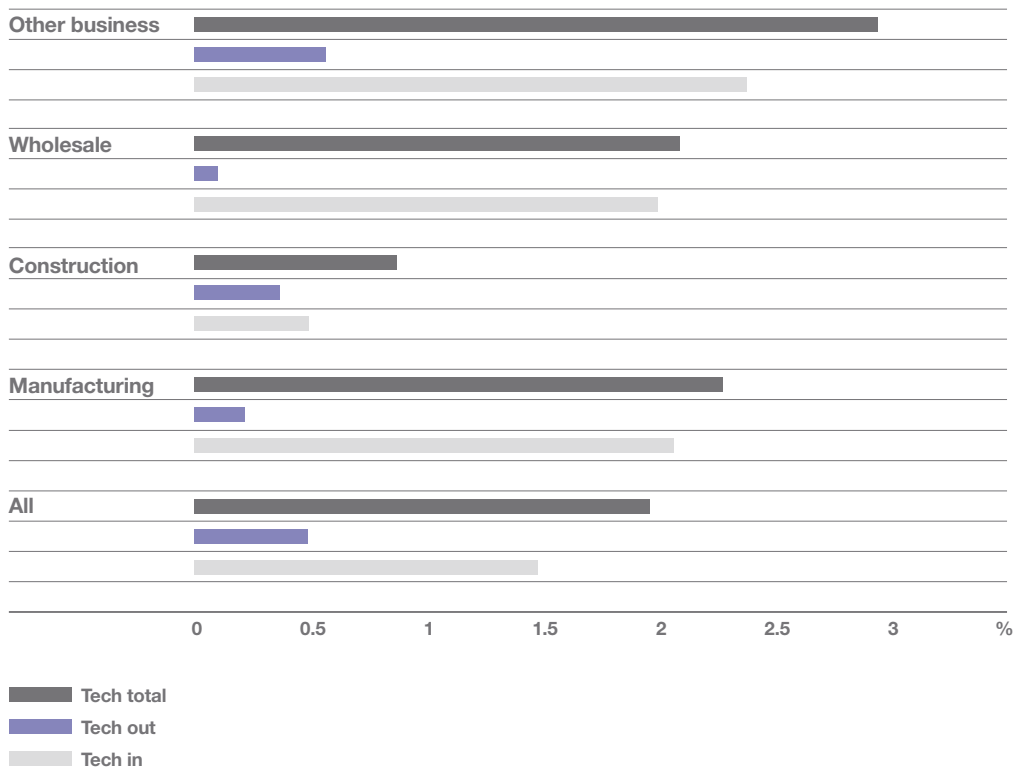
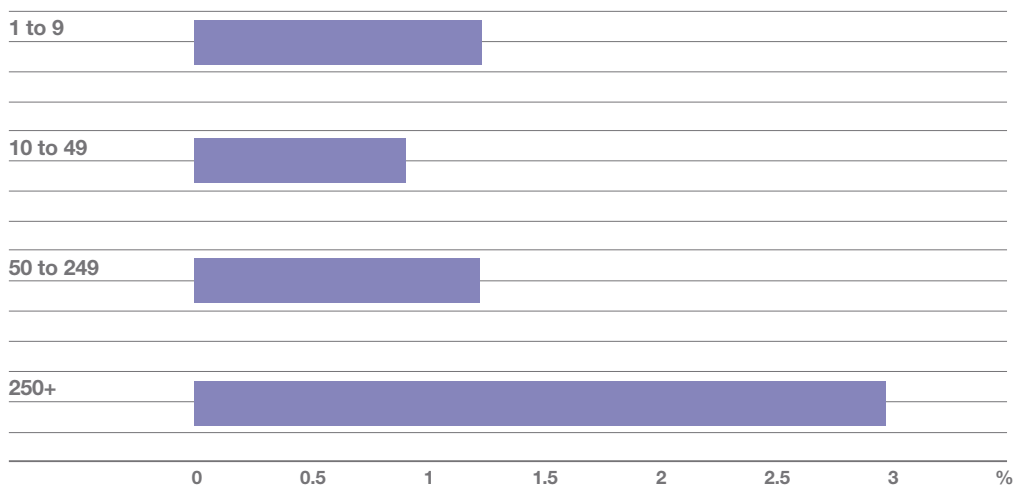


Figure 9 – average technical spend as a percentage of turnover by size of company



Spending on user design

Developing new products and services can involve significant effort in designing the aesthetics, ergonomics and interfaces of products as well as manuals and multi-media to support service delivery. This category of user design is the first of the non-technical categories and is the bridge between the unseen interior of products and services and the user. Again the skew of the data is significant, with 243 companies reporting no spend in this category.

Average user design spend

Average spending on user design for the companies surveyed was £11.6K, with a maximum reported of £520K. The scale difference between this kind of spend and technical design spend is striking, which may reflect the specialised equipment often required to support technical design work.

In terms of average spend, only construction has more outsourced than in-house spend, although it is the lowest average spend. Other business activities have the highest average spend, with a significant proportion outsourced.

The highest average spend by size of company was for those with 50 – 249 employees (see *figure 11*) at just under £34K. There is an inverted-U pattern with small companies spending least on average on user design (£1.3K), and large companies also having a low average spend in this category (£8.3K).

User design spend as a percentage of turnover

The intensity of spending on user design varies significantly between sectors, with other business services at 0.64% of turnover compared to manufacturing at 0.37% of turnover. The companies reporting in the construction sector again stand out as having a very low relative intensity of user design spend. This may be the nature of the sector but it appears to be a significant difference. Expectations that manufacturing would have the highest user spending are not fulfilled and wholesale again has a high intensity relative to the other sectors.

Company size appears to have the same pattern for intensity of user design to the average absolute spend. However, the highest spend as a percentage of turnover is for companies with 10 – 49 employees (see *figure 13*) at 0.3% of turnover. The lowest intensity for user design spend is in the largest companies, with just 0.01% of turnover spent in this category.

Figure 10 – average absolute spending on user design (£K)

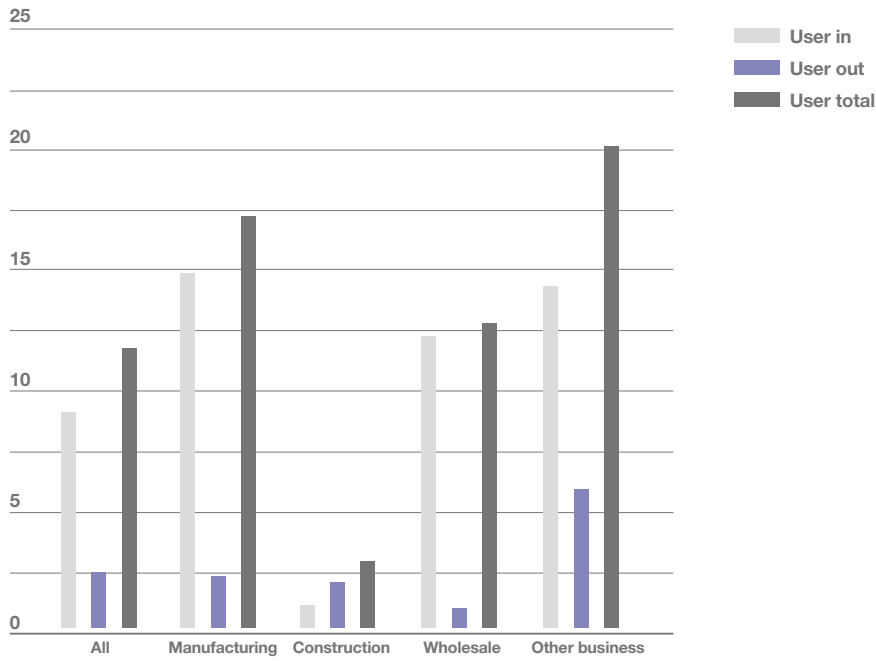


Figure 11 – average absolute spend on user design (£K) by company size

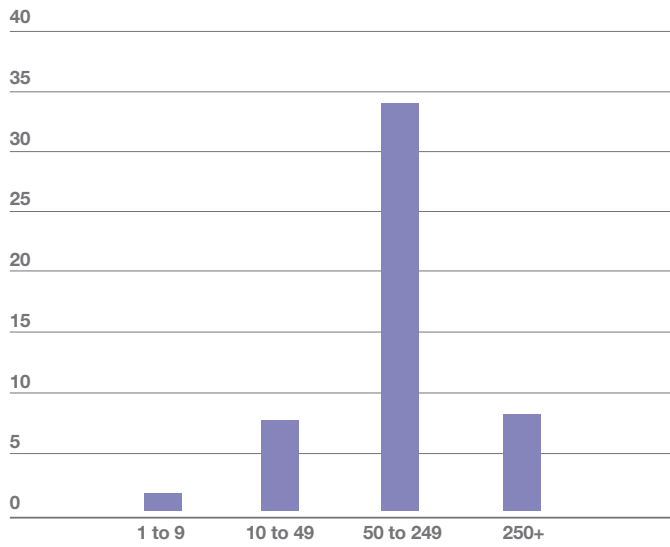


Figure 12 – average user design spending as a percentage of turnover

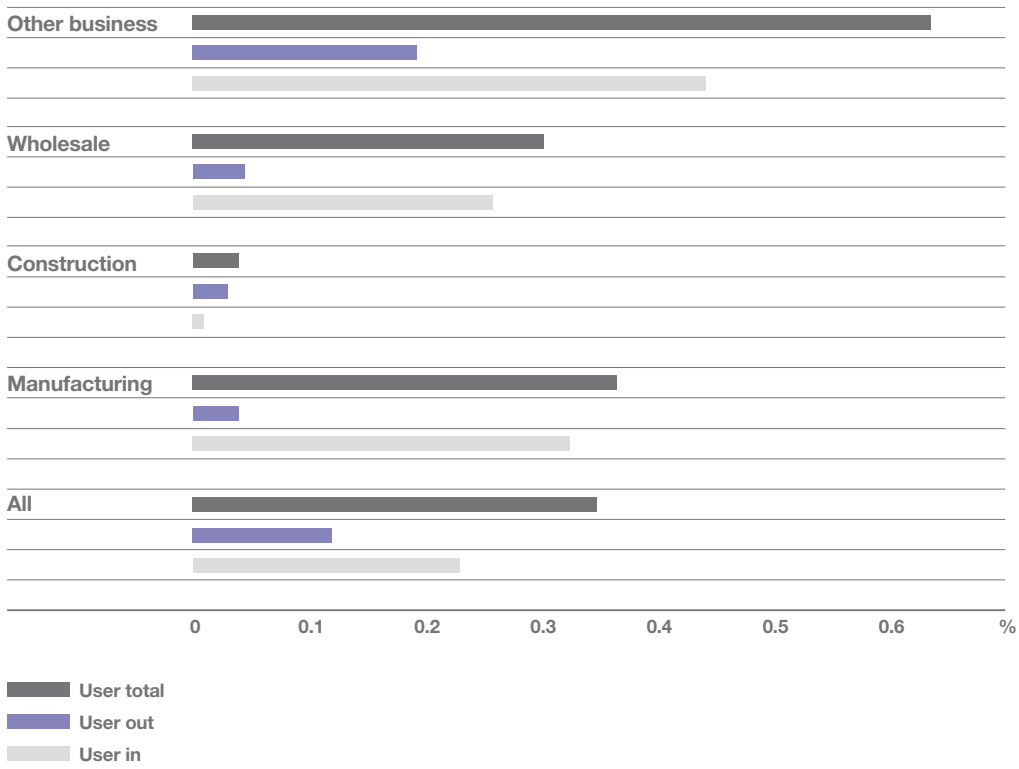
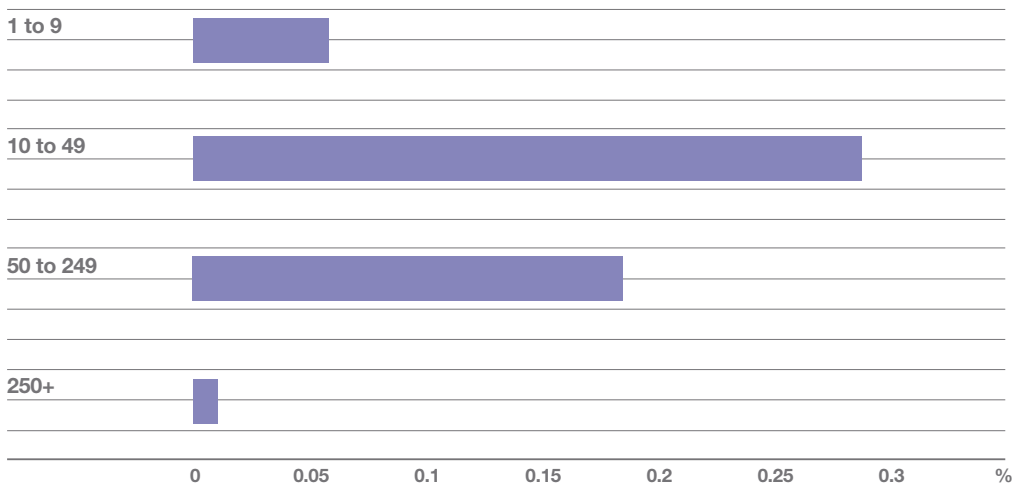


Figure 13 – average user design spending as a percentage of turnover by company size



Spending on promotional design

This category includes the design of advertisements, brochures, showrooms, exhibition stands, and point of sale materials for specific products. This is distinct from the overall management of a company's brand, which is the last category of spending.

In contrast to technical and user design, a much smaller number (120) of companies reported no spend in this category. As a more traditionally understood design function this may not be surprising, but it does indicate where design is traditionally thought to operate and to add value. Whether this is where it does add most value is an open question.

Average promotional design spend

The average promotional design spend for this sample is £28K, with 36% of that spend being outsourced, to the greatest extent in construction. The sector with the highest average spend was wholesale, with an average spend of £44K, possibly reflecting the nature of competition in the sector.

Companies with over 250 employees have the highest average spend at just over £170K and the average spend appears to increase with company size (see *figure 15*). This would support a model for promotional spend where the design effort in promotional is proportional to the size of the company, i.e. there is a scale effect that does not plateau.

Promotional design as a percentage of turnover

The intensity of promotional design spending as a percentage of turnover is highest for other business activities, with 2.2% of turnover spent in this category, followed by wholesale at 1.3% and manufacturing third at 0.8%.

These results indicate that the relative need for promotion is highest in other business activities, whereas it might be expected that as a competitive differentiator it would be most required in wholesale. There appears to be little relative spend in construction, again identifying it as a very different sector in terms of design input.

In contrast to the absolute spends by size of company, the relative promotional spend peaks for companies with between 10 and 49 employees at 0.6% (see *figure 17*). The other three size categories all have approximately the same intensity at around 0.3% of turnover. This may, if company size is strongly linked to age of the company, indicate that as companies grow they go through a period where there is a need for relatively greater design focus on promotion.

Figure 14 – average absolute spend on promotional design (£K)

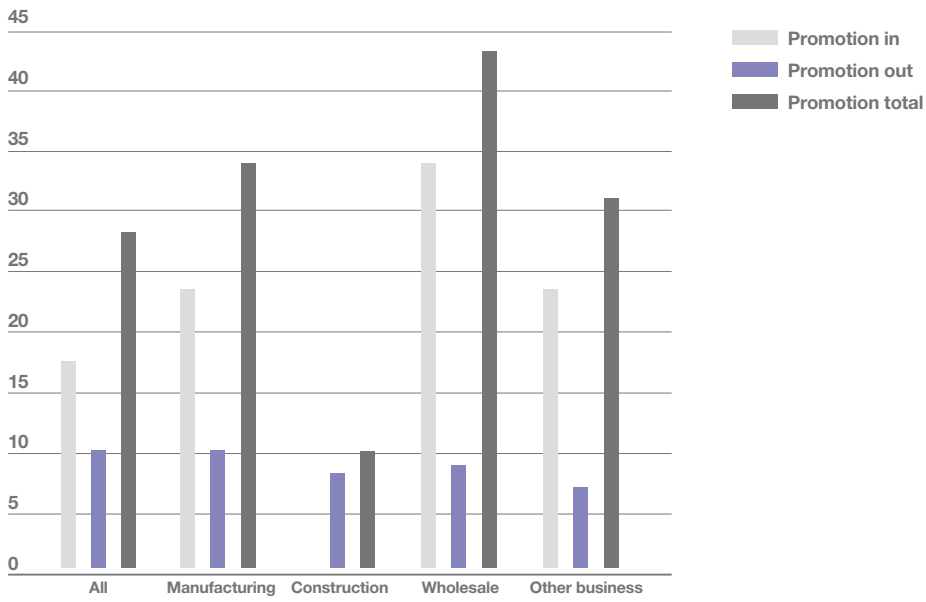


Figure 15 – average absolute spend on promotional design (£K) by company size

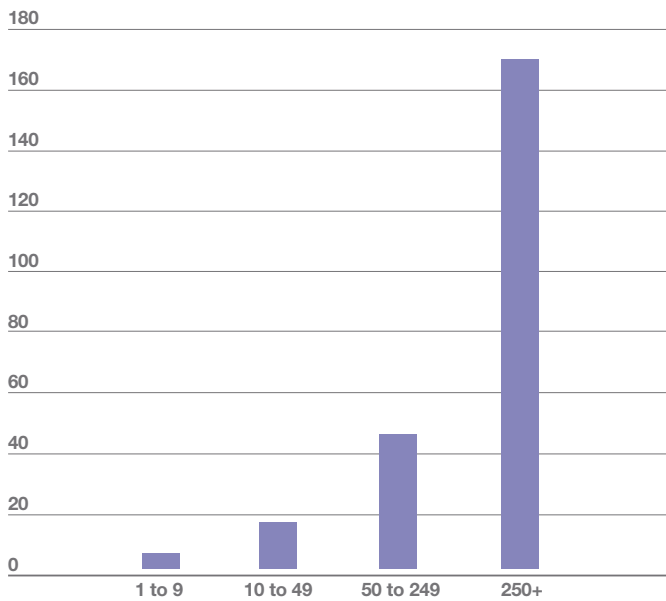


Figure 16 – average promotional design as a percentage of turnover

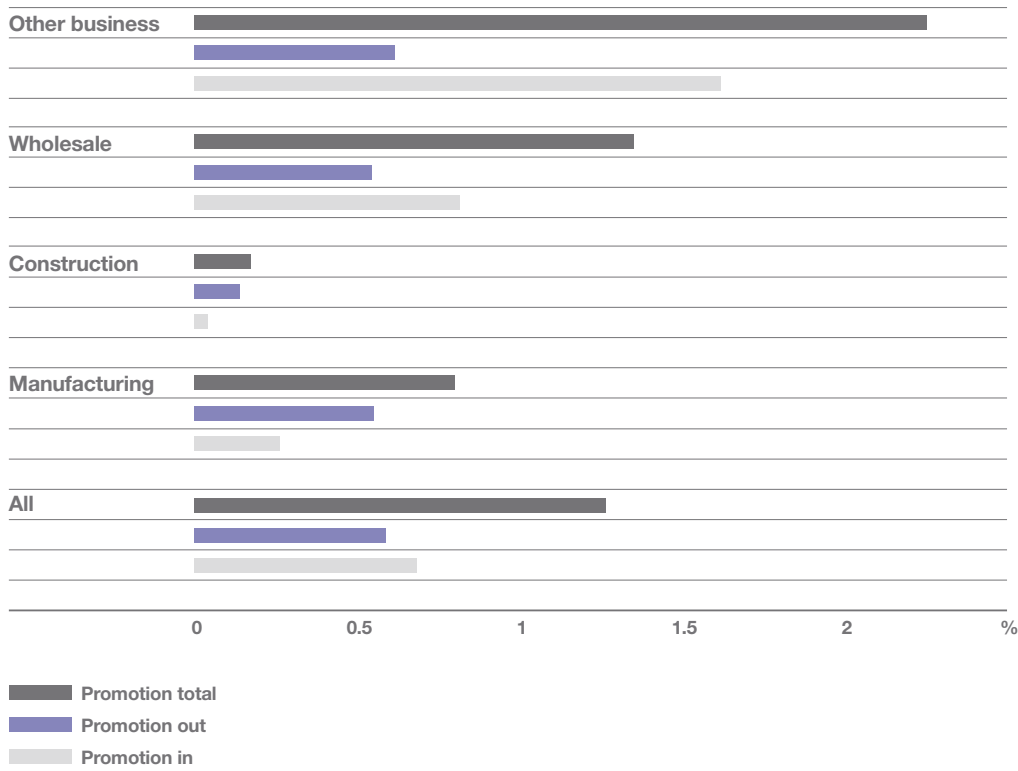
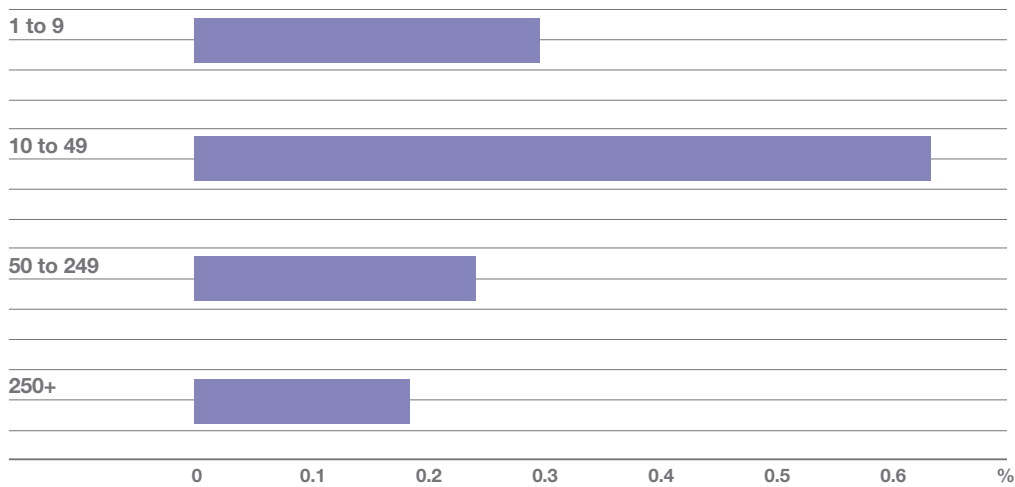


Figure 17 – average promotional design as a percentage of turnover by company size



Spending on identity design

The final category of spending is identity design, which includes the design of logos, corporate identity, business websites, uniforms, and business colour schemes. It is intended to capture the design of the whole company identity as distinct from design of individual products and services or their promotion. For many commentators not directly involved in design this is the first and last category of design. However, this is only one element of design spending and in average terms is the lowest over this sample.

The categories of promotional and identity design will overlap in reporting (as some companies find it difficult to separate the two if there are few product lines) but it is interesting to see how promoting products demands higher levels of spending (in terms of percentage of turnover, roughly double both by sector and by size of company). This could be a reflection of how often a company will consider its image and branding at the strategic level compared to having to promote products as they are brought to market.

Even though it has the lowest average spend over the sample, identity design was the second most reported category, with 197 companies reporting spending.

Average identity design spend

The average spend on identity design was £9.6K, with almost half (46%) of that spend being outsourced from the companies reporting. This level of outsourcing is much higher than the other elements of design. The highest average sector spend was in the wholesale sector at £14.8K and the lowest was in construction at £8.3K (see *figure 18*).

In the same way as average technical and promotional design spending increases with company size, average spending on identity design increases for companies with greater numbers of employees (see *figure 19*). Companies with greater than 250 employees spent on average £43K on identity design, which is in strong contrast to companies with less than 10 employees where the average was £1.2K.

Identity design as a percentage of turnover

Similar to promotional design, the highest average spend as a percentage of turnover is in other business activities (0.63%), with wholesale second (0.40%). Again, construction has a different profile and lower intensity of spend than the other sectors. The vast majority of spending on identity design in the construction sector appears to be outsourced, which is similar to the position for promotional design. For the construction companies in this sample, promotional and identity design does not appear to be a core competence, as that work tends to be carried out by other companies.

The inverted u-shaped pattern for design spending as a percentage of turnover present in promotional and user design is repeated for identity design. For companies with

between 10 and 49 employees 0.2% of turnover is spent in this category (see *figure 21*). This is double the level of companies with between 50 and 249 employees and four times higher than both small and large companies.

Figure 18 – average absolute spend on identity design (£K)

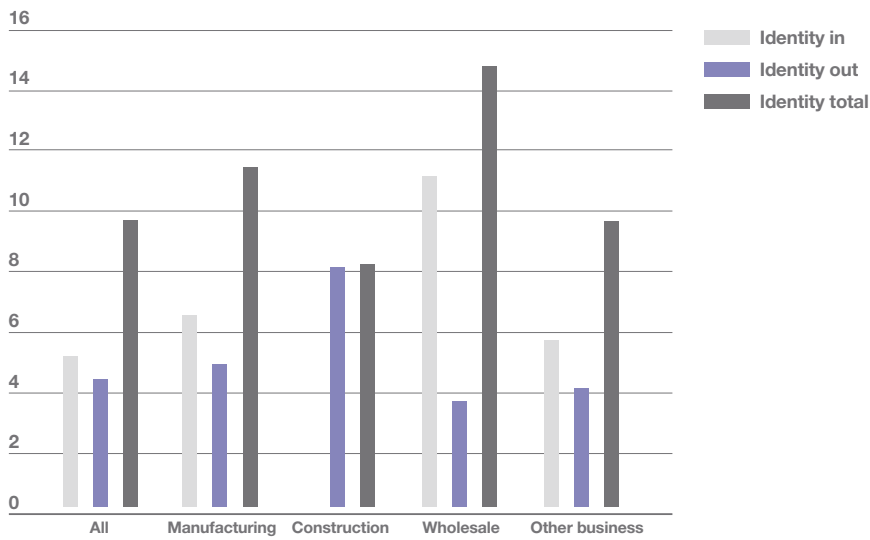


Figure 19 – average absolute spend on identity design (£K) by company size

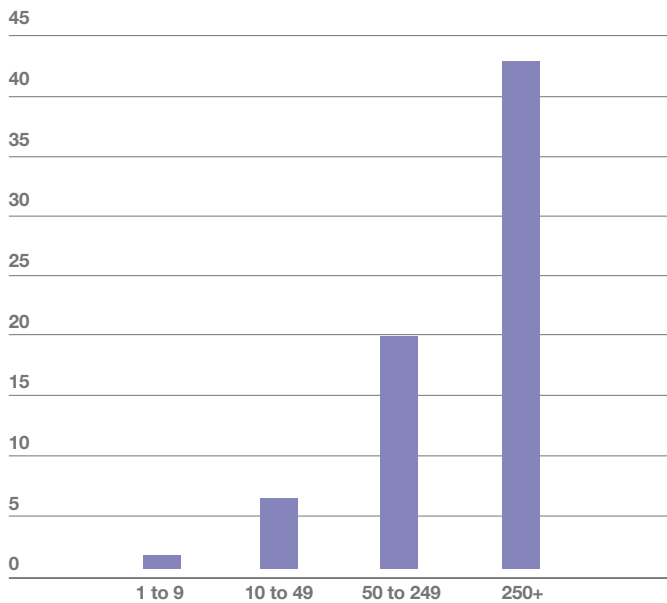


Figure 20 – average spending on identity design as a percentage of turnover

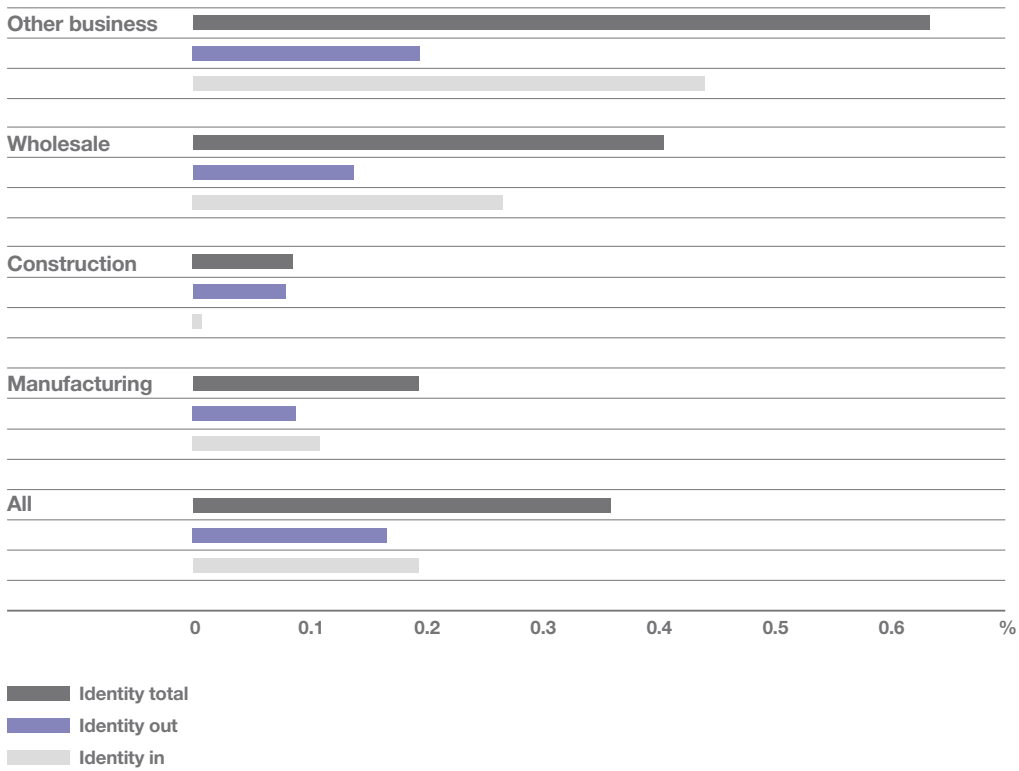
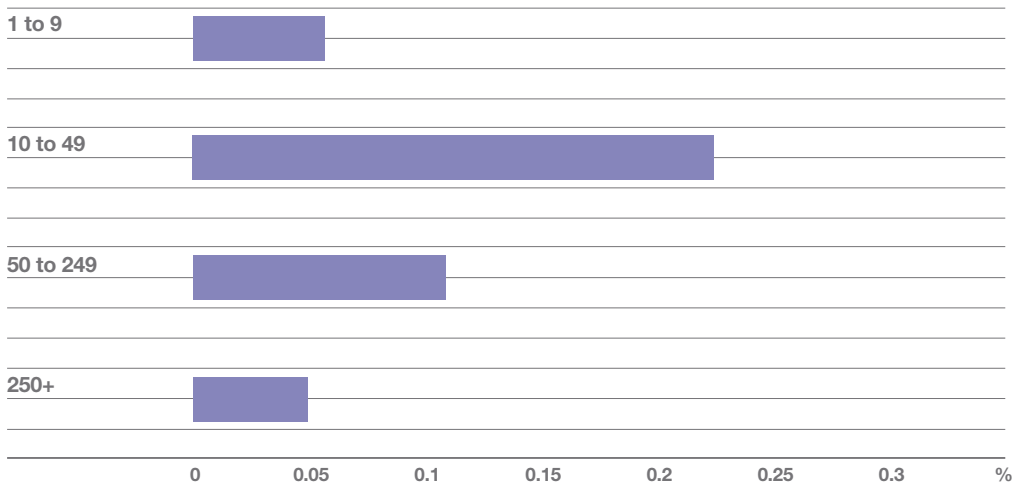


Figure 21 – average spending on identity design as a percentage of turnover by company size



Sector comparisons

The differences in spending between sectors provide an insight into the complex nature of design spending across the economy. There is significant variation in total spend, spend as a percentage of turnover and which type of design is preferred in each sector.

Table 2 – Average absolute design spend by type and sector

(£K)	Technical	User	Promotional	Identity	Total
All	211.2	11.6	28.4	9.6	260.7
Manufacturing	697.9	17.3	34.2	11.5	761.0
Construction	46.9	3.0	10.5	8.3	68.6
Wholesale	171.1	12.9	44.0	14.8	242.7
Other Business	54.5	20.1	31.5	9.7	115.7

The scale of spending between the categories indicates that the inclusion of technical design spending is key in order to gain a realistic estimate of total design spend. For the whole sample, technical design has the highest average spend by a factor of seven compared to promotional design, followed by user-focused design and finally identity design.

Table 3 – reported design spending as a percentage of turnover

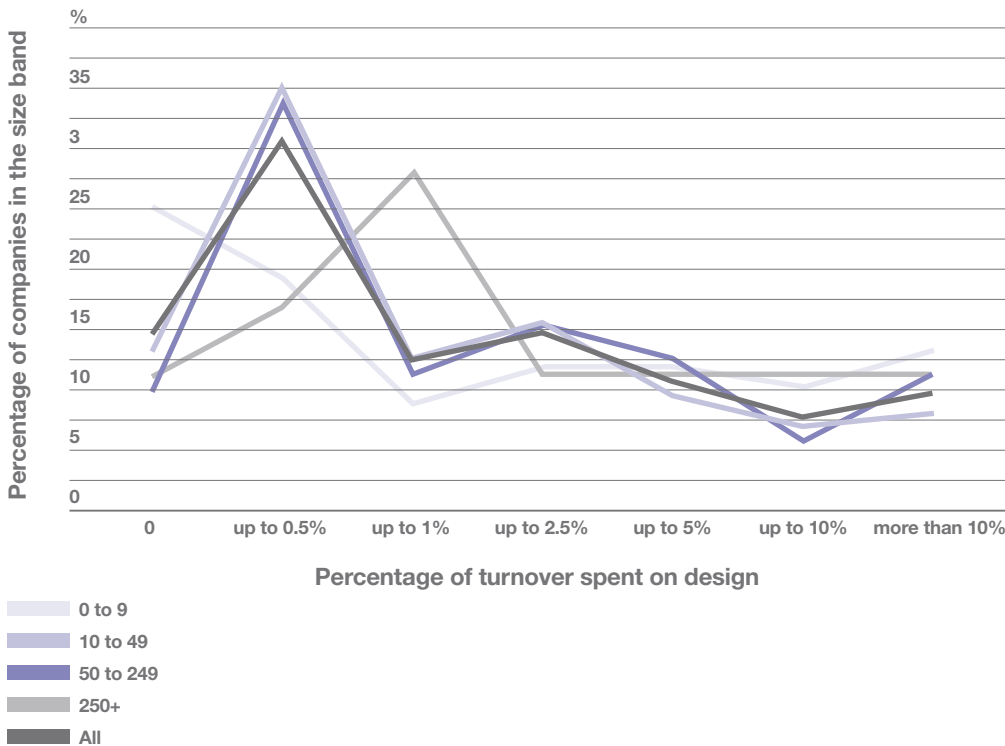
% of turnover	Technical	User	Promotional	Identity	Total
All companies	1.98	0.35	1.27	0.36	3.95
Manufacturing	2.28	0.37	0.80	0.19	3.64
Construction	0.87	0.04	0.18	0.08	1.17
Wholesale	2.10	0.31	1.35	0.40	4.15
Other Business	2.96	0.64	2.23	0.63	6.45

By contrast, the sector that reports the highest design spending as a percentage of turnover is other business activities. This may not be surprising as this category includes product development consultancies and marketing service providers and so there is a significant focus on technical and promotional design. However, in this relative sense it is interesting to note how manufacturing, which led in absolute terms, is not the leader in any of the categories of design spend as a percentage of turnover.

Design spend by size of company

As well as looking at the intensity of design spend by sector, we can look at how design spending varies by company size. Taking the whole sample and looking at the number of companies of each size (in terms of employees 0–9, 10–49, 50–249, 250+) at varying thresholds of design spending provides us with an initial map of how that spending changes as companies grow. This is shown in *figure 22*, with thresholds for spending ranging from zero to over 10% of turnover.

Figure 22 – relative spending on design by size of company

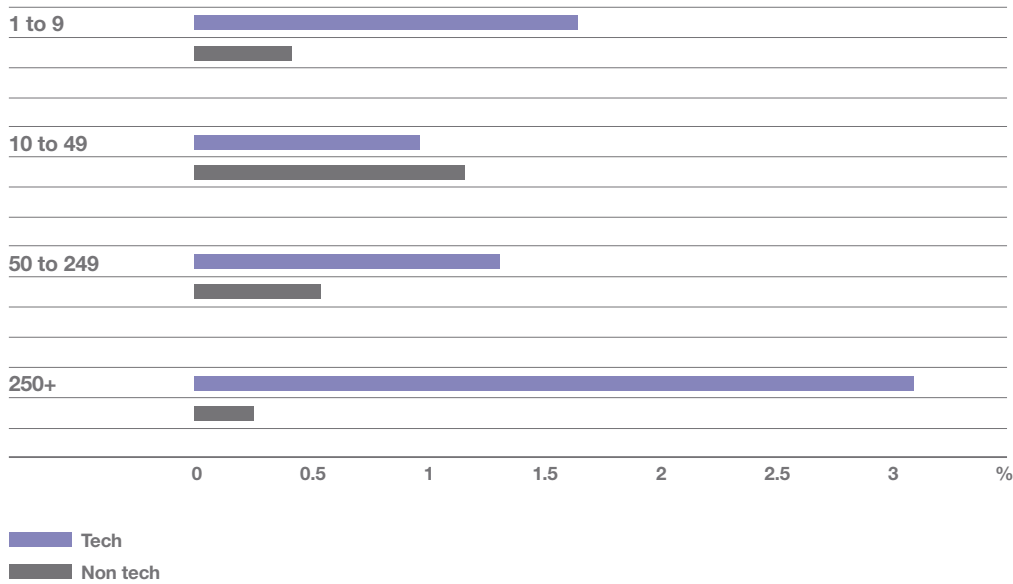


Just under half of all companies have less than 0.5% of turnover spent on design, while just under 10% of companies spend more than 10% of turnover on design. However, by company size this varies significantly. Micro companies (those with nine employees or fewer) have the highest percentage with no design spend (25%) and the highest percentage with a design spend over 10% of turnover (13%). By contrast, a third of companies with between 10 and 249 employees have a design spend between 0.5% and 1.0% of turnover. The share of all companies in each category above 1% of turnover is relatively similar.

This pattern may be expected, as we see small companies biased towards a low to zero spend, medium-sized companies tending towards 0.5% of turnover as design spend and large companies peaking around 1% of turnover.

The focus of design varies by company size with all companies having a predominance of technical spend as a percentage of turnover, followed by promotional spend. However, looking at the overall technical versus non-technical focus (see *figure 23*) the technical intensity dominates for companies in the 1–9, 50 to 249 and 250+ categories, but is lower than the non-technical intensity for companies with between 10 and 49 employees.

Figure 23 – Technical versus non-technical design spend as a percentage of turnover by size of company



This could indicate that companies at this intermediate size have a different focus as they need to build and consolidate their brand and identity, rather than solving initial technical problems or having an identity that requires maintenance rather than creation.



Part three: National spending on design

National spending on design

Developing a national estimate of private-sector design spend from a sample of this size is challenging due to the relatively small number of companies involved. The estimates developed in this section indicate potential national level design spend but should be used with caution due to the small sample size.

The total turnover for this sample of 358 companies was £4.4 billion, with a reported total design spend of £92 million. This implies an intensity of design spending of 2.1% of turnover. If this accurately reflects the intensity of design spending across UK SMEs and as such companies are 99.9% of enterprises nationally, we can estimate national private-sector spending on design as approximately £58.75 billion. This estimate is based on total turnover for SMEs in the UK for 2007, which was £2,794 billion.¹¹ This number could overestimate national design spending due to the large skew in the data collected (i.e. a significant proportion of companies reported zero design spend). SMEs encompass 99.9% of all enterprises, but represent only 51.1% of total turnover nationally. In this sample, only 95% of firms are SMEs, and thus, it is possible that the national estimate of design spend is underestimated as a result.

An alternative method to estimate national private-sector spending on design is to develop an estimate based on sector-level spending. Grouping similar sectors together (so there are 100+ companies in each band from the sample) and then using the average design spend as a percentage of turnover against the figures for the whole economy leads to an estimate of £59.98 billion (see *table 4*).

Table 4 – developing an estimate of national design spend based on industry groupings

Industry group	Sample turnover (£K)	Sample design spend (£K)	Design as percentage of turnover	Population turnover (£M)	Estimated design spend (£M)
Mining and quarrying, manufacturing, electricity, gas and water supply, construction	2,421,679	65,516	2.71%	868,369	23,493
Wholesale and retail, hotels and restaurants, transport, storage and communication	743,506	17,172	2.31%	1,284,178	29,659
Real estate, renting, business activities, education, health and social work, other community, social and personal services	894,481	9,956	1.11%	613,693	6,831

¹¹ See Small and Medium Sized Enterprises Statistics for the UK and the Regions, Department of Business, Enterprise and Regulatory Reform, available online at <http://stats.berr.gov.uk/ed/sme/>.

In a similar fashion we can develop estimates of design spending based on the size of companies, ranging from those with fewer than 10 employees to those with more than 250 employees. This leads to an estimate of £50.06 billion for national private sector design spending (see *table 5*).

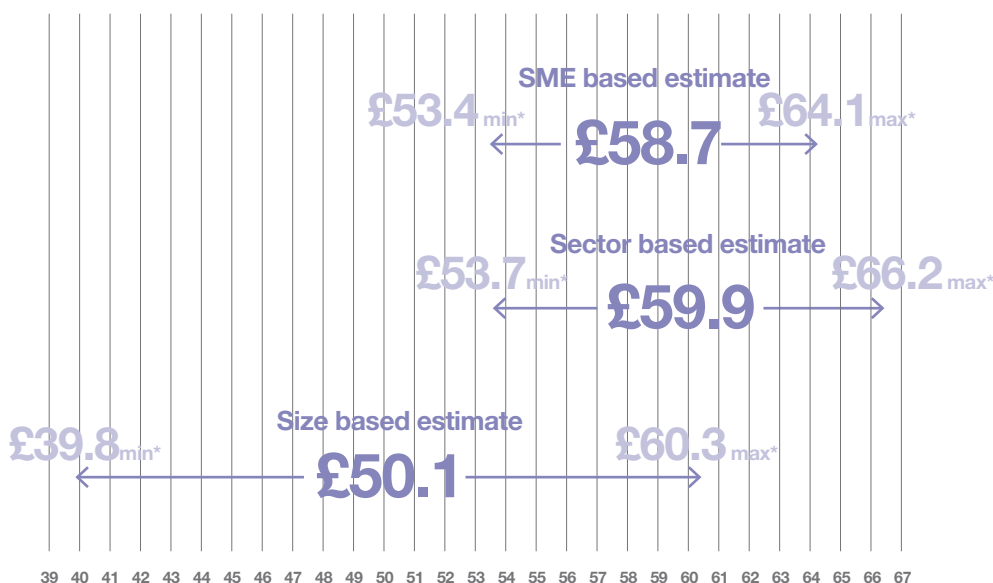
Table 5 – developing an estimate of national design spend based on company size

Company size	Sample turnover (£K)	Sample design spend (£K)	Design as percentage of turnover	Population turnover (£M)	Estimated design spend (£M)
0 to 9	156,896	3,204	2.04%	423,451	8,647
10 to 49	520,916	10,992	2.11%	421,259	8,889
50 to 249	1,332,960	24,212	1.82%	412,706	7,496
250+	1,657,900	54,403	3.28%	1,530,358	25,003
				Total	50,066

A final method, similar to that used in developing national estimates from studies such as the Community Innovation Survey, is to scale the spending for companies by size and sector across the sample based on the inverse of the achieved sample size (i.e. total number of companies/number of companies in sample). Due to the relatively small sample size, this method is not possible with this data as too many individual categories of size and sector have fewer than 10 companies and so the error in scaling is significant.

As noted in the methodology section above, the companies were asked to report their level of confidence in their estimates as being to within £1K, £10K, £50K or £100K. Using these self-reported errors we can provide upper and lower bounds for the estimates developed, based on SME turnover, sector and size. These are presented in *figure 24* below, showing that there is a range for our national design spend estimate of between £39.8 billion and £66.2 billion.

Figure 24 – estimates of national private-sector spending on design



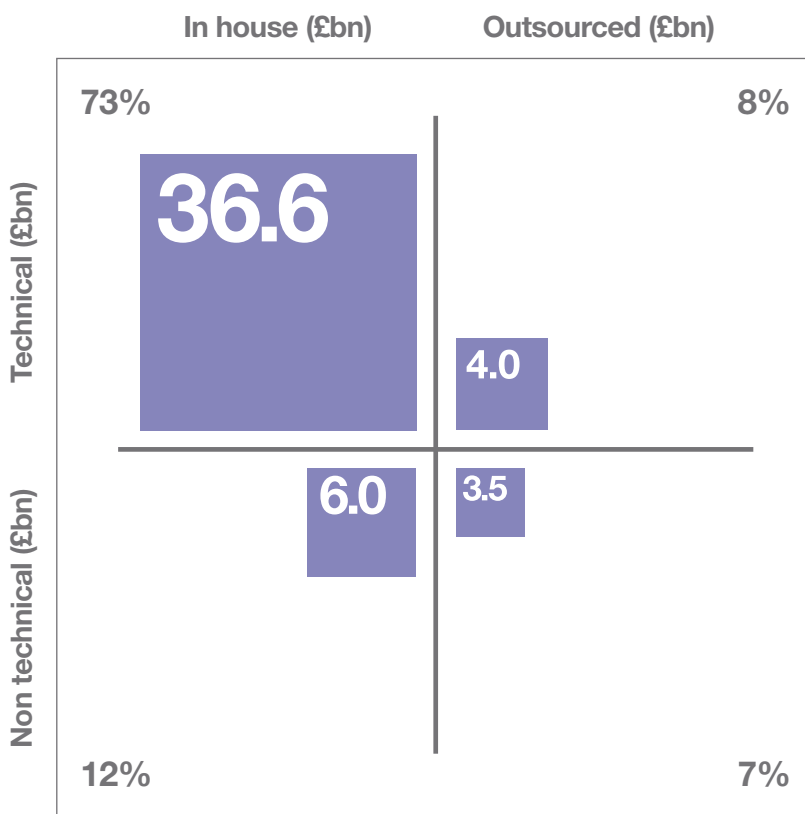
*Based on reported accuracy

These values are estimates based on the 358 completed returns for this survey and therefore may over- or under-represent total national spending. This is because of the high level of skew in responses, i.e. this is not a normal distribution, and because of the differences between the make-up of the sample (in terms of sector and size) compared to actual distributions for the whole economy.

To ensure we are not immediately over-estimating the level of private-sector design spending, we will use the lowest of these estimates (£50.1 billion) for further analysis. The 95% confidence interval for the national estimate will be between £30 billion and £120 billion, and so we are working in the bottom half of that interval.

Breaking up the national estimate, we can estimate the level of technical and non-technical design spending in the UK, as well as how much design is carried out in-house or is outsourced. *Figure 25* shows a simple calculation scaling the intensities in each category for the sample against the average of the estimates for national design spend.

Figure 25 – breaking down the national estimate for design spend



Total £50.1bn

Estimate of total national design spending

% Percentage of reported spend in each category of design spending

¹² The translation of current prices into 1997 prices used GDP deflators from HM Treasury available at http://www.hm-treasury.gov.uk/data_gdp_fig.htm.

A key question is how do these estimates, the overall one and the breakdown by type of spend, compare to previous estimates of national design spending? As noted in the introduction, relatively few attempts have been made to estimate design spending at the national level.

The estimate from Sentence and Clark of £10 billion for product development and design in UK manufacturing firms in 1997 is roughly comparable to the first line of *table 4*, which estimates 2007 design spending in mining, manufacturing and utilities as just over £23.5 billion. This figure, corrected for inflation, is approximately £18.5 billion in 1997 terms.¹² The differences between the two figures will be based on the differing context for 1997 and 2008, as well as the definitional differences governing each estimate.

Next, by looking at the Design Council estimates of the UK design industry we can compare the total figure for the design sector and that for external consultancies. The turnover of the UK design sector, which was estimated at £11.6 billion, can be compared to the total for non-technical design from this survey, which was £9.5 billion. The reported revenue of design consultancies (£5.1 billion) is broadly in line with non-technical outsourced design spending, which is estimated at £3.5 billion from this survey.

Finally, as discussed earlier there is a significant relationship between technical design spend and R&D spending. The estimate for technical design spend is approximately £40.6 billion and this could be compared to national private-sector R&D spending, which is reported at £21bn for 2007.¹³ The fact that technical design spending is estimated at approximately twice R&D spending seems to indicate that the discussion on innovation support (especially that based on R&D tax credits) may be missing a significant element of spending which is future-oriented and directed at bringing new products and services to market without depending on R&D.

The recent paper from Jonathan Haskell estimates expenditure (in-house and outsourced) as well as investment on architecture and engineering design activities. This contrasts to our survey, which did not make an explicit differentiation between expenditure and investment, and so we should compare the expenditure figure as we asked for company spending in a given year. The Haskell paper estimates in-house spending on architecture and engineering design at £27 billion, with purchased architecture and engineering design services costing £17 billion. The estimated outsourced design spend from our survey was £7.5 billion, approximately half of that estimated by Haskell, while the in-house spend is £42.6 billion, roughly twice the Haskell estimate. This highlights the difficulty in comparing our survey to the Haskell estimates, as they have a narrow measurement of architecture and engineering design, whereas we asked for all types of design spending.

It is encouraging that the comparisons are similar in order of magnitude, providing confidence that the estimates are reasonable. However, the significant differences, especially between this survey and the Haskell paper, highlight the differences in definitions and boundaries used in each approach. The inclusion or not of architecture, for example, will significantly change the results. The key difference, though, will be on how design is interpreted, either in a survey question or from existing data sources. In many ways design spend is in a similar situation to the measurement of research and development spending in the 1980s. R&D was recognised as important, but no standard (such as the Frascati definitions) existed at that stage and companies were not used to reporting their R&D spend. Over time, it should be possible to achieve similar levels of confidence in reporting design spend to that of reporting R&D spending.

¹³ DIUS (2008) R&D Scoreboard 2008, Department for Innovation, Universities and Skills, further details available at http://www.innovation.gov.uk/rd_scoreboard/.

Discussion

Measuring design spending is very difficult as companies have not traditionally reported such spending and there is no agreed definition of it. This survey provides the first comparable data for UK companies spending on design, indicating 2.1% of turnover spent on design for the sample of companies surveyed. These results imply that private-sector spending on design in the UK was approximately £50 billion in 2007.

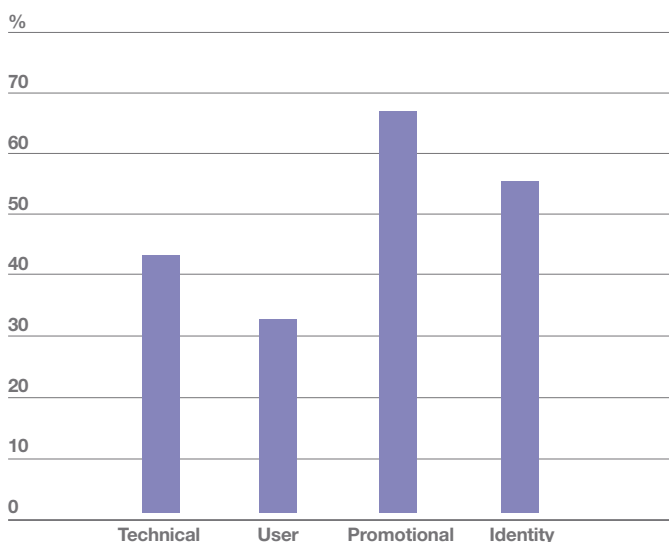
The estimate of national private-sector spending on design is reasonable when compared to previous estimates of design activity, being similar in order of magnitude. However, there are significant scale differences. These may be due to how design was described in each approach and what was explicitly included or excluded. This highlights the need for an agreed and stable approach to estimating design spending if design is to be better understood and given the priority many believe it deserves in policy.

In developing the survey, a four-part model for capturing design spend was created based on the purpose of the design activity. This approach provides significant flexibility compared to a purely definitional approach. Attempts to define design categories are problematic as the terms are not universally understood and it is unclear whether they can ever be exhaustive. This flexibility is necessary to enable firms to estimate spend on design in the business. The model developed here could be used as the first stage of a new standard for estimating design spending in companies.

In terms of absolute and relative spend, technical design dominates this survey as it represents 81% of the reported spending. Including technical design as a category of spending is seen as critical to understanding the breadth of design impact and to help clarify the interface between design, R&D and innovation.

However, in terms of numbers of companies reporting each type of spend (technical, user, promotional, identity) technical spending is third, with 42.7% of companies reporting such a spend, compared with promotional spending being reported by 66.5% of companies.

Figure 26 – percentage of sample reporting spend in each category



As a comparison, the most recent Community Innovation Survey (CIS) in 2007 asked whether companies had “Expenditure on design functions for the development or implementation of new or improved goods, services and processes,”¹⁴ specifically excluding design spending in support of R&D. The percentage of all companies indicating this kind of spend in the period 2004–2006 was 17%. This is much lower than any of the reporting percentages for design spend and raises a question as to what companies were reporting in the CIS survey. Again, it also highlights the difficulty in the interface between design, R&D and innovation.

It might have been expected that the majority of technical and user design would be in manufacturing companies and that promotional and identity design would be relatively similar across all firms. However, the patterns of design spending were surprising in two sectors, wholesale and other business activities. In wholesale the high level of technical spending was not expected and the high overall level of design spending in other business activities was contrary to expectations. This again raises the question as to whether the impact of different types of design activity is well understood across different sectors and implies the need for further research.

As indicated earlier, this survey is a proof of principle that reliable data on design spending can be collected. However, several issues could not be covered in this survey.

These include:

- Whether UK companies are sourcing their bought-in design from the UK or from overseas
- Whether there is a relationship between intensity of design spending and performance (as a single year is insufficient to address the question)

Several important limitations to the work should also be highlighted:

- The data collected are best estimates that telephone interviewees were able to provide and so have a margin of error attached.

¹⁴ Further information on the Community Innovation Survey, including the questionnaire can be found at <http://www.berr.gov.uk/dius/innovation/innovation-statistics/cis/page10957.html>.

- Some of the responses may be biased by the functional focus of the company representative answering the survey.
- The terms and categories used are relatively novel and so it is expected that if the model becomes accepted more precise data will be collected.

Given these limitations, the data collected as part of this survey and the model of design spending are an important first step in improving our understanding of the impact of design on company performance. If data can be collected over several years it should be possible to analyse which types of design spend have an impact on company outcomes in a variety of sectors and contexts.

Recommendations

The completion of this survey has highlighted the lack of an agreed standard for design spending and due to this an inability to link design to company and national performance. The following recommendations are made for further work:

1. Developing a standard for design spending that is applicable across sectors and size of company, developed in consultation with company managers and policymakers.
2. Investing in further surveys of private-sector spending in the UK to establish a baseline and to improve the accuracy of national estimates of design spend.
3. Instigating surveys in key competitor countries to enable comparison between nations.

These steps should ensure that the UK is among the leaders in understanding the impact of design spending on company and national performance.

Appendix: data for key graphs

Figure 4 – Distribution of companies' reported design spend

	0	10	20	30	40	50	75	100	150	200	250	500	1000	5000	10000	>10000
Percentage of companies	15.17	36.80	10.39	5.90	3.37	3.09	5.90	1.97	3.65	1.97	1.69	3.37	3.37	2.81	00.00	0.56

Figures 6, 10, 14, 18 – Average absolute spending

	Tech in	Tech out	Tech total	User in	User out	User total	Promo in	Promo out	Promo total	ID in	ID out	ID total	Total inhouse
All	189.96	21.16	211.12	9.11	2.45	11.56	18.04	10.37	28.41	5.19	4.41	9.60	222.30
Manufacturing	631.98	65.93	697.91	14.92	2.40	17.32	23.80	10.43	34.23	6.57	4.97	11.54	677.27
Construction	24.01	22.87	46.88	1.02	1.94	2.96	1.93	8.58	10.51	0.20	8.05	8.25	27.15
Wholesale	165.45	5.63	171.07	12.18	0.67	12.86	34.57	9.42	43.99	11.09	3.71	14.80	223.29
Other business	51.48	3.00	54.48	14.23	5.85	20.08	24.05	7.40	31.45	5.68	3.99	9.67	95.45

Figures 8, 12, 16, 20 – Design spend as percentage of turnover

	Tech in	Tech out	Tech total	User in	User out	User total	Promo in	Promo out	Promo total	ID in	ID out	ID total	Total inhouse
All	1.48	0.49	1.98	0.23	0.12	0.35	0.68	0.58	1.27	0.19	0.16	0.36	2.59
Manufacturing	2.07	0.21	2.28	0.33	0.04	0.37	0.25	0.55	0.80	0.11	0.09	0.19	2.75
Construction	0.50	0.37	0.87	0.01	0.03	0.04	0.04	0.13	0.18	0.01	0.08	0.08	0.56
Wholesale	1.99	0.11	2.10	0.26	0.05	0.30	0.81	0.54	1.35	0.27	0.14	0.40	3.33
Other business	2.38	0.57	2.95	0.44	0.19	0.64	1.62	0.61	2.23	0.44	0.19	0.63	4.88

Figure 22 – Relative spending on design by size of company

	0	up to 0.5%	up to 1%	up to 2.5%	up to 5%	up to 10%	More than 10%
0 to 9	25.00	19.12	8.82	11.76	11.76	10.29	13.24
10 to 49	13.02	34.90	12.50	15.63	9.38	6.77	7.81
50 to 249	9.86	33.80	11.27	15.49	12.68	5.63	11.27
250+	11.11	16.67	27.78	11.11	11.11	11.11	11.11
All	14.61	30.66	12.32	14.61	10.60	7.45	9.74

Figure 23 – Technical versus non-technical design spend as a percentage of turnover by size of company

	Technical %	Non-technical %
1 to 9	1.63	0.41
10 to 49	0.97	1.14
50 to 249	1.29	0.53
250+	3.04	0.24

Figure 26 – Percentage of sample reporting spend in each category

	Zeros	Reporting	Percentage
Technical	205	153	42.74
User	243	115	32.12
Promotional	120	238	66.48
Identity	161	197	55.03

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**Company spending
on design:**

Exploratory survey
of UK firms 2008

Finbarr Livesey and
James Moultrie

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