

Innovation Optimism Index

Final Report
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Prepared by:
BOP Consulting

CATAPULT
Digital

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Executive Summary

The Digital Catapult's mission is to spark innovations along the data value chain, through encouraging and nurturing innovative activity by others. In order to target its resources well, it needs to understand how these prospective innovators and entrepreneurs are thinking and feeling, right now. This is the idea behind the Innovation Optimism Index, a first of its kind, which surveyed 500 businesses to assess their levels of optimism around innovation and their attitudes to working with data.

We conducted telephone interviews asking questions on the following topics: how they are currently using and working with data, how optimistic they feel about a range of factors likely to impact their propensity to innovate, and what is stopping them from doing more.

On the basis of their answers we created an Index and mapped the 500 businesses across four principle clusters:

- A. Proactive Optimists: 29% of businesses interviewed
- B. Inactive Optimists: 23%
- C. Active Pessimists: 27%
- D. Inactive Pessimists: 20%

These findings are interesting in themselves, but (probably more importantly), **this distribution can now be used as a benchmark for future editions of the Innovation Optimism Index**, and over time it will be possible to build up a more detailed picture of the characteristic behaviours, attitudes and concerns of highly innovative data-led companies.

We recommend that the Catapult repeat the survey on a recurring basis, to create a time series for the index analysis, and conduct more detailed analysis of some of the constituent factors in the index (e.g. optimism and activeness) per subsector, per region, etc.

Background and Findings from Literature Review

“There’s some valuable activity already taking place to map innovation investment and SME support across the UK, but nothing which directly assesses the mood of the UK’s SME innovators who are driving so much of our business growth. How often are SME innovators themselves offered the opportunity to collectively inform the organisations and networks that exist to help them about what they need most to grow?”

– Chris Thompson, Partnerships Director, Digital Catapult

The Challenge

The Digital Catapult is venturing into new territory. The objectives of the organisation are to spark innovation and new products, services and businesses along the data value chain. But success in this endeavour is dependent on encouraging innovations by others – therefore it is important to try and understand at the outset how those businesses and innovators are thinking and feeling about the context for their work. The idea behind the IOI, then, is to track the mood of entrepreneurs and innovators across the UK, their propensity to innovate, and their attitudes to working with data.

The knowledge gap

In terms of existing indices, there are ‘business confidence’ indices which ask for predictions of key metrics (e.g. expected sales), but not usually the optimism or mood of the respondent. There are ‘innovation indices’ or ‘scoreboards’, but these tend to measure innovative capacity through things like investment in R&D, and usually at a national level.

There is some interesting research looking at the behaviours and contexts that encourage innovation, but there are few innovation surveys or pieces of research that combine this with an analysis of attitudes to data. And most innovation surveys cover a broad range of sectors, rather than focusing specifically on the creative/ digital/ data-intensive sector. Nesta’s research on ‘datavores’ is the notable exception here, linking intensity of data use with innovation. Datavores are defined as businesses that ‘gather online customer data intensively, subject this data to sophisticated analyses (such as controlled trials and data and text mining), and use what they learn to improve their business.’ The report also makes distinctions about sophistication of data use, which is helpful for understanding how ready companies are to innovate on the basis of data.

However the Datavores report doesn’t address the question of optimism in the sector. So the IOI seeks to understand propensity to innovate as a consequence of optimism in relation to various conditions for growth, and to simultaneously understand how businesses feel about working and innovating with data.

Process / Methodology

On the basis of the literature review and the Catapult's objectives, a questionnaire was devised to find out from businesses:

- how they are currently using and working with data,
- how optimistic they feel about a range of factors likely to impact their propensity to innovate,
- and what is stopping them from doing more.

We then interviewed a sample of 500 randomly selected businesses, few of whom (7%) were previously aware of the Catapult, and analysed the results.

Defining the target sector

Nesta notes in the 'Datavores' report that 'datavores are present across all company sizes, and in every sector'. An important question for the Catapult then was how to sensibly direct their resources as an organisation towards businesses likely to gain the greatest benefit, and, relatedly, how to refine the focus of the IOI.

The Digital Catapult has a particular interest in the creative industries, as a high growth, high potential sector for the UK. Within and alongside that, it was decided to target businesses that are already likely to see themselves as data-users, which meant narrowing down to a few key 'digital economy' sectors. This was done on the basis of sectors that other reports and data-focused research have catalogued: for example NIESR's Measuring the UK's digital economy with big data (2013), and a sectoral breakdown of tech clusters such as in the TCIO 3rd Anniversary Report (2013).

The broad sectoral categories from which businesses were selected to interview were:

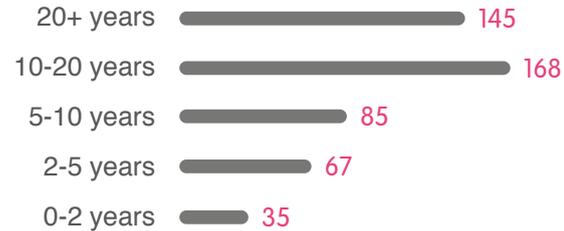
- publishing;
- internet, security and network technologies;
- digital design;
- computer software and database development;
- audio-visual content;
- advertising and marketing.

The 500 businesses were split evenly across these 6 categories.

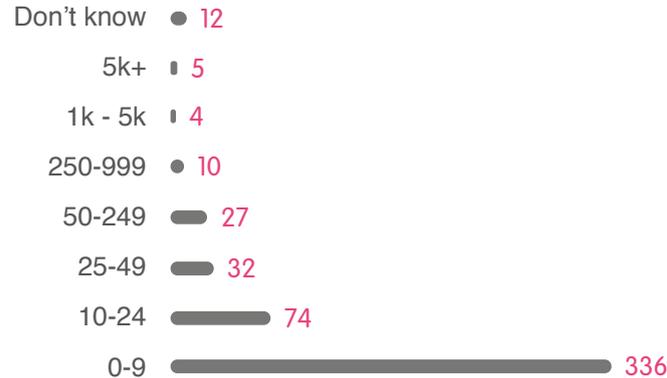
The Businesses We Interviewed

The following charts show the spread of businesses across age range, size and region. By far the greatest number of businesses interviewed were SMEs (fewer than 250 full time equivalent employees), however only a handful were start-ups less than 2 years old. This is partly to do with the proportion of such businesses to be found on business databases. Although the survey was not targeted at particular regions or clusters, the majority of businesses interviewed were in London and the South East, with another sizeable cluster in the North West.

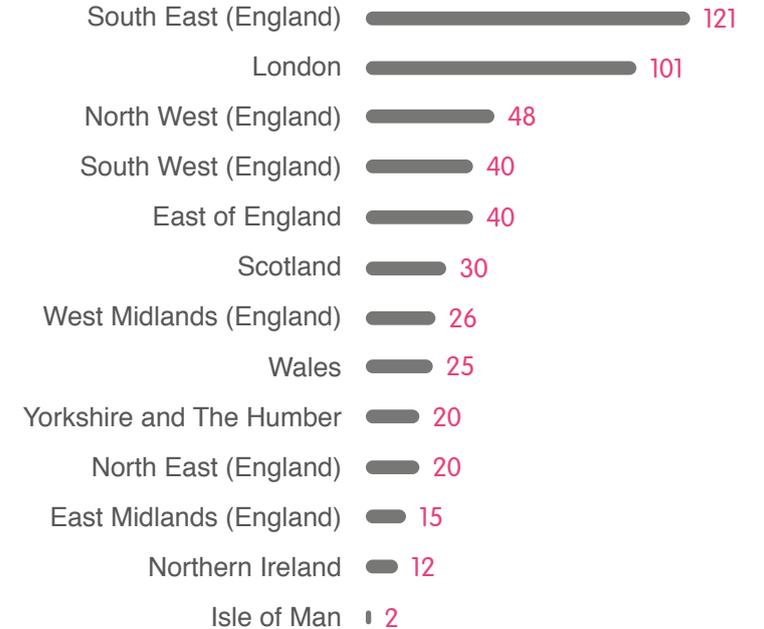
Age of company



Size of company

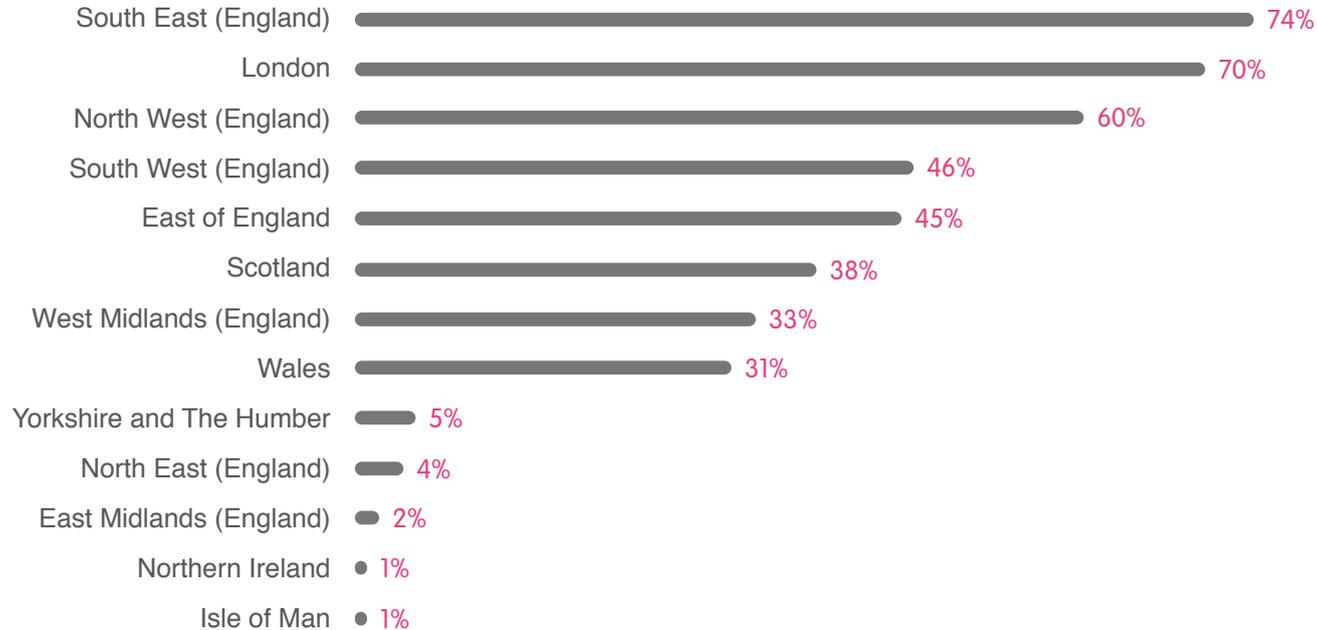


Location of company



How Are Businesses Using Data Today?

1A: Data sources that companies are making use of currently (q3)

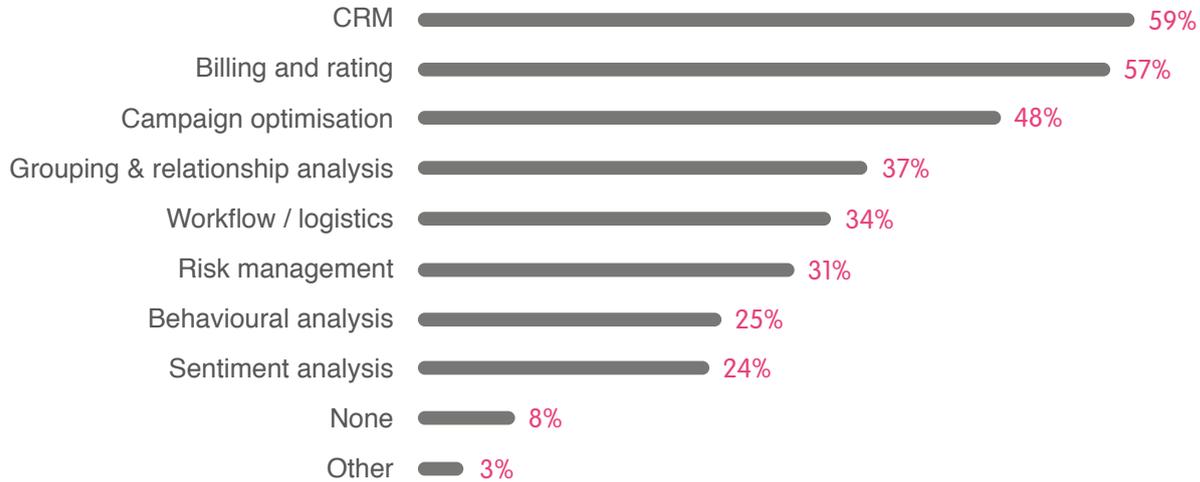


'Human-generated data' was exemplified as 'e.g. emails, application forms', and so represents fairly basic use of data.

'Cloud data', 'public datasets' and 'website analytics' were three of the more common spontaneous answers given under 'other', so have been separated out in the analysis.

How Are Businesses Using Data Today?

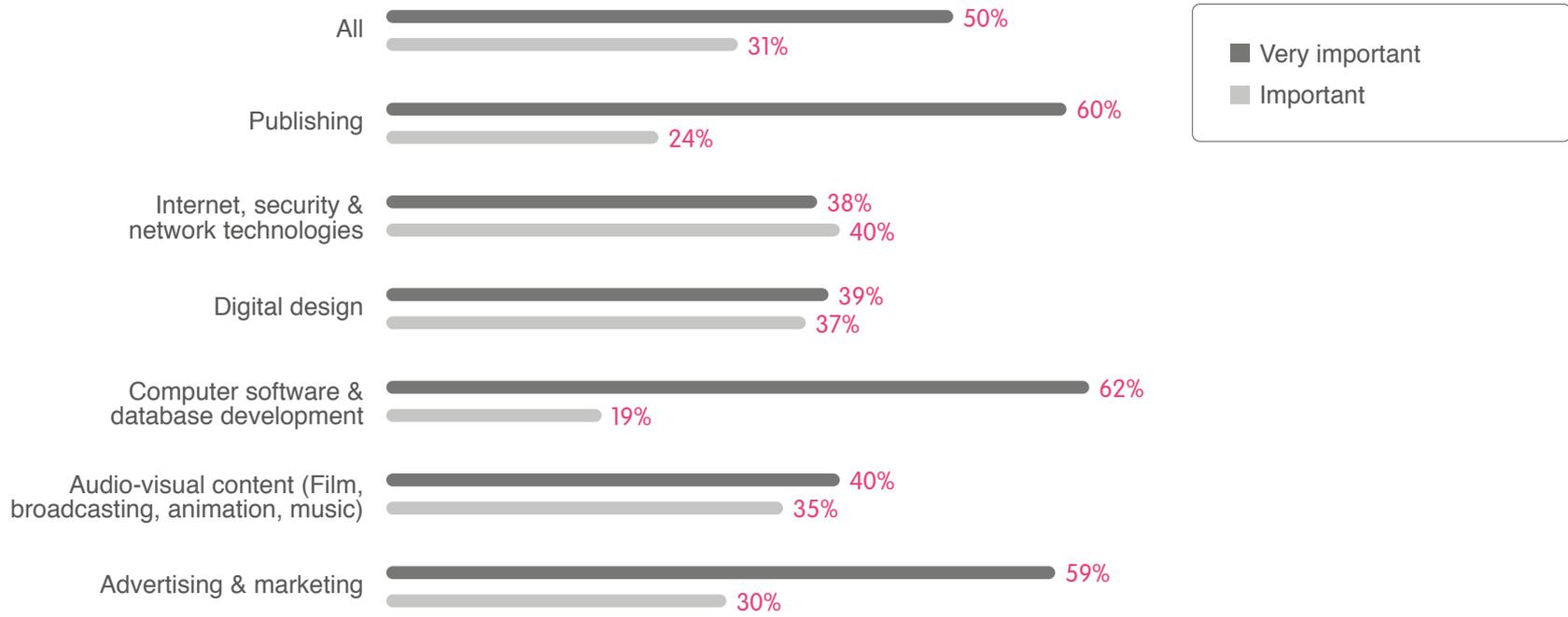
1B: Current applications of data within businesses (q6)



The majority of businesses are using data in a fairly simple way – more sophisticated analysis, such as behavioural analysis and social media sentiment mining, is rarer.

How Are Businesses Using Data Today?

1C: How businesses rate the importance of data to their success (q4)



Overall 81% of businesses questioned in this survey said data was either 'important', or 'very important' to their success.

Businesses in 'publishing', 'advertising and marketing', and 'computer software and database development', were 9-12 percentage points more likely than the average to say data was 'very important'.

How Are Businesses Using Data Today?

1D: Companies most pressing priorities around how they use data (q5)



This chart records those issues deemed 'high priority'. Businesses are currently marginally more focused on how to improve data management and security, rather than data analysis, or the development of new products / services based on data.

How Optimistic Are Businesses About Innovating with Data?

2A: Optimism about a range of conditions for innovation and growth (q2)

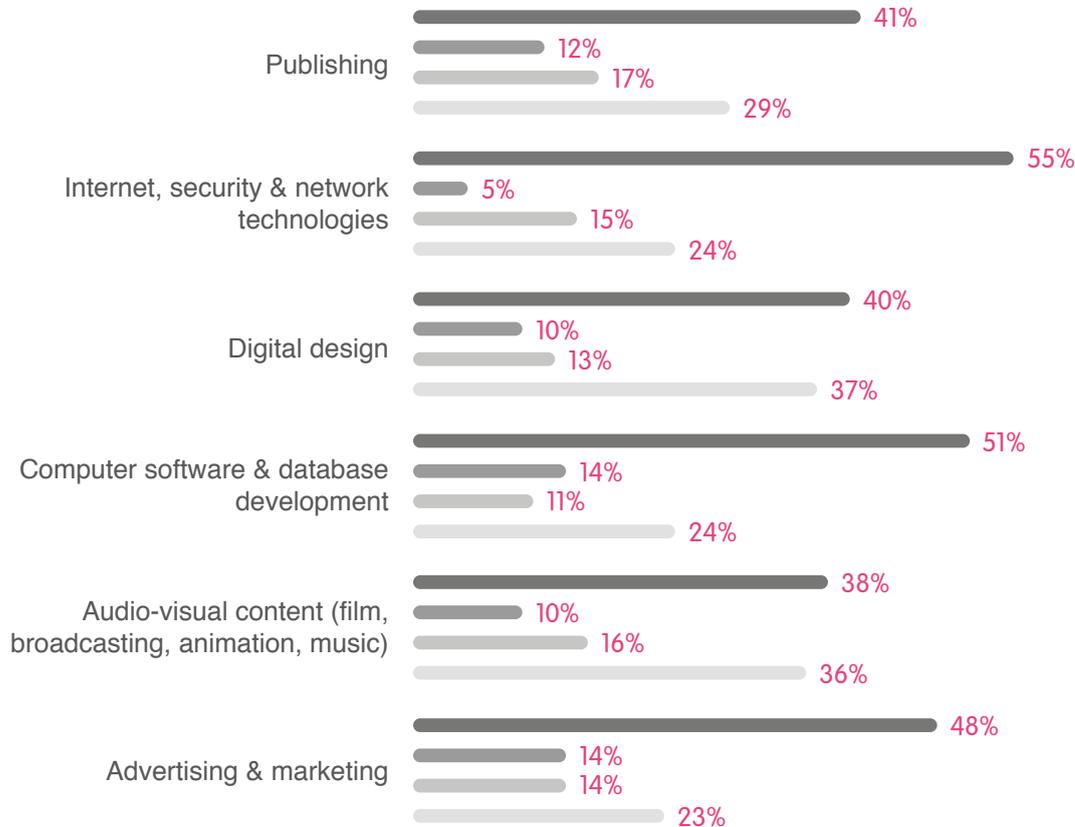


Perhaps unsurprisingly, 'finance' and 'political support' are the two areas respondents are least likely to be optimistic about.

These two categories also have the greatest variance between sub-sectors: digital design is most optimistic about political climate, publishing least; advertising most optimistic about finance; audio-visual least.

How Optimistic Are Businesses About Innovating with Data?

2B: Innovation activity based on the exploitation of data (q7)



With regard to new products or services based on exploiting data, is your company currently;

- Offering one or more product/service
- Seriously planning to start doing so
- Making some initial investigations
- Doing nothing

Internet, security and network technologies, computer software and database development, and advertising and marketing are currently most likely to be offering one or more product or service based on the exploitation of data. Digital design is the sector most likely to be doing nothing.

How Optimistic Are Businesses About Innovating with Data?

2C: Perception of attitudes to innovation within own company (q8)

We asked if they would describe their company as:

- Brave, initiating change
- Happy to try out new ideas but in a careful way
- Thoughtful, accepting of change more quickly than average
- Sceptical, only using a new idea when the majority are using it
- Or critical towards new ideas, only accepting change when it has become mainstream

We then mapped these answers on to traditional categories of innovation adoption/ diffusion.



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How Optimistic Are Businesses About Innovating with Data?

2D: Perceived market opportunities for new products / services based on exploiting data (q9)

NB This was an open question, answers have subsequently been categorised.

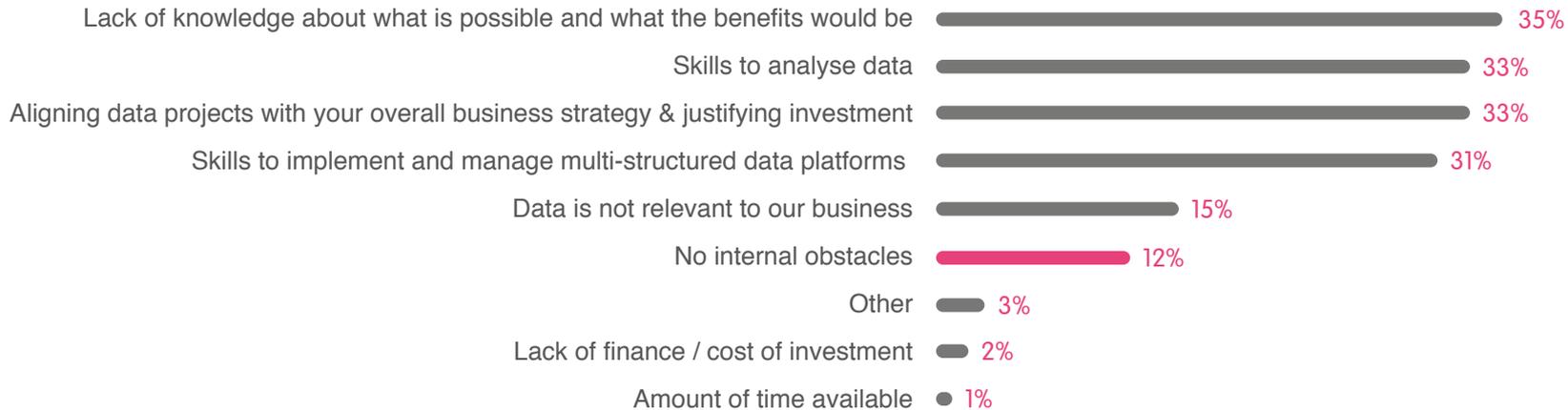


A large number of companies either struggled or refused to answer the question: 'what do you see as the market opportunity for products and services based on exploiting data?' which is interesting in itself, suggesting it's either viewed as sensitive information, or not something they readily think about.

Only a small number mentioned data-driven decision making. Only one person said 'connected physical products'.

What's Stopping Them Do More?

3A: Internal obstacles to innovating with data (q10)



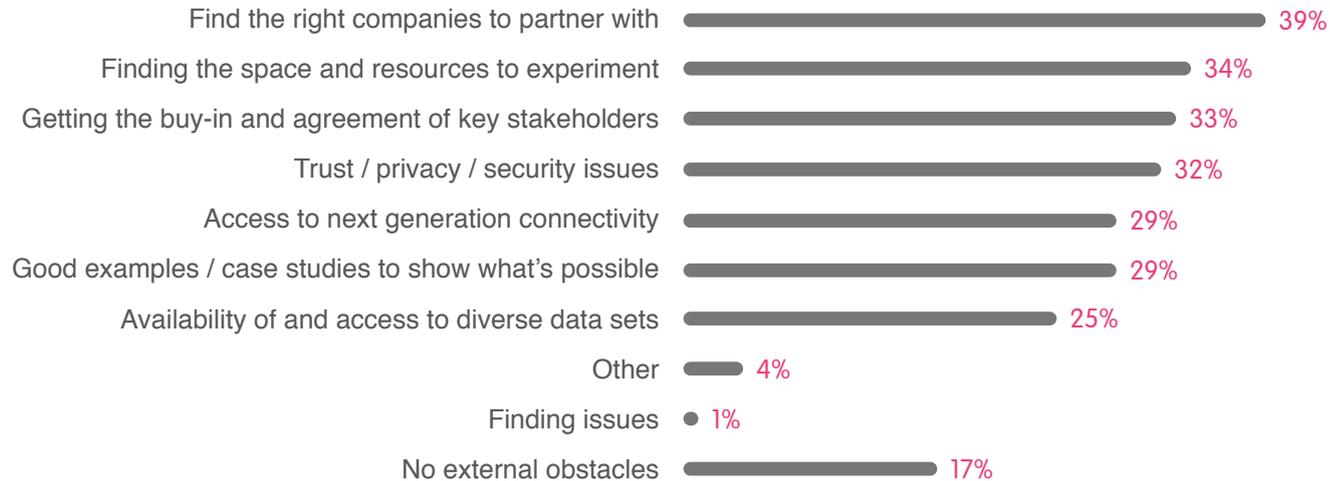
Overall, there is a fairly even split here between deficiency in skills, knowledge and stakeholder buy-in.

'Lack of finance', and 'amount of time available', have been separated out as two of the most common spontaneous responses given under 'other'.

It's interesting to note that 12% of respondents reported 'no internal obstacles'.

What's Stopping Them Do More?

3B: External obstacles to innovating with data (q11)



This set of responses is one of the most important for the Catapult in informing how its efforts are directed.

At the moment businesses are facing some fairly fundamental issues: 'finding the right companies to partner with' and 'finding the space and resources to experiment' are seen as more pressing than 'access to diverse datasets'.

Innovation Optimism Index: Methodology

To create the IOI, we scored all companies on the basis of their answers to 4 key questions:

Optimism

Average scores of 9 items in Q2 (where 'optimistic' = 1, 'pessimistic' = 0)

Actions

Score of Q7 (where 'currently offering one or more product/service' = 4: 'seriously planning to start doing do' = 3: 'making some internal investigations' = 2: 'doing nothing' = 1)

Internal Challenges

Average scores of 8 items in Q10 (where identifying a challenge = 1)

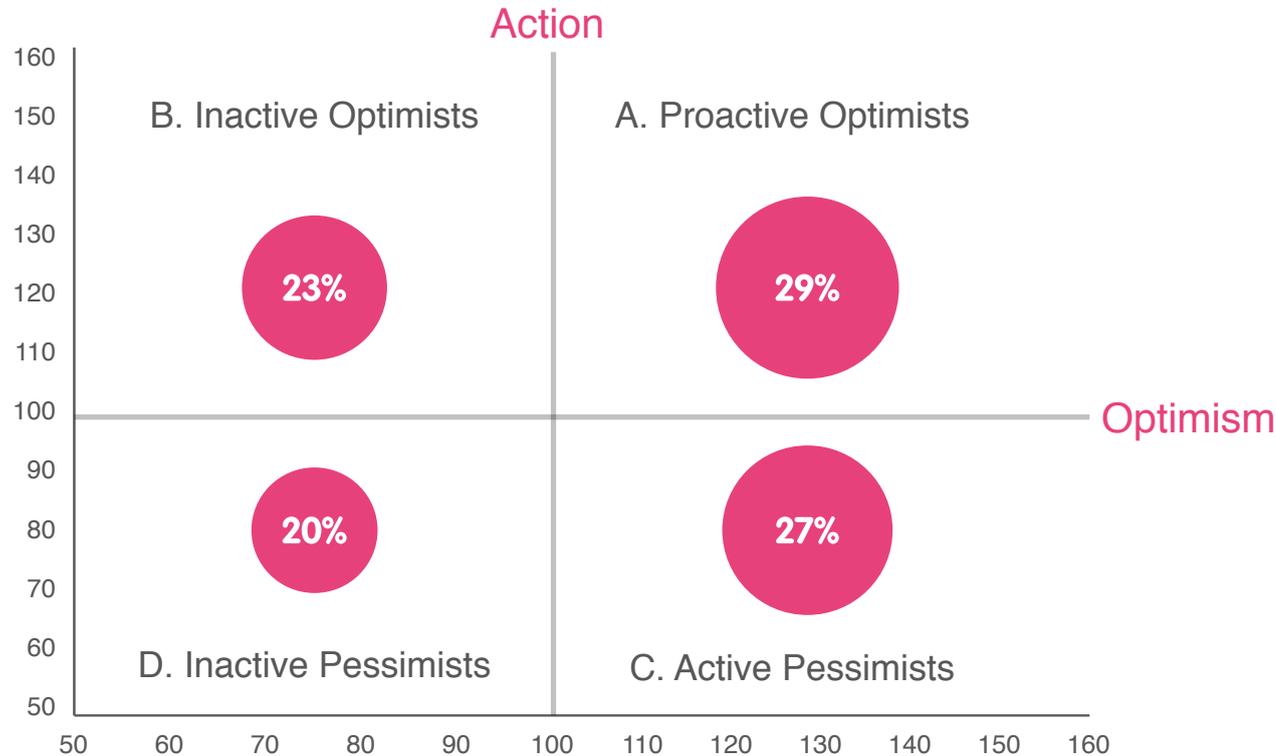
External Challenges

Average scores of 9 items in Q11 (where identifying a challenge = 1)

All the scores were normalised so that the average equals 100. This will constitute a benchmark for all our analysis but it will also serve as the base point for future surveys

Innovation Optimism Index

We created 4 different clusters based on 'optimism' and 'action' scores, and mapped the 500 companies across them.



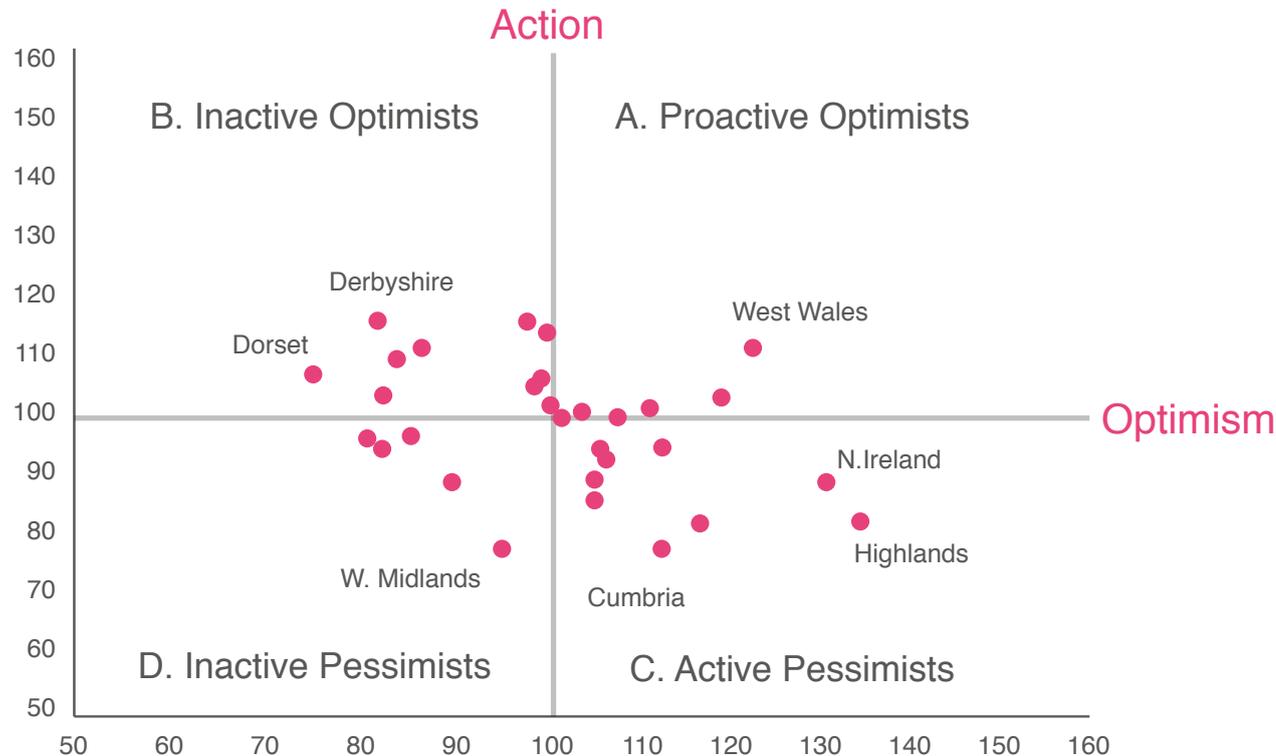
Companies in quadrant A have a higher than average optimism score and are likely to be 'currently offering one or more product/ service' based on the exploitation of data.

The ideal scenario would be to move as many companies as possible into A from other quadrants. But the most obvious immediate opportunity for the Catapult is in converting the 'inactive optimists' to be 'proactive optimists'.

This distribution can now be used as a benchmark for future editions of the Innovation Optimism Index.

Innovation Optimism Index: Regional Variations

We plotted the regional breakdown of 500 companies across the 4 clusters

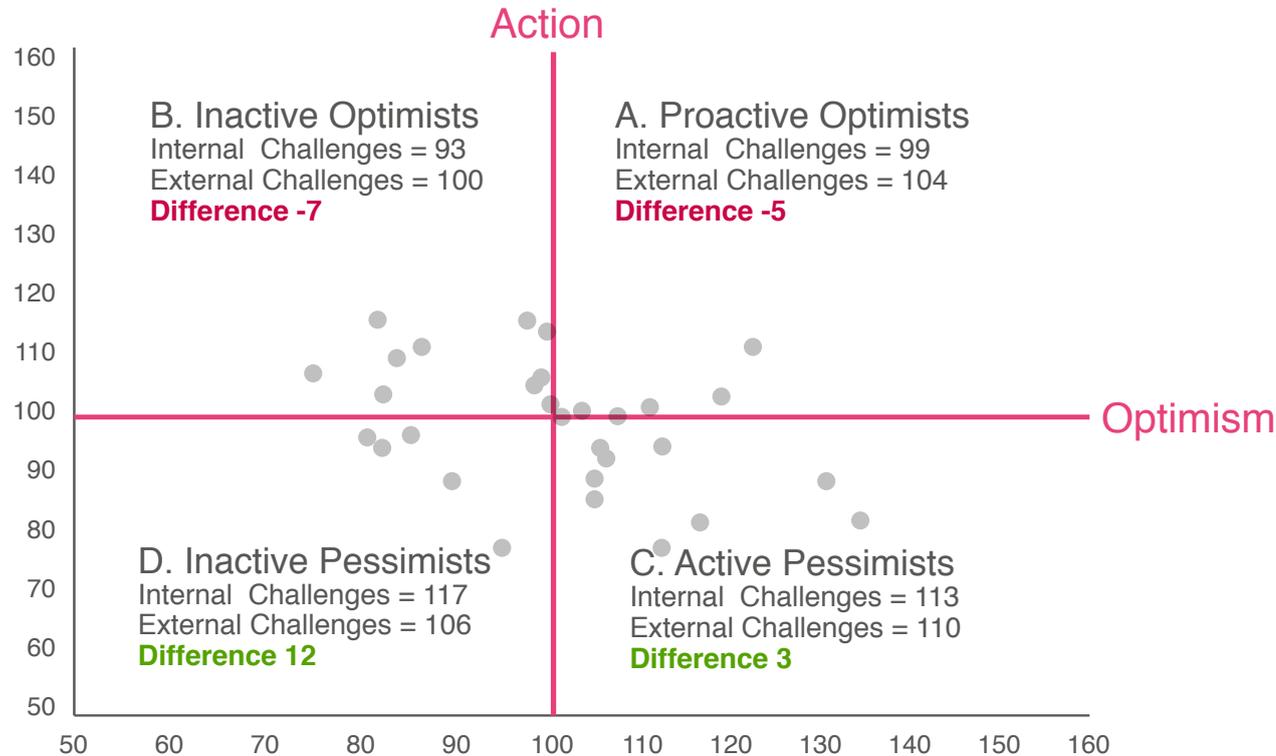


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At the moment businesses are facing some fairly fundamental issues: 'finding the right companies to partner with' and 'finding the space and resources to experiment' are seen as more pressing than 'access to diverse datasets'.

Innovation Optimism Index: Perception of Challenges

We incorporated an analysis of how companies in each quadrant perceive external and internal obstacles to innovation and growth.



Businesses with a higher average score in optimism tend to perceive external obstacles to growth as more significant than internal obstacles.

The less optimistic businesses are more likely to see internal challenges as the most acute.

In general, the optimists perceive fewer challenges overall than the pessimists.

The IOI Questionnaire

Q1. What does your company do?

Q2. Are you feeling optimistic or pessimistic with regard to the following?

- Education provision for your sector
- Access to finance for your business
- The political climate/ support for your sector
- Availability of the right kind of office/ work space
- Availability of good mentors
- Availability of the technology talent you need
- Availability of the business talent you need
- Access to the technology infrastructure and hardware you need
- Availability of marketing/ strategy expertise

Q3. Which of the following internal and external data sources do you currently make business use of?

- 1 Image content
- 2 Audio content
- 3 Social media data
- 4 Click-stream data from online application and mobile apps
- 5 Geo-location data from mobile and smart devices
- 6 External market segmentation data (e.g. demographics)
- 7 Human generated data (e.g. emails, application forms)
- 8 Operational application data (e.g. point of sale, customer care)
- 9 N/A – data is not relevant to our business
- 10 Other (specify)

The IOI Questionnaire

Q4. How important to the success of your business is how you use and exploit data?

- 1 Not important
- 2 Important
- 3 Very important

Q5. Which of the following goals related to data are a High priority, Low priority or Not a priority for your company?

- Improve how we store and manage data
- Increase data security
- Improve the analysis of the data we have
- Speed-up query response times
- Develop new products and services based on data

Q6. In which of the following ways are you using data in your business?

- 1 Customer Relationship Management
- 2 Billing and rating
- 3 Grouping and relationship analysis, geographic targeting (e.g. clustering, social network analysis)
- 4 Campaign optimisation; Cross-sell / up-sell recommendation
- 5 Sentiment analysis or opinion mining (e.g. natural language processing, text analytics)
- 6 Behavioural analysis (e.g. customer churn)
- 7 Workflow / logistics / staff scheduling
- 8 Risk management (e.g. fraud analysis)
- 9 Other (specify)

The IOI Questionnaire

Q7. With regard to new products or services based on exploiting data, is your company...?

- 1 Currently offering one or more product/service
- 2 Seriously planning to start doing so
- 3 Making some initial investigations
- 4 Doing nothing

Q8. Would you describe your company as:

- 1 An Innovator (e.g. brave; initiating change)
- 2 An Early Adopter (e.g. try out new ideas but in a careful way)
- 3 Part of the Early Majority (e.g. thoughtful; accepting change more quickly than average)
- 4 Part of the Late Majority (e.g. sceptical; uses a new idea only when majority are using it)
- 5 A Laggard (e.g. critical towards new ideas; only accept change when it has become mainstream)
- 6 Other (specify)

Q9. What does your company see as the market opportunity for products and services based on exploiting data?

Q10. Which of the following internal obstacles apply to your company in implementing data projects that would achieve a step change in your business?

- 1 Lack of knowledge about what is possible and what the benefits would be
- 2 Aligning data projects with your overall business strategy and / or justifying investment
- 3 Skills to implement and manage multi-structured data platforms (e.g. Hadoop, MongoDB)
- 4 Skills to analyse data (e.g. behavioural analytics, social media sentiment analysis)
- 5 N/A – data is not relevant to our business
- 6 Other (specify)

The IOI Questionnaire

Q11. Which of the following external obstacles apply to your company in implementing data projects that would achieve a step change in your business?

- 1 The availability of, and access to, diverse data sets
- 2 Getting the buy-in and agreement of key stakeholders (e.g. partners, customers)
- 3 Finding the right companies to partner with
- 4 Trust/ privacy/ security issues
- 5 Finding the space and resources to experiment
- 6 Good examples/ case studies to show what's possible
- 7 Access to next generation connectivity
- 8 Other (specify)

Q12. Before today, had you heard of the Connected Digital Economy Catapult?

Q13. Is your company multi-site or single-site?

Q14. Is the location you are based in the company's?

- Global HQ
- UK HQ
- Other

The IOI Questionnaire

Q15. Approximately how many Full Time equivalent Employees (FTEs) are employed across the company as a whole?

- 1 0-9
- 2 10-24
- 3 25-49
- 4 50-249
- 5 250-999
- 6 1,000 to 5,000
- 7 5,000+
- 8 Don't know

Q16. How many years has the company been in business?

- 1 0-2
- 2 2-5
- 3 5-10
- 4 10-20
- 5 20+

Q17. What is the postcode of your current business location?

Q18. A version of this survey will be repeated annually so we would like to keep your contact details on file to contact you again in a year's time – are you happy for us to do so?

Q19. If you'd like to sign up to the Connected Digital Economy Catapult email list, to be the first to find out about how to participate in demonstrator projects, free events and funding opportunities, please provide us with your email address.

Appendix

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Digital Catapult

101 Euston Road
London
NW1 2RA

Tel: 0300 1233 101
Email: info@cde.catapult.org.uk