Managing to grow: Evidence from new longitudinal business data

EMG Workshop 2021

Centre for Applied Economic Research, UNSW

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Background

A productivity levels and growth problem

- Growth slowdown across advanced economies (Cette, Fernald, Bojon 2016)
- UK productivity levels and growth below its peers (OECD 2018; Mason, O'Mahony, Riley 2018)

Rising importance of intangibles that exhibit different features to tangibles

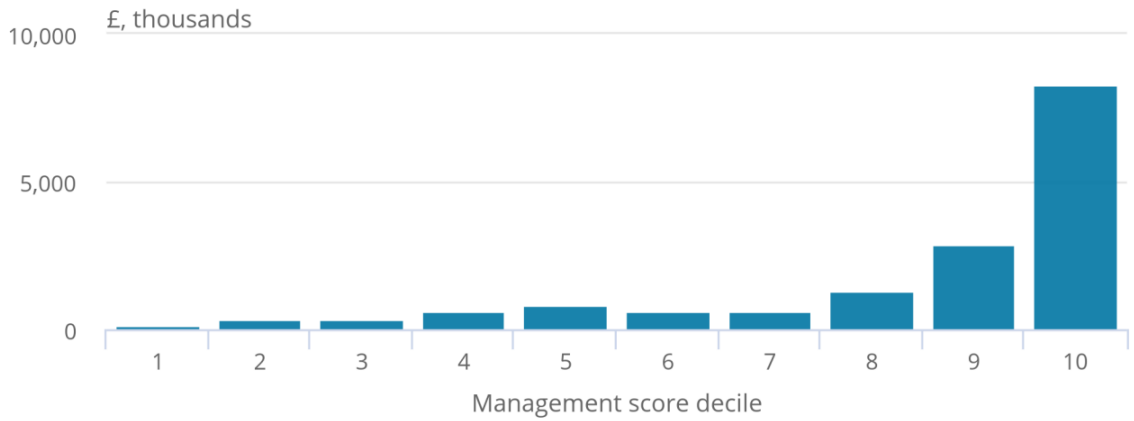
- Sunk, Scalable, Synergies, Spillovers (Haskel & Westlake, 2018)
- Associated with changing market structures and winner takes all dynamics? (Corrado et al, 2021)

Management as an intangible asset

- High returns & dispersion across firms within/between countries (Bloom, Sadun, Van Reenen 2017)

Management practices and business performance in Great Britain

Gross Value Added (GVA) per worker by Management Score decile, GB 2016



Gross Operating Surplus (GOS) by Management Score decile, GB 2016

Source:
https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/articles/experimentaldataonthemanagementpracticesofmanufacturingbusinessesingreatbritain/2018-04-06

Questions

If the returns to investing in good management practices are as high as indicated by correlations, then why don't more firms invest in improving management?

Are there particular barriers to the adoption of good management practices, e.g. knowledge and/or skills gaps?

Do the returns to investing in management depend on other concurrent business activities, e.g. complex supply chains, exporting and use of intangible assets?

What are the mechanisms by which management facilitates productivity performance?

Alternatively, does the positive correlation between good management and productivity partially reflect a tendency for already successful firms to invest in management?

New longitudinal survey data can help to address these questions.

Main findings so far

1. Substantial variation in management scores across British firms with better management more prevalent amongst larger, foreign and not family owned firms

2. Strong links to firm performance

3. Firms with high management scores are better forecasters

4. Firms with high management scores adapted more easily to the pandemic on some dimensions

5. Evidence of self-selection into business support to improve management

Management and Expectations Survey

UK's biggest-ever survey on management and expectations

- Executed by Economic Statistics Centre of Excellence (ESCoE) and the Office for National Statistics (ONS)

The first wave was dispatched in July 2017

- 25,000 firms sampled from Annual Business Survey (ABS) (year 1 firms)
- Both manufacturing and non-manufacturing sectors

The second wave was dispatched in November 2020

- 50,000 firms sampled from Annual Business Survey (ABS), the IDBR and previous MES respondents

Questions on:

- Management questions, following Bloom and Van Reenen (2007)
- Subjective expectation questions, asking probability distributions of forecasts
- Additional Covid related questions in the second wave

Office for National Statistics

Management and Expectations Survey

In 2016, how many days training and development, on average, have managers and non-managers undertaken within this business?
Include: formal training and informal 'on the job' training.

Please X one box for each column

	Managers	Non-managers
a. Less than a day	X	X
b. 1 day	X	X
c. 2 - 4 days	X	X
d. 5 - 10 days	X	X
e. More than 10 days	X	X

Management and Expectations Survey

In 2016, how many key performance indicators were monitored within this business?

Examples: Sales, cost, quality, customer satisfaction, timely service delivery, waste.

Please X one box only

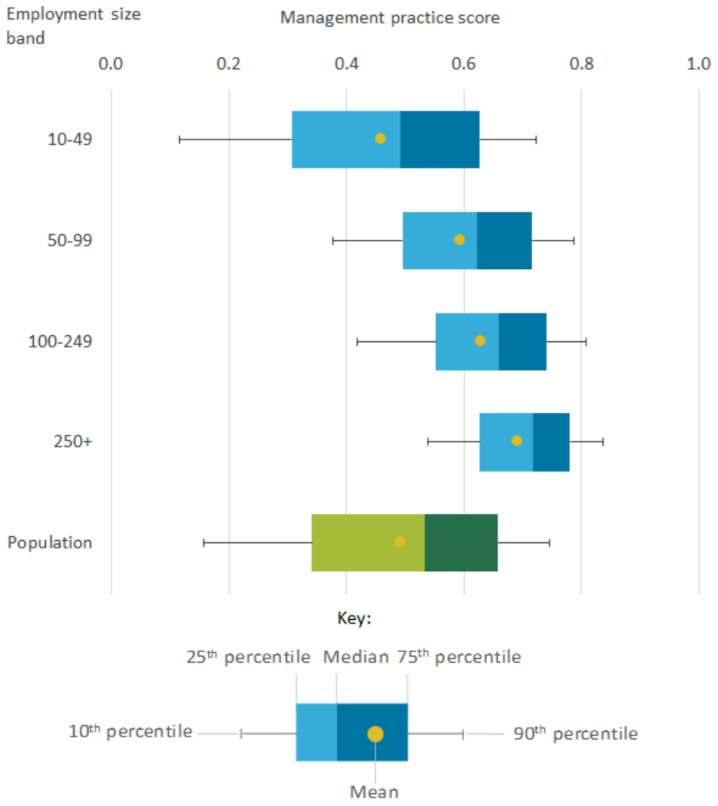
a. 1-2 key performance indicators..... X

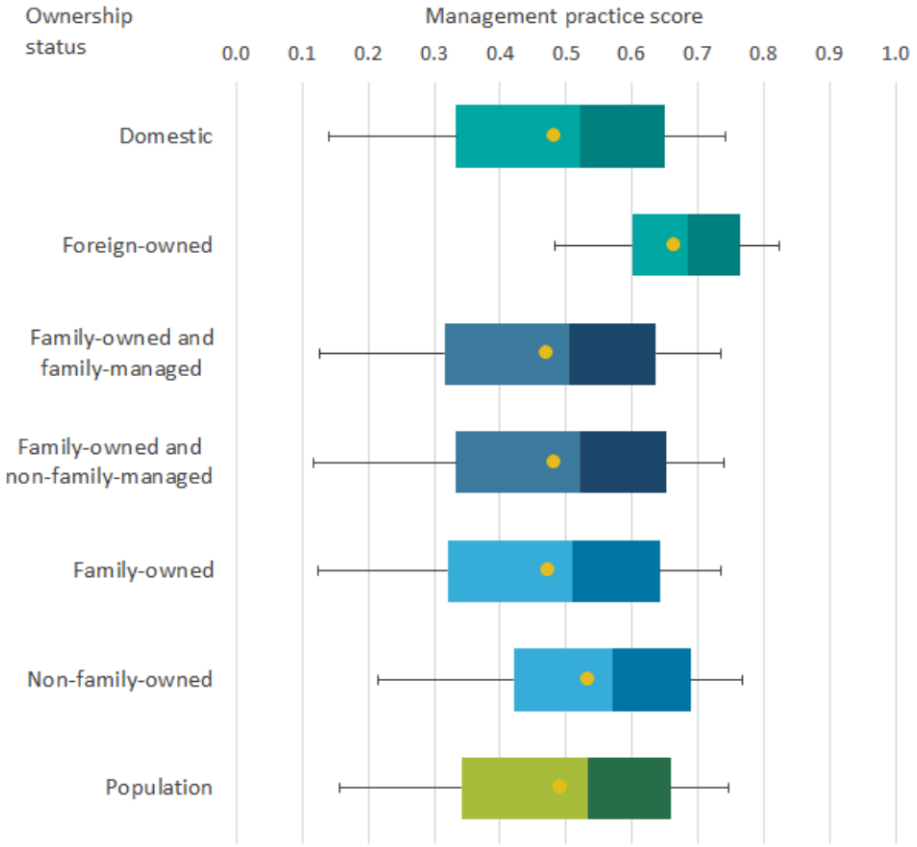
b. 3-9 key performance indicators..... X → Go to Question 7

c. 10 or more key performance indicators..... X → Go to Question 7

d. No key performance indicators..... X → Go to Question 8

Who adopts structured management practices?
… size and ownership status matter





Source:
https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/articles/experimentaldataonthemanagementpracticesofmanufacturingbusinessesingreatbritain/2018-04-06

Management scores are higher for larger, non-family-run and foreign-owned firms

	Management score						
	(1)	(2)	(3)	(4)	(5) Employment 10-49	(6) Employment 50-249	(7) Employment 250+
Log employment	0.063***	0.061***	0.055***	0.057***	0.108***	0.043***	0.022***
	(0.0014)	(0.0017)	(0.0018)	(0.0018)	(0.0079)	(0.0071)	(0.0039)
Family owned but not run			-0.009	-0.004	-0.012	-0.001	-0.007
			(0.0065)	(0.0065)	(0.0129)	(0.0107)	(0.0094)
Family owned and run			-0.025***	-0.015***	0.007	-0.020**	-0.042***
			(0.0050)	(0.0050)	(0.0089)	(0.0083)	(0.0087)
Foreign owned			0.053***	0.046***	0.093***	0.046***	0.025***
			(0.0054)	(0.0054)	(0.0144)	(0.0093)	(0.0071)
Log age				-0.016***	-0.036***	-0.010	0.002
				(0.0031)	(0.0050)	(0.0065)	(0.0040)
Share of managers with a college degree				0.061***	0.063***	0.063***	0.028*
				(0.0079)	(0.0127)	(0.0137)	(0.0141)
Share of non-managers with a college degree				0.058***	0.071***	0.050***	0.031*
				(0.0103)	(0.0165)	(0.0181)	(0.0172)
Industry Dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
Location Dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
Other Controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7756	7756	7756	7756	3160	2421	2175
R^2	0.212	0.307	0.319	0.341	0.272	0.246	0.243

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Management scores are positively related to performance

	Log GVA per worker							Profit per worker	Export
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Management score	0.845***	0.846***	0.790***	0.724***	0.754***	0.670***	0.661***	18.878***	0.125***
	(0.0662)	(0.0640)	(0.0680)	(0.0693)	(0.1041)	(0.1227)	(0.1883)	(4.2240)	(0.0264)
Log employment			-0.102***	-0.101***	-0.062	-0.201***	-0.035	-5.271***	0.009**
			(0.0117)	(0.0117)	(0.0415)	(0.0449)	(0.0271)	(0.7429)	(0.0046)
Log capital per worker			0.131***	0.128***	0.130***	0.120***	0.165***	6.303***	0.021***
			(0.0076)	(0.0075)	(0.0125)	(0.0124)	(0.0173)	(0.5479)	(0.0026)
Log age			0.063***	0.064***	0.097***	0.078**	0.013	-0.963	0.030***
			(0.0193)	(0.0191)	(0.0309)	(0.0366)	(0.0332)	(1.1449)	(0.0065)
Family owned but not run			-0.076**	-0.066*	-0.079	0.004	-0.041	-2.202	-0.033**
			(0.0359)	(0.0357)	(0.0686)	(0.0582)	(0.0683)	(2.4556)	(0.0154)
Family owned and run			-0.119***	-0.102***	-0.065	-0.114***	-0.112**	-3.738**	-0.056***
			(0.0257)	(0.0255)	(0.0440)	(0.0436)	(0.0499)	(1.7122)	(0.0111)
Foreign owned			0.186***	0.171***	0.356***	0.226***	0.029	9.742***	0.113***
			(0.0354)	(0.0354)	(0.0959)	(0.0604)	(0.0529)	(2.9841)	(0.0163)
Share of managers with a college degree				0.082*	0.036	0.133*	0.128	0.029	0.058***
				(0.0425)	(0.0616)	(0.0776)	(0.0908)	(2.5105)	(0.0165)
Share of non-managers with a college degree				0.286***	0.343***	0.154	0.263**	6.516	0.092***
				(0.0630)	(0.0972)	(0.1141)	(0.1253)	(4.0643)	(0.0236)
Industry Dummies	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Location Dummies	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Controls	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Difference in management scores between 10 & 90 percentiles	0.509	0.509	0.509	0.509	0.509	0.509	0.509	0.509	0.509
Observations	7346	7346	7346	7346	3023	2305	2018	7756	7756
R^2	0.025	0.334	0.390	0.395	0.378	0.460	0.513	0.195	0.414

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Managers as forecasters?

Macro forecasts

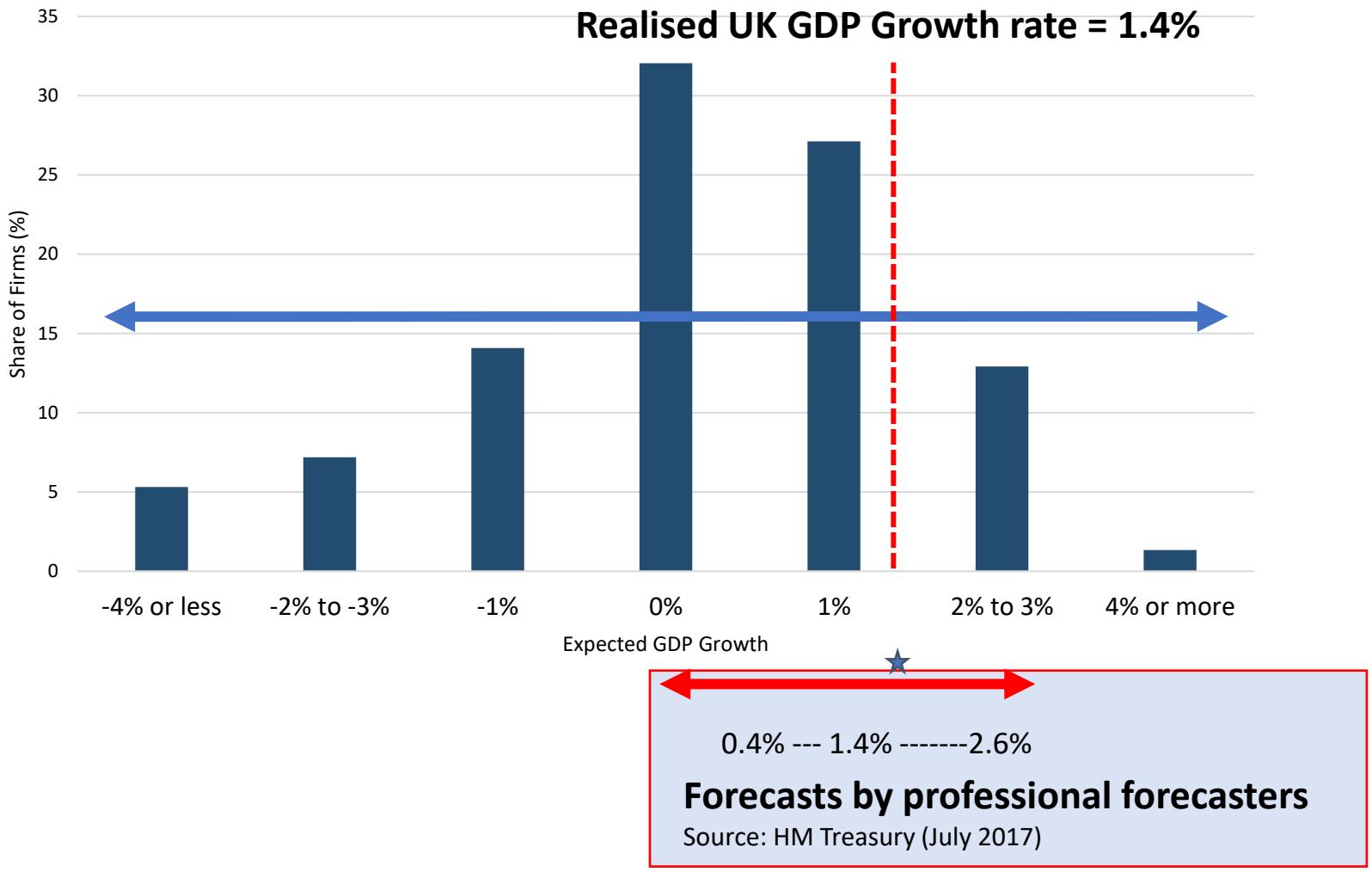
Response Requirement:

- Sum of percentage likelihoods must be within range 90 – 110

30. Please indicate what likelihood you would attach to the possible 2018 rates of UK economic growth (real growth rate of Gross Domestic Product) below.
Gross Domestic Product (GDP) is the main measure of the size of the UK economy, based on the value of goods and services produced during a given period.

UK Economic Growth in 2018		Percentage likelihood (values in this column should sum to 100)	
Strong decline	-4% or less	2 %	1138
Moderate decline	-2% to -3%	5 %	1139
Slight decline	-1%	10 %	1140
No change	0%	30 %	1141
Slight increase	1%	40 %	1142
Moderate increase	2% to 3%	10 %	1143
Strong increase	4% or more	3 %	1144
	Total	100 %	

Expected UK GDP Growth for 2018



Micro forecasts

Response requirement
for each indicator:

- Period reported for is 365 days (+/- 31 days)
- Forecasts given for both 2016 and 2017
- For 2018:
  - At least two bins completed
  - Values given must be weakly increasing (from lowest to highest)
  - Sum of percentage likelihoods must be within range 90 – 110

The example below will help you to complete questions 22, 24, and 26

Example A:
Jane Smith is filling out this survey for Business A. In 2016, Business A had approximately £4,500,000 in turnover, with a forecast of £4,750,000 in 2017.

For calendar years 2016 and 2017, what are the approximate values of turnover, including exports and other receipts within this business? If applicable exclude freight charges, excise taxes and value added tax.

For 2016 calendar year..... £ 4,500,000

Forecast for 2017 calendar year..... £ 4,750,000

The example below will help you to complete questions 23, 25, 27 and 29

Example B:
Jane also knows that turnover at Business A is forecast to grow approximately an additional 5% in 2018, with predicted annual value of turnover of £5 million. However, Jane knows there is some uncertainty with that forecast and that the value of turnover next year could be more or less than £5 million depending on consumer demand, changes in prices, and other uncertainties in the market. Given this uncertainty, Jane estimates that turnover will be between £2.8 million and £7.5 million, and thinks the likelihood of each scenario is as shown in the table below.

Looking ahead to the 2018 calendar year, what is the approximate value of turnover you would anticipate for this business in the following scenarios, and what likelihood do you assign to each scenario?

2018 scenarios, from lowest to highest	Approximate turnover in 2018	Percentage likelihood (values in this column should sum to 100)
LOWEST	£ 2,800,000	5 %
LOW	£ 4,200,000	10 %
MEDIUM	£ 5,000,000	60 %
HIGH	£ 6,300,000	20 %
HIGHEST	£ 7,500,000	5 %
	Total	100 %

Better-managed firms have both smaller GDP forecast errors and smaller GDP disagreement

	Absolute GDP forecast error						GDP Disagreement
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Management score	-0.358***	-0.293***				-0.171**	-0.154**
	(0.0609)	(0.0673)				(0.0738)	(0.0725)
Log employment			-0.066***			-0.054***	-0.055***
			(0.0103)			(0.0115)	(0.0113)
Foreign owned				-0.040		0.035	0.036
				(0.0338)		(0.0365)	(0.0358)
Family owned but not run					0.066*	0.047	0.049
					(0.0391)	(0.0395)	(0.0388)
Family owned and run					0.073***	0.030	0.033
					(0.0269)	(0.0295)	(0.0289)
Log age						0.018	0.016
						(0.0175)	(0.0171)
Share of managers with a college degree						-0.030	-0.027
						(0.0474)	(0.0465)
Share of non-managers with a college degree						0.087	0.088
						(0.0641)	(0.0627)
Industry Dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
Location Dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
Other Controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Mean of dep. var.	1.411	1.411	1.411	1.411	1.411	1.411	1.304
Observations	7134	7134	7134	7134	7134	7134	7134
R^2	0.005	0.055	0.058	0.053	0.054	0.060	0.061

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Better-managed firms have smaller turnover forecast errors

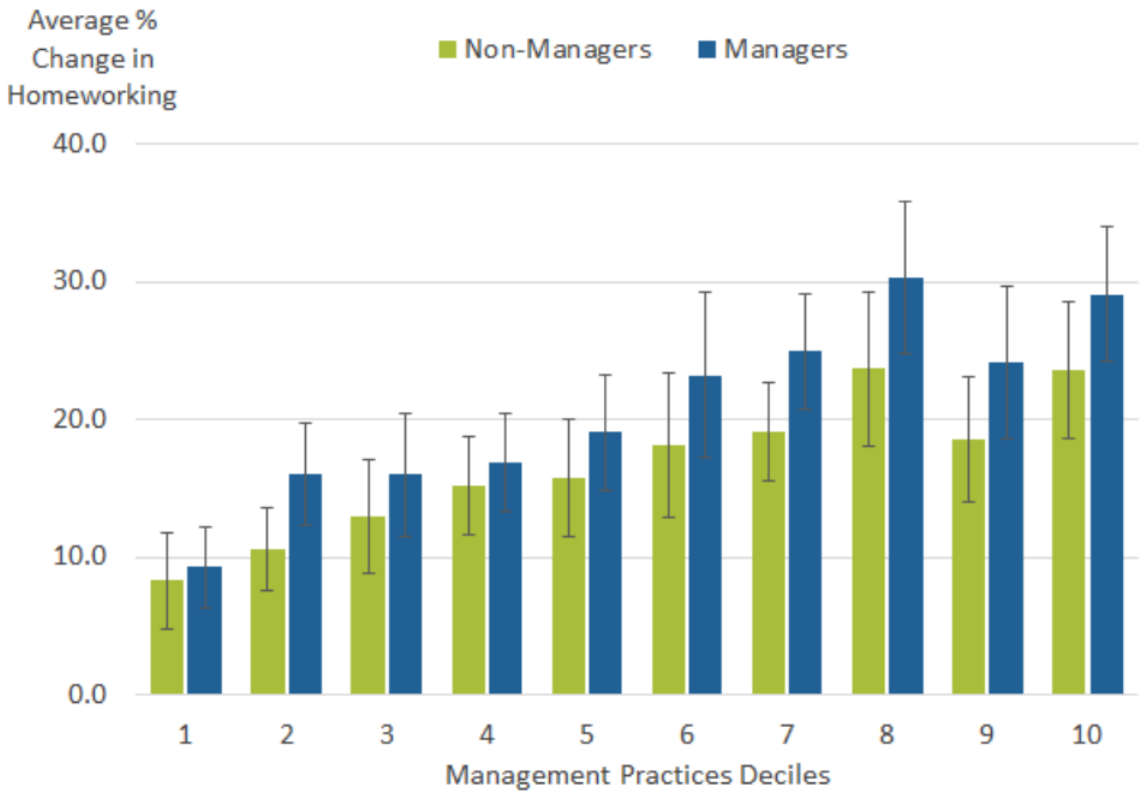
	Average Forecast Error between 2017 & 2018						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Management score	-6.004***	-4.043*					-4.834*
	(2.2571)	(2.4087)					(2.6455)
Five-year turnover volatility			15.013***				14.987***
			(4.1464)				(4.1151)
Log employment				-1.074**			-0.519
				(0.4380)			(0.5235)
Foreign owned					1.940*		1.840*
					(1.0165)		(1.1163)
Family owned but not run						-0.606	-0.481
						(1.1962)	(1.2170)
Family owned and run						-2.157***	-2.328***
						(0.8012)	(0.8968)
Log age							-2.017***
							(0.7118)
Share of managers with a college degree							-0.260
							(1.7095)
Share of non-managers with a college degree							5.955**
							(2.4908)
Industry Dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
Location Dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
Other Controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Mean of dep. var.	16.744	16.744	16.744	16.744	16.744	16.744	16.744
Observations	4723	4723	4723	4723	4723	4723	4723
R^2	0.001	0.250	0.259	0.251	0.250	0.251	0.266

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Adapting to economic shocks

Better-managed firms increased their homeworking rates by more in 2020

Change in homeworking rates from 2019 to 2020 by decile of management score, Great Britain



Natural experiment approach:

Comparing outcomes of more and less well managed firms before and during the pandemic

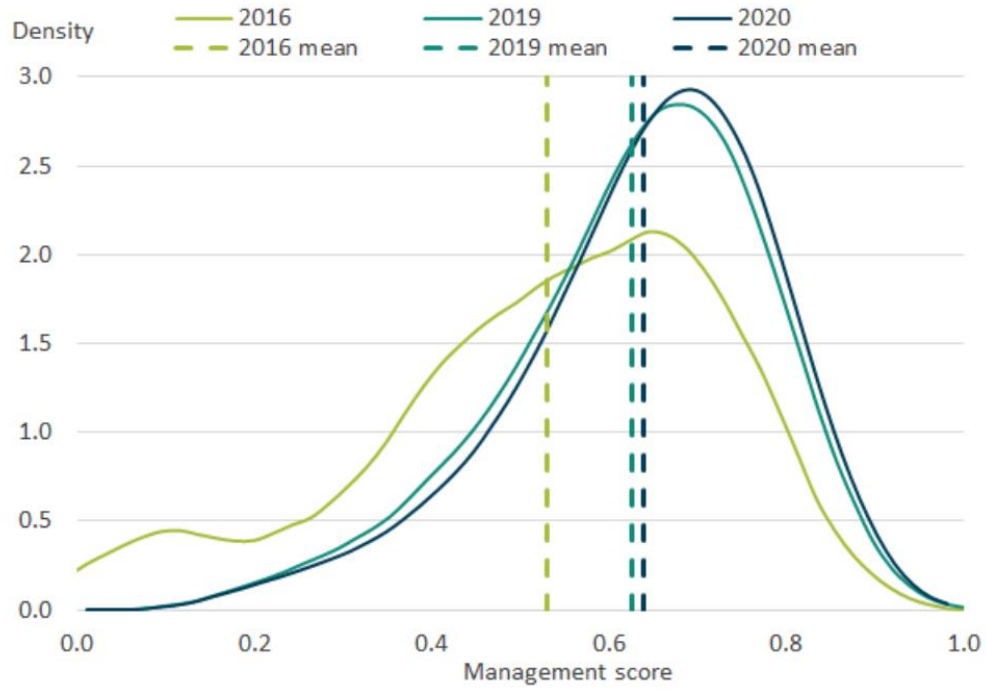
Source: https://www.ons.gov.uk/economy/economicoutputandproductivity/productivitymeasures/articles/managementpracticeshomeworkingandproductivityduringthecoronaviruscovid19pandemic/2021-05-17

Improving management practices

Management scores have increased since 2016 and during the pandemic … mainly driven by changes amongst SMEs

Changes of overall management practices scores, whole sample, Great Britain, 2016 to 2020

Changes of overall management practices scores, linked sample, Great Britain, 2016 to 2020



Source:
https://www.ons.gov.uk/economy/economicoutputandproductivity/productivitymeasures/articles/managementpracticesingreatbritain/2016to2020

Businesses have the opportunity to engage with feedback through the survey tool

4. Feedback and Comments

This section provides the opportunity to request feedback on the management practices score and provide any additional information that will help us understand the answers you have provided.

Would you like to receive [Ru Name]'s management practices score?

To show our appreciation for taking part in this survey, ONS would like to provide your business with its own "management practices" score based on the information you have provided.

- Yes, I would like to receive feedback
- No, I would prefer not to receive feedback

Who engages with feedback?

… better managed (and more productive) businesses

Requested Feedback

	(1)	(2)	(3)	(4)	(5)
Management score 2019	0.489***	0.471***	0.555***	0.552***	0.552***
	(0.027)	(0.028)	(0.031)	(0.031)	(0.032)
Log employment 2019			-0.029***	-0.029***	-0.029***
			(0.004)	(0.004)	(0.004)
Family owned and family managed			0.046***	0.045***	0.047***
			(0.012)	(0.012)	(0.012)
Not family owned			0.039***	0.040***	0.038***
			(0.013)	(0.013)	(0.013)
Foreign owned EU			-0.010	-0.013	-0.012
			(0.022)	(0.022)	(0.022)
Foreign owned non-EU			-0.034*	-0.035*	-0.036*
			(0.019)	(0.019)	(0.019)
Labour productivity 2019: bottom 25%				-0.047***	
				(0.010)	
Labour productivity 2019: bottom 50%					-0.018**
					(0.009)
Industry Dummies	No	Yes	Yes	Yes	Yes
Location Dummies	No	Yes	Yes	Yes	Yes
Observations	12380	12380	12135	12135	12135
R^2	0.022	0.036	0.040	0.042	0.041

Note: Dependent variable is an indicator equal to one if the firm requested survey feedback. Management score is the unweighted average of the score for each of the 12 questions, with scores on a scale of 0 to 1 for each, where 0 was the least and 1 the most structured management practice. In column (1) and (2) the regressor is the management score in 2019. In column (3) the logarithm of firm employment in 2019 and dummies for family and foreign ownership structures are included. In columns (4) and (5) an indicator of the firm's position in the within industry distribution of labour productivity is included. In columns (2) through (5), dummies for industry and regions are included. OLS estimation. Standard errors are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Improvements in management practices are correlated with … engagement with feedback

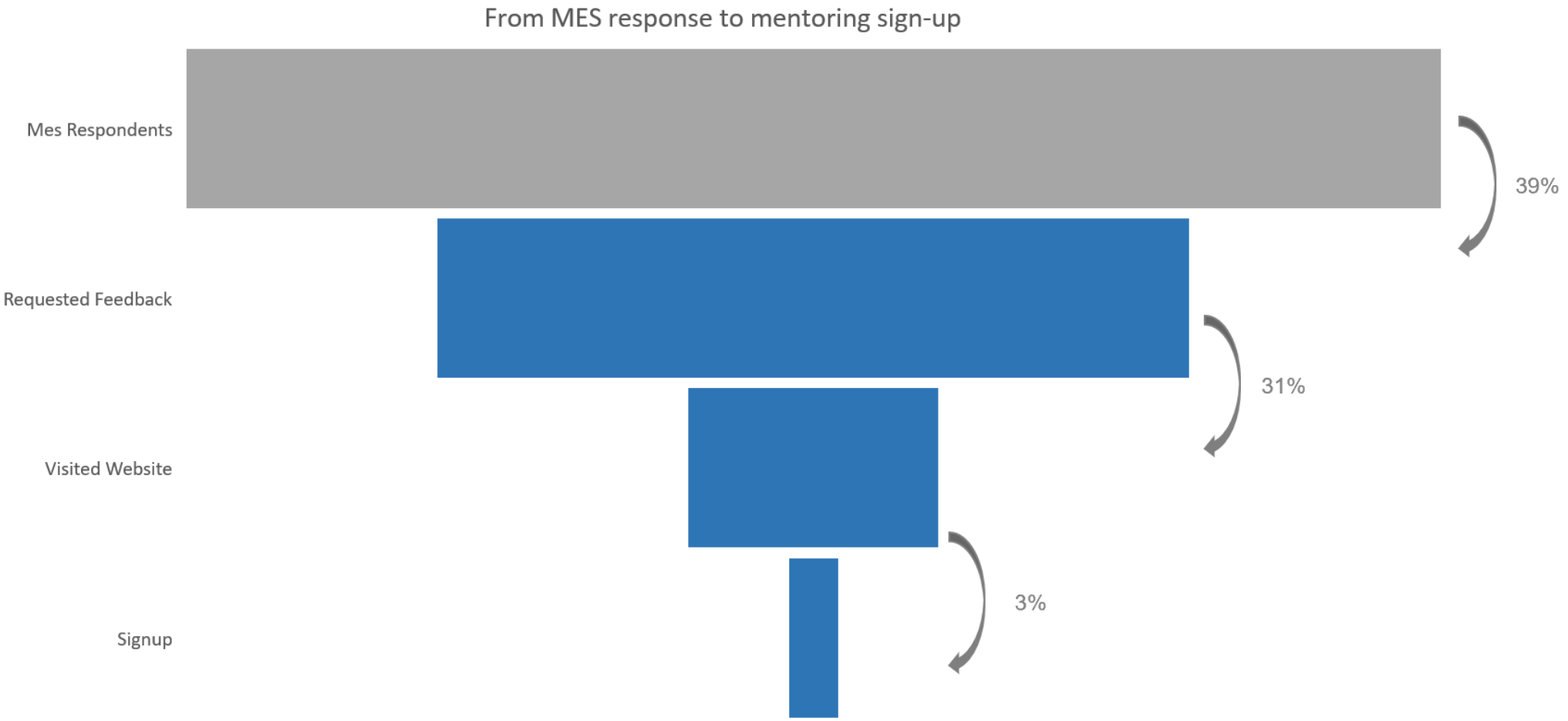
Change in management score 2019 to 2020

	(1)	(2)	(3)	(4)	(5)	(6)
Management score 2019	-0.107***	-0.113***	-0.111***	-0.115***	-0.115***	-0.116***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Log employment 2019			0.002***	0.002***	0.002***	0.002***
			(0.001)	(0.001)	(0.001)	(0.001)
Family owned and family managed			-0.001	-0.001	-0.001	-0.001
			(0.001)	(0.001)	(0.001)	(0.001)
Not family owned			0.001	0.000	0.000	0.000
			(0.002)	(0.002)	(0.002)	(0.002)
Foreign owned EU			0.004	0.004	0.004	0.003
			(0.003)	(0.003)	(0.003)	(0.003)
Foreign owned non-EU			-0.002	-0.002	-0.002	-0.002
			(0.002)	(0.002)	(0.002)	(0.002)
Requested feedback				0.008***	0.008***	0.008***
				(0.001)	(0.001)	(0.001)
Labour productivity 2019: bottom 25%					-0.001	
					(0.001)	
Labour productivity 2019: bottom 50%						-0.002*
						(0.001)
Industry Dummies	No	Yes	Yes		Yes	Yes
Location Dummies	No	Yes	Yes		Yes	Yes
Observations	12413	12413	12168	12135	12135	12135
R^2	0.061	0.084	0.080	0.083	0.083	0.083

Note: Dependent variable is the change in the management score between 2019 and 2020. Management score is the unweighted average of the score for each of the 12 questions, with scores on a scale of 0 to 1 for each, where 0 was the least and 1 the most structured management practice. In column (1) and (2) the regressor is the management score in 2019. In column (3) the logarithm of firm employment in 2019 and dummies for family and foreign ownership structures are included. In column (4) an indicator equal to one if the firm requested feedback on their management score is included. In columns (5) and (6) an indicator of the firm's position in the within industry distribution of labour productivity is included. In columns (2) through (6), dummies for industry and regions are included. OLS estimation. Standard errors are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

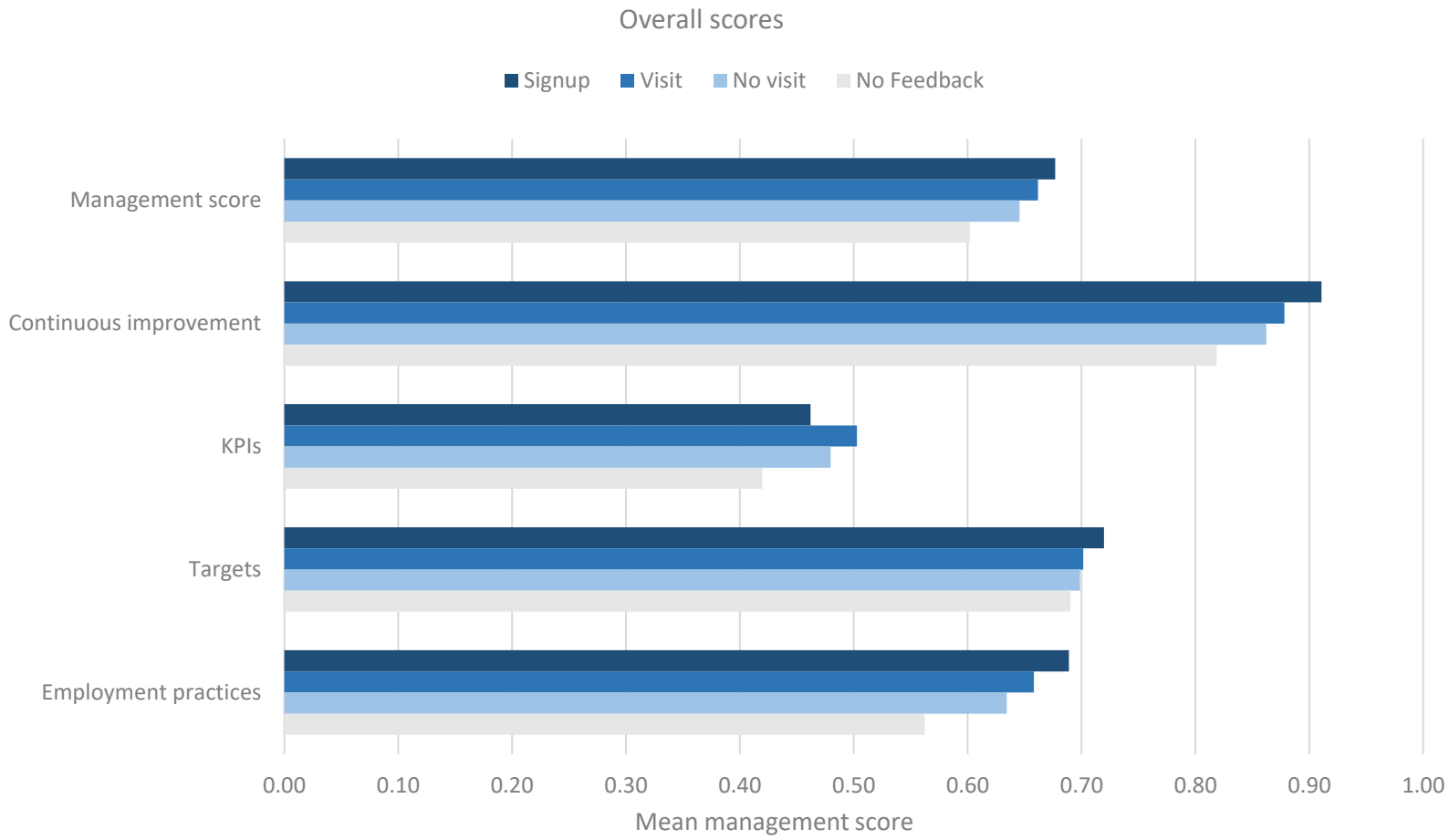
Who might we reach with business support?

… the leaky pipeline

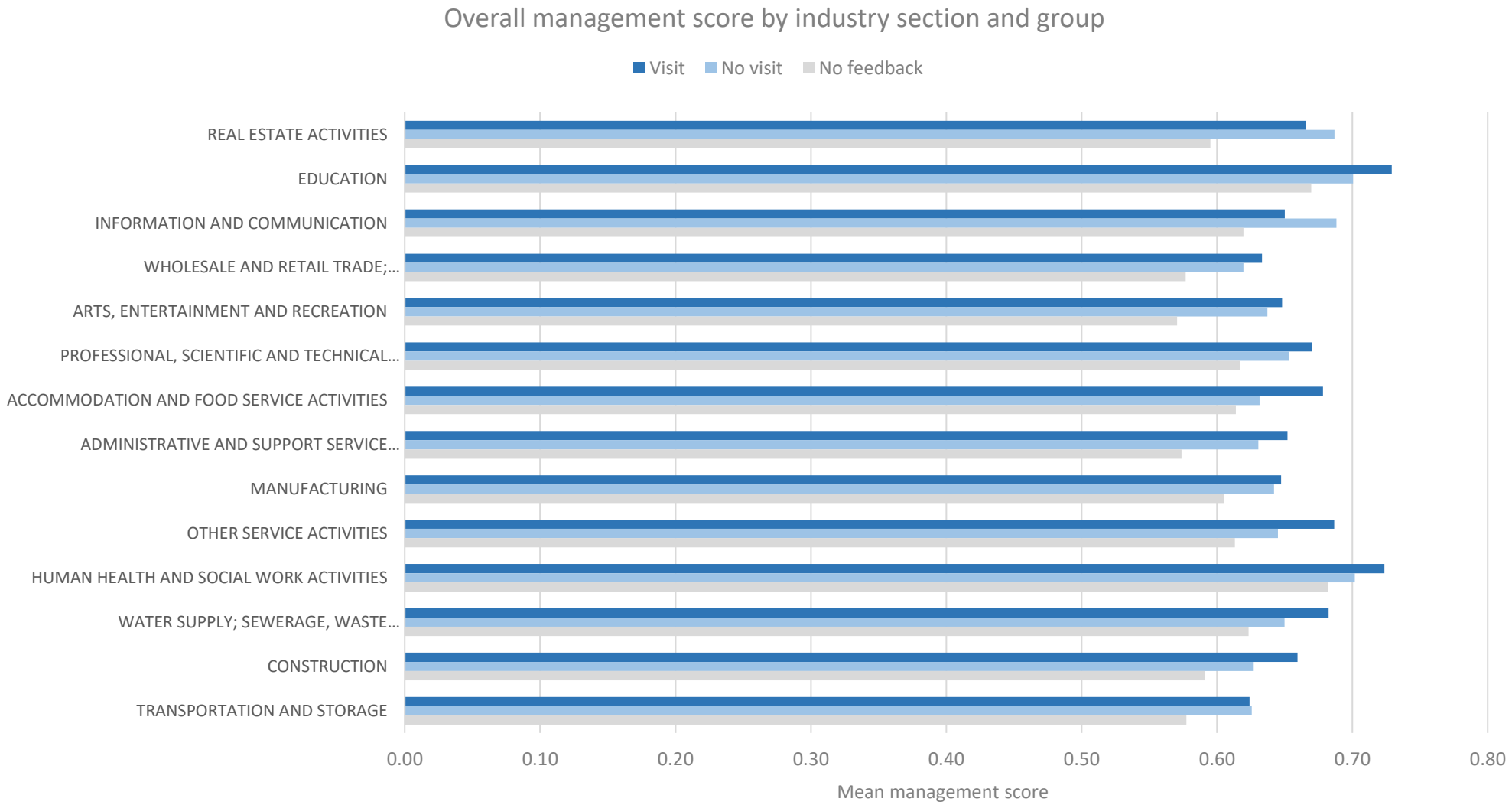


Self selection in engagement

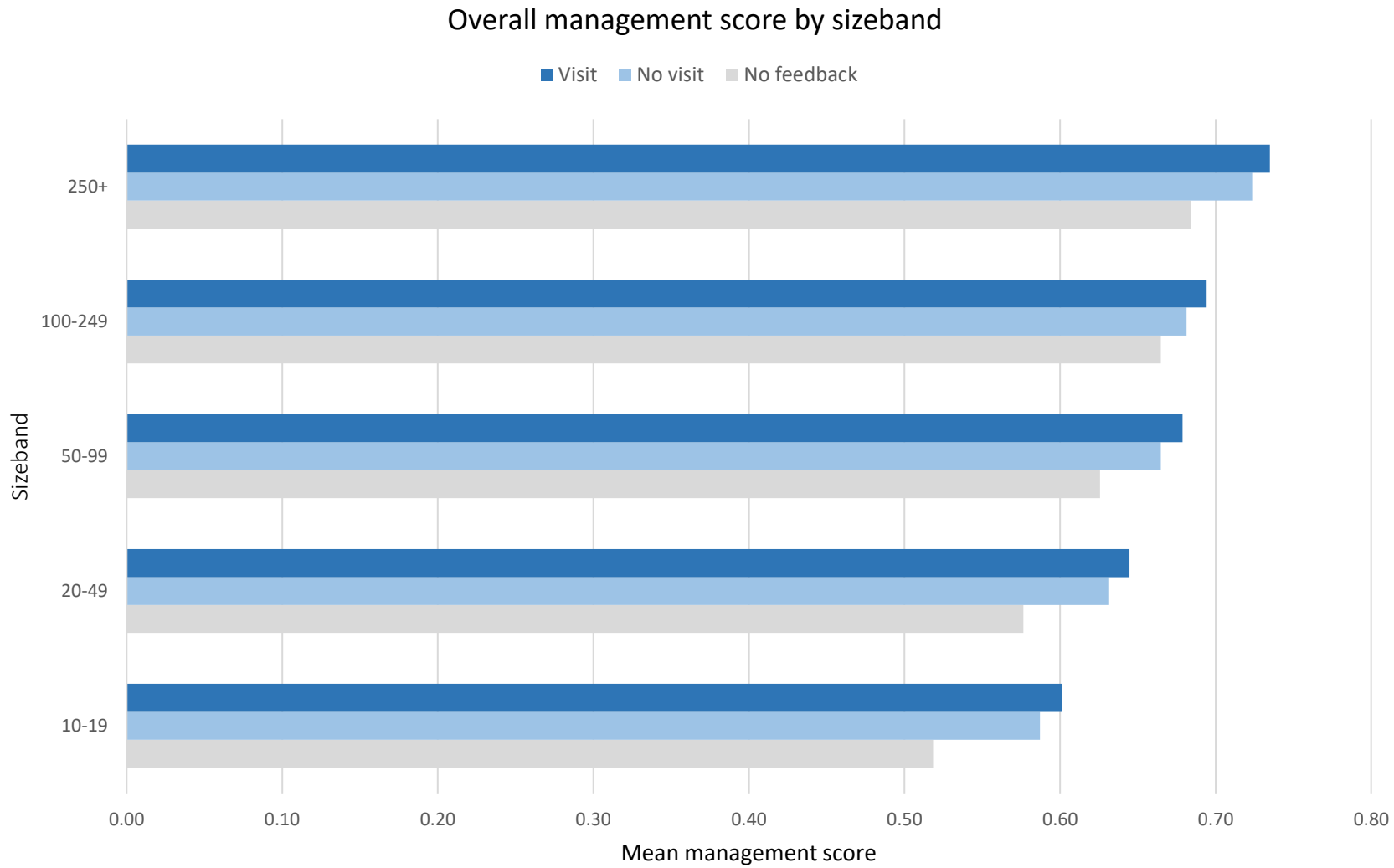
… mean management score increased at each stage



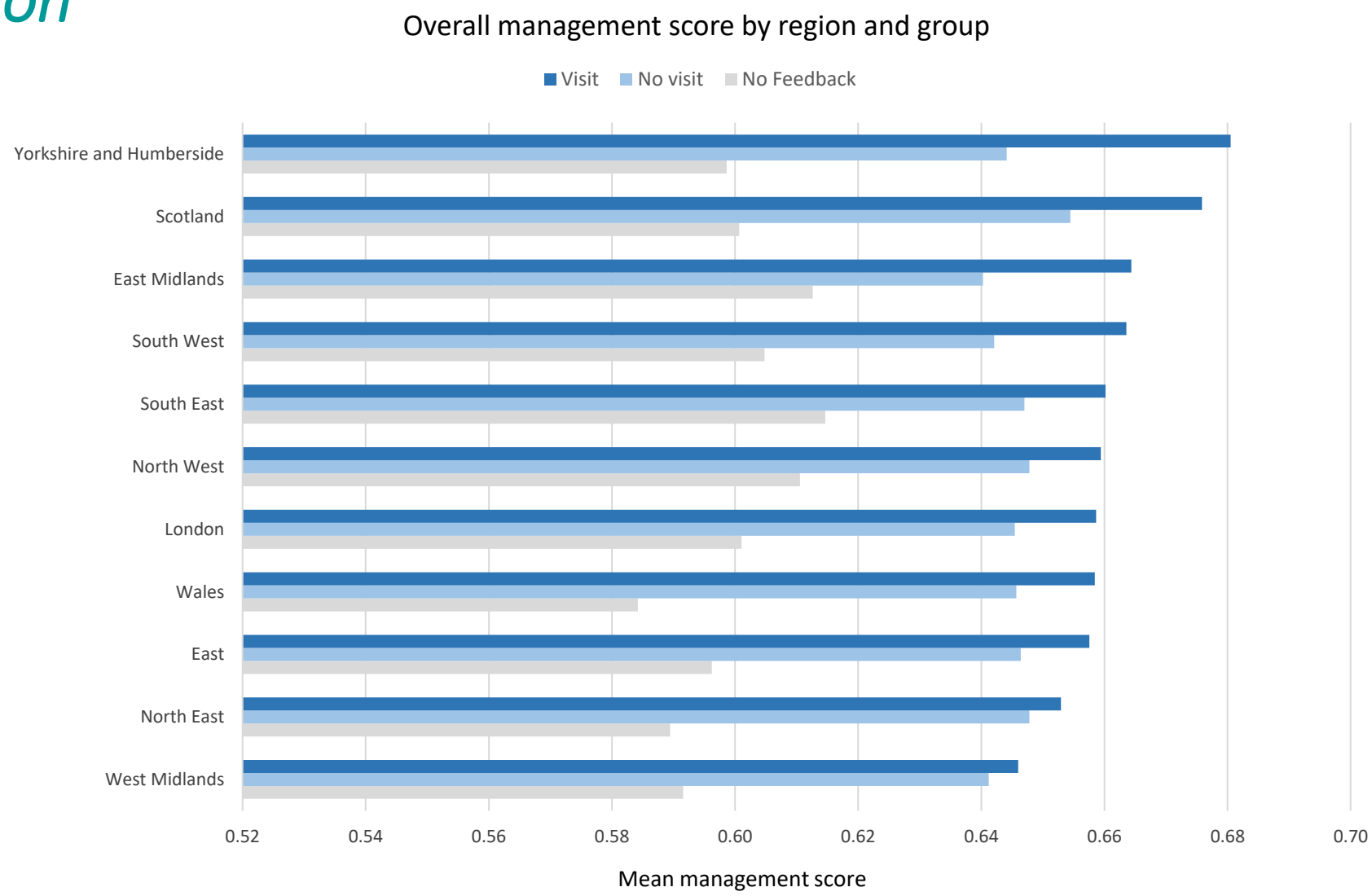
This holds true within industry …



… employment size band …



… and region


Overall management score by region and group
Visit
No visit
No Feedback
Yorkshire and Humberside
Scotland
East Midlands
South West
South East
North West
London
Wales
East
North East
West Midlands
0.52
0.54
0.56
0.58
0.60
0.62
0.64
0.66
0.68
0.70
Mean management score

Summing up

New longitudinal survey data on management practices for Great Britain …

Suggests better managed firms make **better forecasts**, which may help them make **better decisions** (input choices, strategic decisions)

Preliminary analysis suggests better management may **help firms adapt** to economic shocks

And points to potential **barriers** to firms adopting more structured management practices, with **selection into business engagement** with support programmes

raising questions about how to improve performance in the "**fat tail**"

Data reference

Management and Expectations Survey

Office for National Statistics

https://www.ons.gov.uk/surveys/informationforbusinesses/businesssurveys/managementandexpectations