



Department
for Education

The costs of providing levels 4 and 5 in further education

Research report by Aldaba

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Acknowledgements

We would like to thank the providers that participated in the research for this report for their time and useful insights into further education.

Common terms

Apprenticeship: Apprenticeships are paid jobs which incorporate on and off the job training. Apprentices have the same rights as other employees and are entitled to be paid at least the apprentice rate of the national minimum wage. There are two different types of apprenticeship schemes, frameworks and standards. Apprenticeship frameworks are being progressively phased out and replaced by the newer apprenticeship standards.¹

Learning provider, or 'provider': In this report, used as a generic term to refer to the organisations that deliver the learning activities required for a qualification awarding body to recognise, and award the qualification.

Qualification awarding body: Institution with power to award qualifications. This is regulated by the regulators, such as Ofqual in England.²

Qualification level, or 'level': There are nine qualification levels, ranging from entry level to level 8. Each level may have sub-levels and correspond to a range of certificates and diplomas, including types of apprenticeships.³

¹ House of Commons Library (2017), Apprenticeships policy in England: 2017, available at <http://researchbriefings.files.parliament.uk/documents/SN03052/SN03052.pdf>

² Accredited Qualifications, Qualification awarding bodies in the UK, available at <http://www.accreditedqualifications.org.uk/qualification-awarding-bodies-in-the-uk.html>

³ Gov.uk, What qualification levels mean, available at <https://www.gov.uk/what-different-qualification-levels-mean/list-of-qualification-levels>

Executive summary

Aim

1. The Department for Education ('the department') commissioned Aldaba ('we') to do research on the costs of further education. The focus was on the providers of further education that includes science, technology, engineering, and maths (STEM) subjects at levels 4 and 5.
2. The aim of this report is to better understand the perspective of learning providers by estimating the resources that they require to deliver further education qualifications, and how this compares with the income that they receive.

Sources and methods

3. We invited over 50 providers of further education, mostly colleges, to participate in the research for this report. Through self selection, six providers agreed to participate ('participating providers'). Each of them chose one qualification that met the scope of the research. Their geographical locations covered most of the English regions, with one of the exceptions being London.
4. Participating in the research required a two hour interview over the telephone involving at least two senior managers responsible for further education qualifications: one of them with business development expertise, and the other one with financial management expertise.
5. We assessed the quality of the information provided at the interviews. We took our quality assessments as the basis to create ranges, with poorer quality information resulting in wider ranges. Then, we produced separate estimate ranges for three scenarios which varied depending on the number of learners: below, at, and above full capacity. The technical appendix at the end of this report sets out further details of our sources and methods.
6. Our estimates must be taken as indicative, and not necessarily representative of all the equivalent qualifications. They are not suitable for accounting, financial, or funding management purposes.

Spend per learner

7. Figure 1, below, provides estimates of spend per learner, per year. Qualifications 1 to 5 are higher apprenticeships which have in common learner numbers between 10 and 18 at full capacity; and science, technology, engineering, and maths (STEM)

subjects. We used qualification 6 (management) as a comparator for the rest of the qualifications. This is because of its non STEM focus.

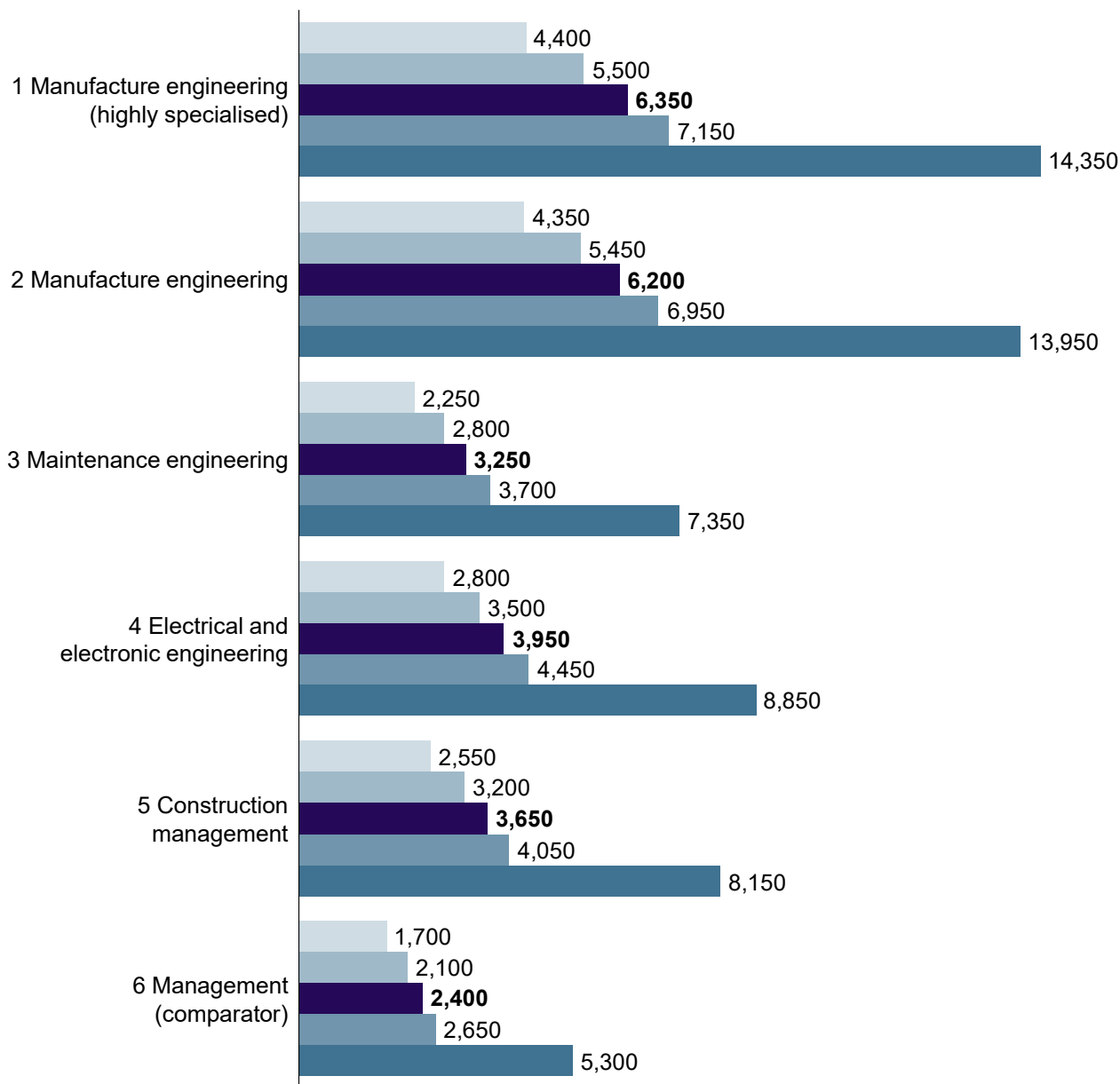


Figure1 Provider spend per learner, per year (£)

Source: Aldaba analysis of interview data. Note: Rounded to the nearest 50.

8. Human resources represent half, or more of the spend per learner. The lowest proportion represented by human resources is 50 per cent for qualification 4 (electrical

and electronic engineering). The highest proportion is 91 per cent for comparator qualification 6 (management).

Spending versus income

9. The majority of the learners in scope were older than 19, and worked full time for their employers, who in most cases paid for all or part of the learner fees. Most of the participating providers had an employer demand of the type that can afford to pay learner fees at levels 4 and 5.

10. As estimated in our full capacity scenario, operating margins range from a deficit of 24 per cent, to a surplus of 20 per cent. All the qualifications in scope may experience losses under scenarios which we consider to be possible, although not necessarily probable.

Views and perceptions

11. In addition to producing quantitative estimates, the department set some qualitative research questions for discussion at the interviews with the participating providers, including on choice of qualifications, spending drivers, and cross-subsidies.

12. Almost without exception, the main factors identified by the participating providers as responsible for their choice of qualification were in relation to employers. The priority for participating providers when they first put the qualifications in place was to meet the needs of employers, particularly local employers.

13. Participating providers identified challenges in recruiting teachers with the required qualifications and experience in science, technology, engineering, and maths (STEM) subjects. This was due to competition from other employers, such as engineering companies.

14. In all cases, the priority of participating providers was the finances of each of their organisations as a whole. As a result, just breaking even, or experiencing an operating loss in one qualification might be acceptable if the finances of the organisation as a whole are healthy.

Conclusion

15. Based on our sources and methods, higher apprenticeships at levels 4 and 5 face wide variation in their operating margins, ranging from a deficit of 24 per cent, to a surplus of 20 per cent. The main driver for this is staff salaries, which represent 50 per cent or more of the spending incurred by learning providers. There is a perceived shortage of teachers in science, technology, engineering, and maths (STEM) subjects.

16. Our findings do not support the assumption that learning providers may choose not to put STEM qualifications in place due to the investment required in equipment. Instead, the priority for them is to secure engagement from employers, particularly local employers, by providing an offer that meets employer needs.

17. Learning providers focus on the financial health of their organisations as a whole, for example, all qualifications and activities delivered by a further education college, and not necessarily on the operating margins of each qualification individually.

Section 1: Introduction

Increasing productivity through technical qualifications

18. In its 2015 productivity plan, the Government set out changes to apprenticeships with the aim of increasing their quantity and quality in England. The plan included a levy on large employers to fund new apprenticeships. It also included the ambition to set up Institutes of Technology to deliver higher level technical provision.⁴

19. In 2016, the Government published updated guidance on area reviews in relation to post-16 education and training institutions. The guidance mentioned weaknesses in the UK's skill base, which contributed to a productivity gap with respect to France, Germany, and the US, in particular in relation to intermediate professional and technical skills. To address this, the guidance explained that the Institutes of Technology will focus on science, technology, engineering, and maths (STEM) skills.⁵

20. In January 2017, the Government's Building Our Industrial Strategy green paper announced the creation of a single framework of approved technical qualifications at level 4 and above, based on standards developed by employers and overseen by the Institute for Apprenticeships and Technical Education.⁶ At the time of writing, there were 28 apprenticeship frameworks for levels 4 and 5, which will gradually become part of the newly developed standards.⁷

21. The green paper confirmed £170 million capital funding to create the Institutes of Technology. The Government is expected to issue further information on Institutes of Technology soon.

Government, employers, providers, and learners

22. The Government's policies over the past years have recognised the need to increase the number of learners participating in intermediate professional and technical

⁴ Gov.uk (2015), Fixing the foundations: creating a more prosperous nation, available at <https://www.gov.uk/government/publications/fixing-the-foundations-creating-a-more-prosperous-nation> ; page 25

⁵ HM Government (2016), Reviewing post-16 education and training institutions: updated guidance on area reviews, available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/520838/BIS-16-118-reviewing-post-16-education-and-training-institutions-updated-guidance-on-area-reviews.pdf ; page 38

⁶ HM Government (2017), Building our industrial strategy: green paper, available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/611705/building-our-industrial-strategy-green-paper.pdf ; pages 42, 48

⁷ Federation for Industry Sector Skills and Standards, Apprenticeship frameworks online, available at <http://www.afo.sscalliance.org/>

skills qualifications. This is with a view to meeting employers' demands, and improving economic productivity, competitiveness, and growth. However, there are uncertainties around learning providers' willingness to offer those qualifications, including their financial viability, and learners' interests in choosing those types of qualifications, as opposed to others available.

23. In 2013-14, the further education college sector was in deficit for the first time, with 45 per cent of colleges recording an operating deficit.⁸ In 2015, the HM Treasury's Costing Centre of Excellence estimated that the further education system operated at a 1 per cent surplus.⁹ It is commonly accepted that science, technology, engineering, and maths (STEM) subjects carry greater financial risks compared to other subjects, partly because of the required investment in technical equipment and premises.

24. In terms of learners, a survey of 4,000 individuals aged 19 plus who had taken part in further education in 2010-11 revealed that in 83 per cent of the cases the main reason for choosing learning provider related to the provider itself, including their location, and the courses they offered. In 14 per cent of the cases, the reasons related to information and advance guidance, with social, economic and other reasons making up 3 per cent of the responses.¹⁰

25. Apprenticeships are one type of further education. Higher apprenticeships correspond to qualification levels 4 to 7. The fees for apprenticeships may be covered by employers and the Government, depending on the type of apprenticeship scheme.¹¹

Aim of the report: spending versus income

26. The Department for Education ('the department') commissioned Aldaba ('we') to do research on the costs of further education. The focus was on the providers of further education that includes science, technology, engineering, and maths (STEM) subjects at levels 4 and 5.

27. The aim of this report is to better understand the perspective of learning providers by estimating the resources that they require to deliver further education qualifications,

⁸ National Audit Office (2016), *Overseeing financial sustainability in the further education sector*, available at <https://www.nao.org.uk/wp-content/uploads/2015/07/Overseeing-financial-sustainability-in-the-further-education-sector.pdf>

⁹ HM Treasury (2015), *Unit costing projects: overview*, available at https://fiscal.treasury.gov/fstraining/events/Colloq_UnitCostingProj.pdf

¹⁰ 4,000 interviews with individuals aged 19 plus who had taken part in further education in 2010-11, who had completed and achieved their learning, and a small comparison group who had not completed; see Department for Business Innovation and Skills (2013), *The impact of further education learning*, available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69179/bis-13-597-impact-of-further-education-learning.pdf; page 35

¹¹ House of Commons Library (2017), *Apprenticeships policy in England: 2017*, available at <http://researchbriefings.files.parliament.uk/documents/SN03052/SN03052.pdf>; page 14

and how this compares with the income that they receive. Table 1, below, describes the types of spending and income included in this report.

Table 1 Types of spending and income

Category	Type	Definition	
Spending	Human resources	Core teaching staff salaries	Teachers; lecturers; assessors, who visit learners during their work based learning to assess performance
		Non teaching staff salaries	Administrative, marketing, finance, and other support from within the provider organisation
		Non salary, or on-costs	Employer's national insurance payments, and pension contributions
		Staff support	Staff training; expenses, such as transport, accommodation and subsistence for assessors while visiting learners
	Non human resources	Equipment	Specialist equipment; teacher and learner laptops; equipment maintenance
		Premises	Buildings for classroom based learning; workshops for practical learning; utilities; building maintenance
		Business support	One-off recruitment campaigns; registration fees for awarding bodies; learner materials
		Other non human resources	Consumables
Income	Learner fees	Fees paid in relation to participating in learning	
	Government grants	Income from the Government to support the delivery of the qualifications	

Source: Aldaba analysis. Note: Spending on the initial development of the qualifications, such as producing contents and working with awarding bodies prior to launching the qualification for the first time, is out of scope; table 5, in the technical appendix, sets out the correspondence between this and other classifications used by the department in the past.

28. In addition to producing quantitative estimates for each type of spending and income, the department set the following qualitative research questions:

- What are the key cost drivers?
- What economies of scale exist?
- Which costs are fixed regardless of the number of learners?
- How do costs rise in line with the number of learners?
- How do available fees influence learning providers' choice of courses to offer?

- In particular, how does the difference between the following two types influence learning providers' choice of courses to offer: fees and maintenance loans for level 4 and 5 higher education qualifications, for example Higher National Diplomas (HND), and Certificates (HNC); and fees and maintenance loans for level 4 and 5 further education qualifications, for example, National Vocational Qualifications (NVQ).
- Do available fees influence choices between apprenticeship frameworks and standards?
- What income streams are available to learning providers?
- In particular, how much are employers willing to pay for private training and higher apprenticeships?
- To what extent are learning providers currently cross subsidising their level 4 and 5 STEM provision?

Sources and methods: interviews with college managers

29. We invited over 50 providers of further education, mostly colleges, to participate in the research for this report. Our invitation included an introductory letter from the department confirming that the identity of those providers who agreed and declined to participate in the research would only be known to us, and would not be shared, either directly or indirectly, as part of this report. The reasons for this included commercial sensitivities.

30. Participating in the research required a two hour interview over the telephone involving at least two senior managers responsible for further education qualifications: one of them with business development expertise, and the other one with financial management expertise. Research participation also involved follow-up exchanges by email to clarify the estimates provided at the interview.

31. We assessed the quality of the information provided at the interviews. We took this as the basis to create ranges, with poorer quality information resulting in wider ranges. Then, we produced separate estimate ranges for three scenarios which depended on the number of learners: below, at, and above full capacity. The technical appendix at the end of this report sets out further details of our sources and methods.

Participating providers: higher apprenticeships

32. Through self selection, six providers agreed to participate in the research for this report ('participating providers'). Their geographical locations covered most of the English regions, with one of the exceptions being London.

33. Each participating provider chose one qualification that met the scope of the research. All six qualifications had the following characteristics:

- required between two and three years to complete;
- included both classroom, and work based learning; and
- were designed for learners in full time employment, who were released either once a week over approximately 30 weeks a year, or ‘in blocks’ throughout the year to participate in learning intensively.

34. Table 2, below, provides further characteristics of the qualifications chosen by the participating providers. The remainder of this report refers to the qualifications by their number, as set out in the table. It is recommended to interpret spending and income estimates alongside the characteristics provided above.

35. Qualifications 1 to 5 are higher apprenticeships which have in common learner numbers between 10 and 18 at full capacity; and science, technology, engineering, and maths (STEM) subjects. We will use qualification 6 (management) as a comparator for the rest of the qualifications. This is because of its non STEM focus.

Table 2 Characteristics of the qualifications

Qualification 1			
Provider type	Level	STEM	Subject
Further education college	4	Yes	Manufacture engineering (highly specialised)
Title	Full capacity	Assessment model	Other characteristics
BTEC Higher National Certificate; NVQ Extended Diploma	10 learners	Provider and employer premises	Based on plans for first cohort starting as of September 2017; balance between larger (fee contributor) and smaller (fee contributor) employers
Qualification 2			
Provider type	Level	STEM	Subject
Further education college	4	Yes	Manufacture engineering
Title	Full capacity	Assessment model	Other characteristics
BTEC Higher National Certificate; NVQ Extended Diploma	16 learners	Provider and employer premises	Balance between larger (fee contributor) and smaller (fee contributor) employers

Qualification 3			
Provider type	Level	STEM	Subject
Further education college	4	Yes	Maintenance engineering
Title	Full capacity	Assessment model	Other characteristics
BTEC Higher National Certificate; NVQ Diploma	15 learners	Provider and employer premises	Based on plans for first cohort starting as of September 2017; relatively large number of larger (fee contributor) employers
Qualification 4			
Provider type	Level	STEM	Subject
Further education college	4	Yes	Electrical and electronic engineering
Title	Full capacity	Assessment model	Other characteristics
BTEC Higher National Diploma; NVQ Diploma	18 learners	Provider and employer premises	Skills Funding Agency pays the practical totality of the fees in 2016-17; this reflects learner and employer profiles, rather than funding rules
Qualification 5			
Provider type	Level	STEM	Subject
Further education college	5	Yes	Construction management
Title	Full capacity	Assessment model	Other characteristics
BTEC Higher National Diploma; NVQ Diploma	16 learners	Provider and employer premises	Not applicable
Qualification 6 (comparator)			
Provider type	Level	STEM	Subject
Work based training provider (company)	4	No	Management (of STEM related activities)
Title	Full capacity	Assessment model	Other characteristics
Diploma	12 learners	Employer premises only	No specialist equipment required; delivered at employer's premises, so no teaching (provider) premises required

Source: Aldaba analysis of interview data.

Limitations: indicative estimates

36. The only perspective included in this report is that of learning providers. Employers, learners, and other perspectives, such as qualification awarding bodies, are not part of the focus of this report.

37. The sources for the information shared verbally by the participating providers at the interviews included a combination of accounting records, business plans, and expert knowledge held by the interviewees. We did not verify the information, for example by reviewing supporting documentation independently. This was mostly because the participating providers do not hold separate accounting records for each specific qualification, also referred to as 'cost centres' in accounting terms.

38. As a result, the estimates included in this report must be taken as indicative, and not necessarily representative of all the equivalent qualifications. They are not suitable for accounting, financial, or funding management purposes.

39. We would also like to point out that the majority of the learners in scope were older than 19, and worked full time for their employers, who in most cases paid for all or part of the learner fees. Most participating providers had an employer demand of the type that can afford to pay learner fees at levels 4 and 5. The findings in this report, and particularly the final section on views and perceptions, would probably be different if participating providers had faced limited employer demand, or a type of employer demand that can only afford lower fees, such as those for level 3 qualifications.

Employer levy: out of scope

40. On 6 April 2017, the apprenticeship levy came into effect with all UK employers with a pay bill of over £3 million per year paying the levy.¹² The levy is set at 0.5 per cent of the value of the employer's pay bill, minus an apprenticeship levy allowance of £15,000 per financial year. The levy is paid into an apprenticeship service account, and funds in this account have to be spent on apprenticeship training and assessment.

41. The Government will apply a 10 per cent top-up to the funds that are paid by an employer for the levy. Employers within the construction industry are already required to pay the Construction Industry Training Board levy, while those in the engineering construction industry pay the Engineering Construction Industry Training Board levy. The funds collected through these levies are used to provide training to the whole industry.

¹² House of Commons Library (2017), Apprenticeships policy in England: 2017, available at <http://researchbriefings.files.parliament.uk/documents/SN03052/SN03052.pdf>

42. The new apprenticeship funding system will be made up of 15 funding bands, with the upper limits of these bands ranging from £1,500 to £27,000. All existing apprenticeship frameworks and standards have been placed within one of these funding bands, and new standards will be placed in a funding band as they become ready for use by employers.

43. The research for this report took place between June and August 2017. It used the academic year of 2016-17 as a reference. Therefore, the apprenticeship levy, which will apply to the whole of the 2017-18 academic year, is out of the scope of this report. The exceptions to this are qualifications 1 and 3, whose estimates refer to 2017-18 plans, and as a result do incorporate the learner fees associated with the introduction of the apprenticeship levy.

Section 2: Spend per learner

Below, full, and above capacity

44. This section provides our estimate ranges expressed as spend per learner, per year, in 2016-17 prices. The estimate ranges at full capacity are for the number of learners for which the qualification was designed, as detailed in Table 2, above. The lower and upper bounds of the ranges are the result of applying assumptions to the information provided at the interviews based on our quality assessments. As explained in the technical appendix, poorer quality information resulted in wider ranges. The middle estimate is the average of the lower and upper bounds.

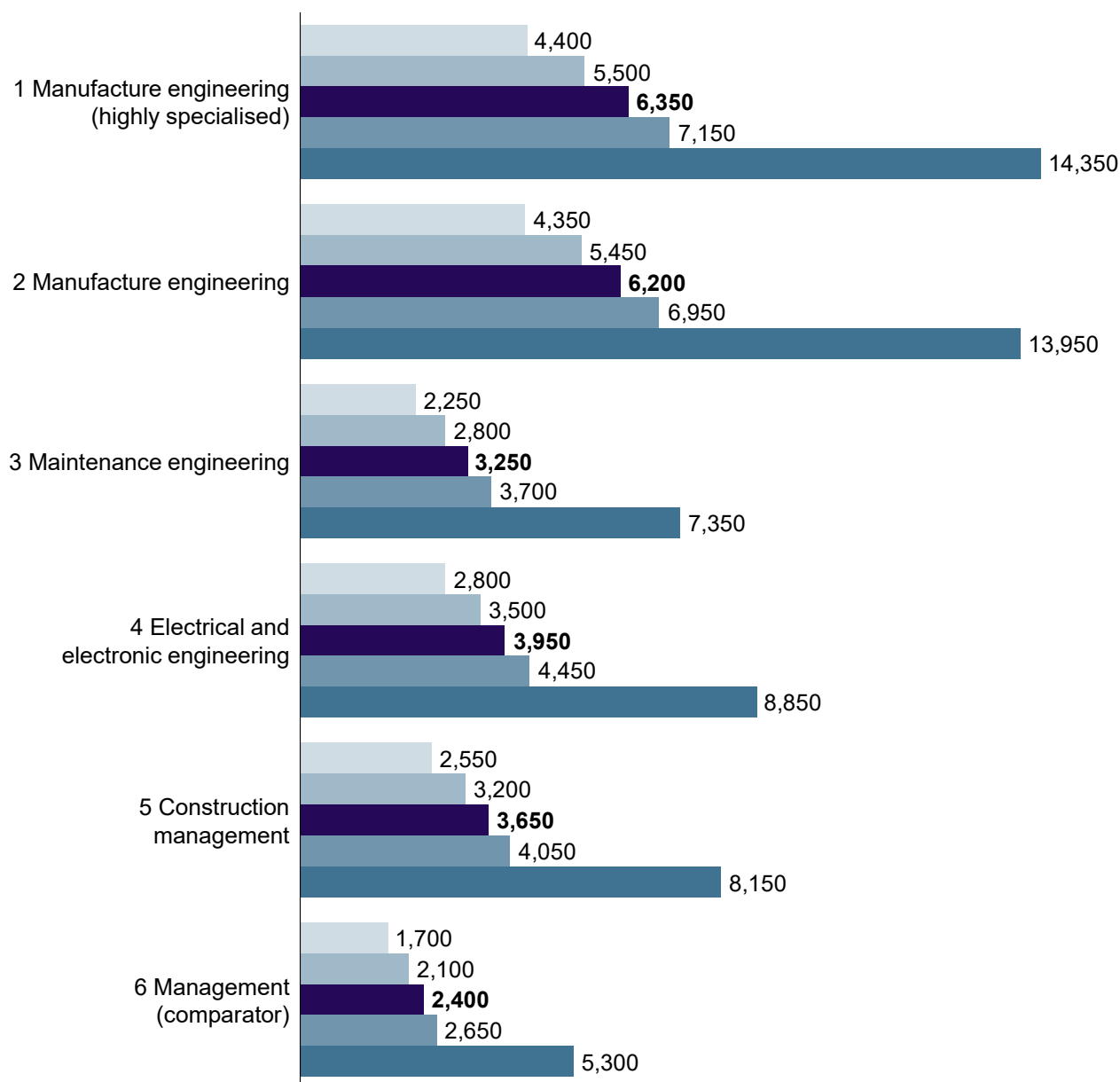
45. The above capacity estimates refer to a scenario where the number of learners is approximately 20 per cent higher than at full capacity. In particular, they are the result of applying this adjustment to the lower bound of the full capacity scenario, and so they represent a scenario where spend per learner is as low as possible. This is because total spending remains the same but it is divided by a greater number of learners: as great a number as possible before the participating providers have to open a new cohort of learners, and incur new (total) spending.

46. Similarly, the below capacity estimates refer to a scenario where the number of learners is approximately 50 per cent lower than at full capacity. In particular, they are the result of applying this adjustment to the upper bound of the full capacity scenario, and so they represent a scenario where spend per learner is as high as possible. This is because total spending remains the same but it is divided by a lower number of learners: as low a number as possible before the participating providers take the decision not to make the qualification available on the grounds that it is not financially viable.

47. The information provided at the interviews was for the academic year 2016-17, when most of the qualifications in scope experienced learner numbers very close to full capacity. We consider the above, and below capacity scenarios to be possible, and so worth considering, although not necessarily probable.

48. Figure 1, below, shows a wide variation in spend per learner, per year, across qualifications. The highest middle estimate is for qualification 1 (manufacture engineering, highly specialised): £6,350 per learner, per year. This is almost double the middle estimate for qualification 3 (maintenance engineering): £3,250 per learner, per year. Comparator qualification 6 (management) has the lowest middle estimate: £2,400 per learner, per year.

Figure 1 Provider spend per learner, per year (£)



- Above capacity, lower bound
- Full capacity, lower bound
- **Full capacity, middle**
- Full capacity, upper bound
- Below capacity, upper bound

Source: Aldaba analysis of interview data. Note: Rounded to the nearest 50.

Human versus non human resources

49. As shown in Figure 2, below, human resources represent half, or more of the spend per learner. The lowest proportion represented by human resources is 50 per cent

for qualification 4 (electrical and electronic engineering). The highest proportion is 91 per cent for comparator qualification 6 (management).

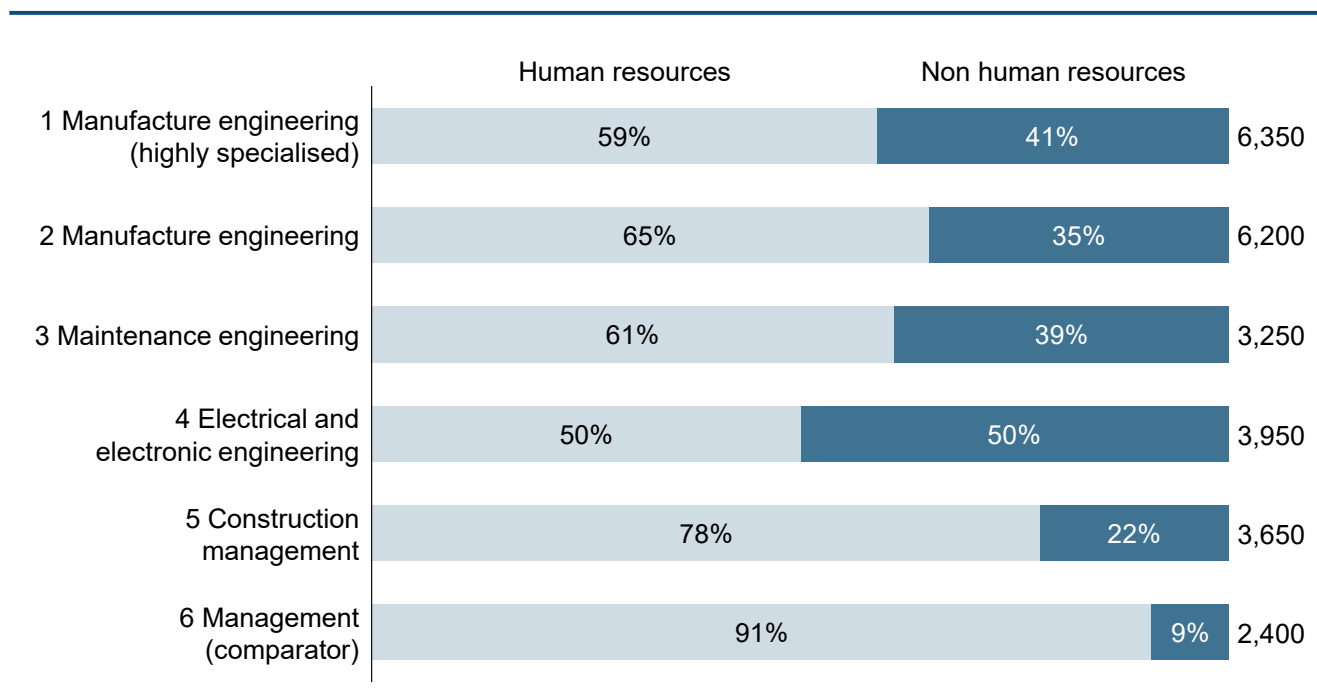


Figure 2 Provider spend per learner, per year, high level breakdown (£, percentage)

Source: Aldaba analysis of interview data. Note: middle estimates for the full capacity scenario, rounded to the nearest 50; percentages may not add to 100 due to rounding; table 1 provides definitions of types of spending.

50. Figure 3, below, provides a more detailed breakdown of our spend per learner estimates. We consider this level of detail to be particularly unreliable because the quality of the information, as provided at the interviews, was low. In many instances, the participating providers were confident about the higher level estimates for ‘human’, and ‘non human resources’, but were dubious about the best way of breaking these further down.

51. As an indication, we estimate that the bulk of the spending on human resources was in relation to core teaching staff, with smaller proportions dedicated to non core teaching staff, such as administrative support. With the exception of qualification 1 (highly specialised manufacture engineering), premises attracted a greater level of spending than equipment.

Figure 3 Provider spend per learner, per year, detailed breakdown (percentage)

Qualifica- -tion	Human resources					Non human resources			
	Teaching	Non teaching	Non salary	Support	Other	Equip- ment	Premi- ses	Support	Other
1	32%	8%	17%	1%	0%	21%	11%	9%	0%
2	34%	9%	10%	12%	0%	3%	32%	0%	0%
3	36%	4%	14%	8%	0%	11%	23%	0%	4%
4	28%	4%	13%	5%	0%	19%	26%	6%	0%
5	37%	6%	13%	11%	10%	8%	14%	0%	0%
6	40%	8%	21%	22%	0%	0%	4%	0%	4%

Source: Aldaba analysis of interview data. Note: percentages may not add to 100 due to rounding; table 1 provides definitions of types of spending.

Section 3: Income per learner

52. This section provides our estimate ranges expressed as income per learner, per year, in 2016-17 prices. The estimate ranges at below, full, and above capacity are as in the previous section. The reason why the above capacity scenario is the same as the upper bound estimate in the full capacity scenario is because income per learner remains the same, irrespective of how many learners make up a cohort. The same applies to the below capacity scenario with respect to the lower bound estimate at the full capacity scenario.¹³

53. Figure 4, below, shows a wide variation in income per learner across qualifications. The highest middle estimate is for qualification 1 (highly specialised manufacture engineering): £6,750 per learner, per year. This is over three times higher than the middle estimate for comparator qualification 6 (management): £2,200 per learner, per year.

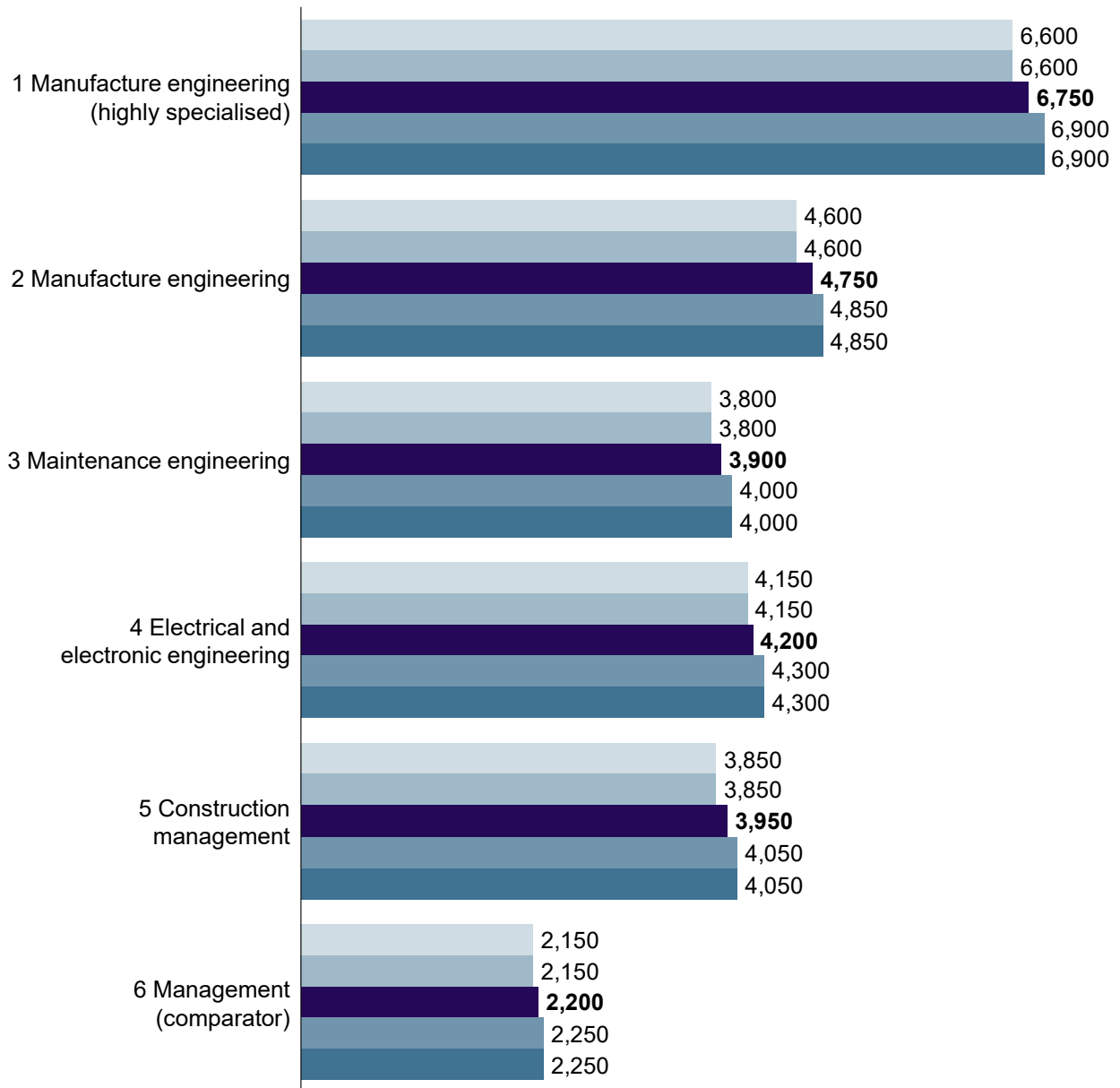
54. In more detail, Figure 5, below, shows the proportion of the participating providers' income that came from employers, as opposed to the Government, as estimated by the participating providers themselves at the interviews. This ranges between 1 and 100 per cent.

55. To clarify, the estimates in Figure 5, below, reflect the actual profiles of the learners and the employers, including employer size, that participated in the six qualifications in the specific years under research, rather than funding rules set by the Government.¹⁴ Employers might be able to recover some of their contributions from various sources, including the Government, however, this is not reflected on the estimates.

¹³ There was one instance where the participating provider mentioned the possibility of adjusting learner fees depending on the number of learners required by an employer client, however, this was an exception and we decided not to incorporate it into the method that we consistently applied to all participating providers.

¹⁴ House of Commons Library (2017), Apprenticeships policy in England: 2017, available at <http://researchbriefings.files.parliament.uk/documents/SN03052/SN03052.pdf> ; page 14

Figure 4 Provider income per learner, per year (£)



- Above capacity, lower bound
- Full capacity, lower bound
- **Full capacity, middle**
- Full capacity, upper bound
- Below capacity, upper bound

Source: Aldaba analysis of interview data. Note: Rounded to the nearest 50.

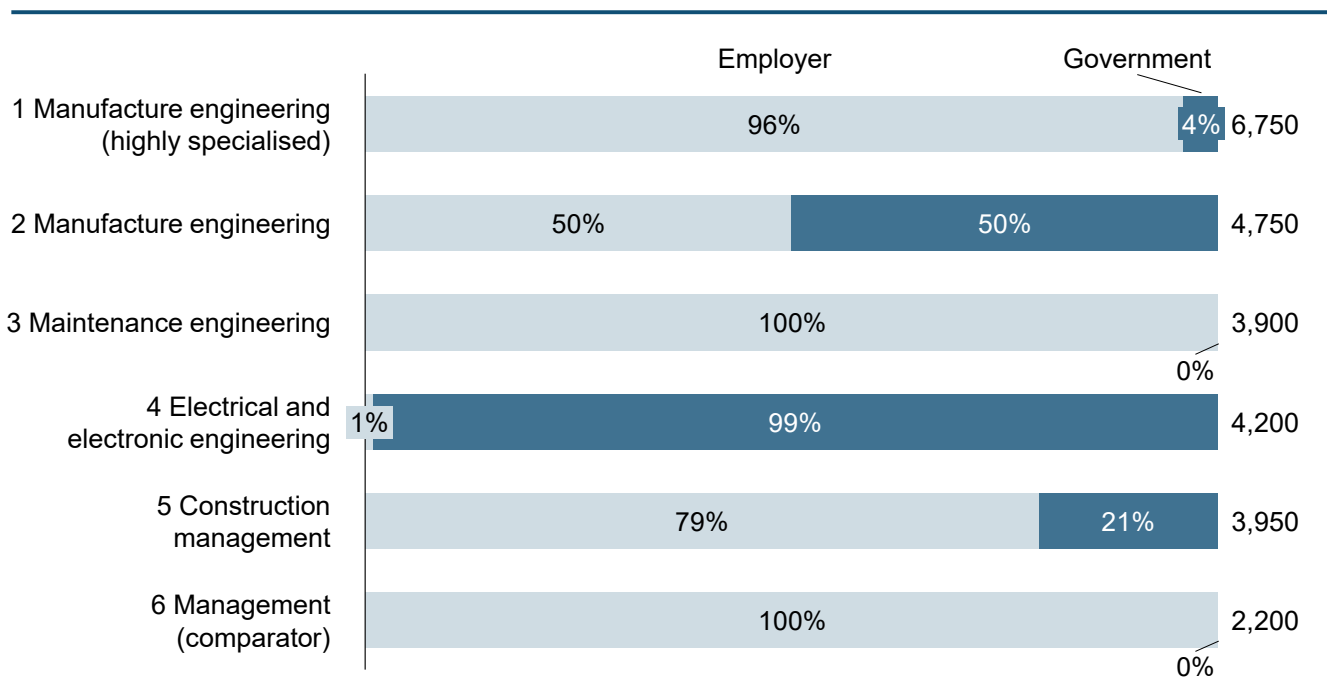


Figure 5 Provider income per learner, per year, breakdown by source (£, percentage)

Source: Aldaba analysis of interview data. Note: middle estimates for the full capacity scenario, rounded to the nearest 50; percentages may not add to 100 due to rounding; table 1 provides definitions of types of income.

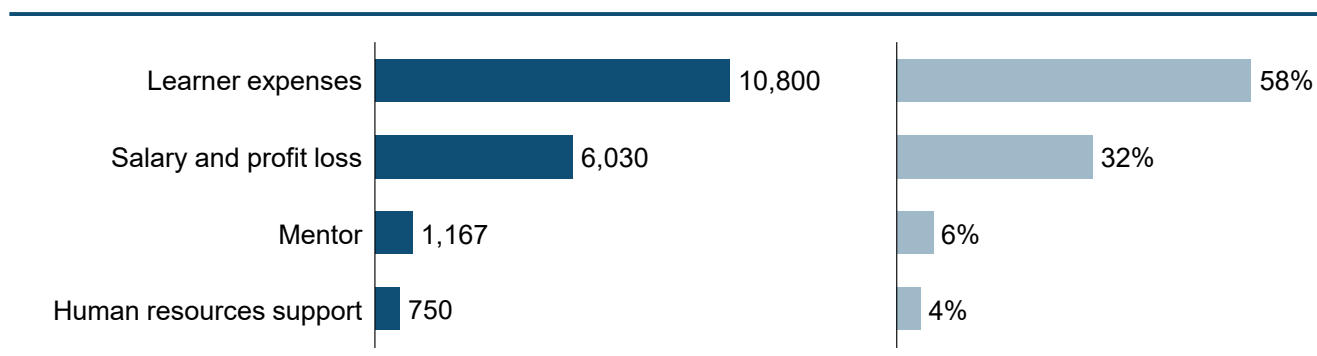
Employer perspective

56. Guidance by HM Treasury requires economic analyses to include spending by, and income from all relevant perspectives.¹⁵ As a result, in addition to providers, a complete piece of analysis should also include employers, learners, and other perspectives, such as qualification awarding bodies. However, providers were the only perspective represented in the research for this report. Through them, we were able to produce indicative estimates in relation to employers. This was based on the participating providers’ understanding of employers’ spending.

57. Figure 6, below, provides estimates of the spending incurred by employers in relation to the qualifications in scope. We only produced one generic set of employer spend estimates which may apply to all six qualifications. Assuming a cohort of 15 learners, we estimate that employers spend £18,750 per learner, per year, in addition to their learner fee contributions.

¹⁵ HM Treasury (2003), The Green Book: appraisal and evaluation in central government, available at <https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government>

Figure 6 Employer spend per learner, per year, breakdown by type (£, percentage)



Source: Aldaba analysis of interview data. Note: rounded to the nearest 50; percentages may not add to 100 due to rounding.

58. Around 60 per cent of the employer's spending is in relation to the expenses involved in employees travelling to colleges, including accommodation and subsistence expenses. About a third of the employer's spending is in relation to releasing employees to participate in the qualifications, which typically happens once a week, while employees continue to receive a salary for those days.

59. Employers might be able to recover some of their contributions from various sources, including the Government. There are incentives from the Government available to those employers who engage learners aged 16 to 18, or older, if in care. These are not included in Figure 6, above. The technical appendix provides details of the calculations underpinning these estimates.

Section 4: Spending versus income

60. There are many ways of comparing spending and income, including a number of mark-up formulae. Figure 7, below, shows the result of our operating margin calculations, which are as follows:

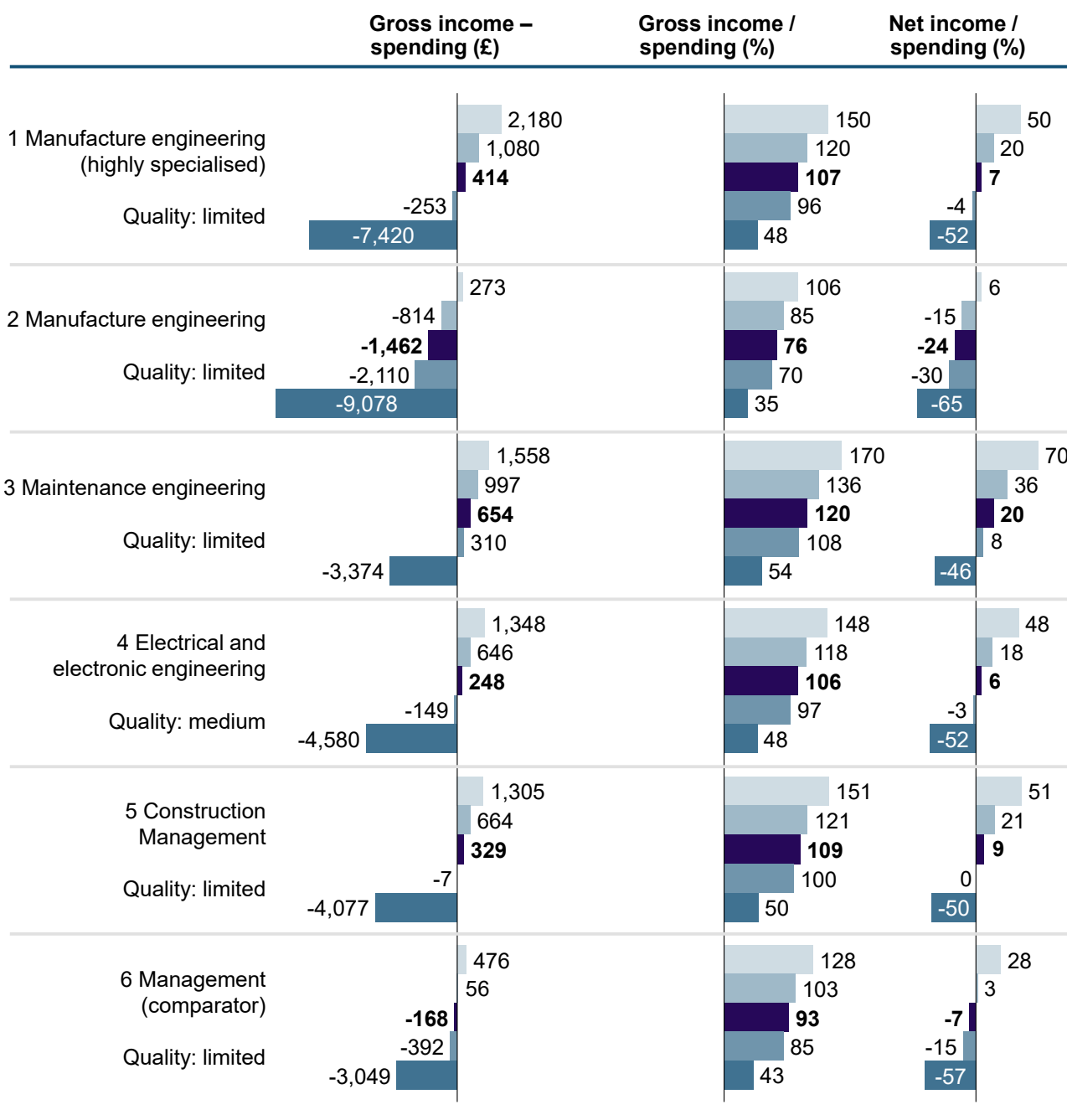
- gross income minus gross spending;
- gross income divided by gross spending; and
- net income (gross income minus gross spending) divided by gross spending, which is used in some commercial settings as the mark-up to be added on top of costs to calculate selling prices.

61. Looking at the middle estimates in the full capacity scenario, operating margins range from a deficit of 24 per cent, to a surplus of 20 per cent. The middle estimate for comparator qualification 6 (management) is a deficit of 7 per cent.

62. Qualification 3 (maintenance engineering) has the largest positive operating margin: a surplus of 20 per cent. However, in the above capacity scenario this can be as high as a surplus of 70 per cent, whereas in the below capacity scenario it can be as low as a deficit of 46 per cent. All the qualifications in scope may experience losses under scenarios which we consider to be possible, although not necessarily probable.

63. Figure 7, below, also includes a summary of our quality assessments for each of the estimates provided at the interviews. We obtained between 8 and 10 spending and income estimates for each qualification. Where we assessed three or more of the estimates as unreliable, the summary quality assessment for that qualification became 'limited', otherwise it became 'medium'. The technical appendix includes further details, including the definition of unreliable estimate.

64. The providers that we interviewed calculate their operating margins in different ways. Some of them consider core teaching as the only type of spending in their calculations, which results in greater operating margins than when following our methodology.



- Above capacity, lower bound
- Full capacity, lower bound
- **Full capacity, middle**
- Full capacity, upper bound
- Below capacity, upper bound

Figure 7 Provider spending versus income

Source: Aldaba analysis of interview data. Note: Not rounded; references to medium and limited quality refer to the estimates, rather than the qualifications themselves.

Section 5: Views and perceptions

65. In this section, we provide the findings from the qualitative research questions set by the department. Most of the participating providers had an employer demand of the type that can afford to pay learner fees at levels 4 and 5. The findings in this section would probably be different if participating providers had faced limited employer demand, or a type of employer demand that can only afford lower fees, such as those for level 3 qualifications.

Qualification choices

66. Almost without exception, the main factors identified by the participating providers as responsible for their choice of qualification were in relation to employers. The priority for the participating providers when they first put the qualifications in place was to meet the needs of employers, particularly local employers. 'First you talk to employers, then you develop the qualification', said one of the interviewees.

67. As a result, other factors such as fee caps, or availability of loans for learners, were identified as of secondary importance when taking the decision to put a qualification in place for the first time. One interviewee said that 'fees are important, but never the trigger for a go-no-go decision'. To put this in context, the majority of the learners in scope were older than 19, and worked full time for their employers, who in most cases paid for all or part of the learner fees.

68. Interviewees also mentioned the upfront investment in equipment and premises as a factor in the decision to start a new qualification. This is particularly the case of science, technology, engineering, and maths (STEM) qualifications. Upfront investments typically come from college reserves and borrowing, with capital funding opportunities from the Government being described as very limited. 'This is not like the capital funding available to universities', pointed out one of the interviewees.

Approach to planning and monitoring

69. The participating providers explained how they plan and monitor the finances of the six qualifications in scope. Typically, the planning work takes place early in the calendar year, in January and February, for delivery when the academic year starts, in September or October.

70. Business development teams set expectations on the level of income required to meet the costs, and achieve some operating surplus. This only includes teaching costs, and is constrained by the fee caps set by the Government. The key figure is the number of learners required for the qualifications to be financially viable, and therefore made available in a given academic year.

71. Finance teams support the planning work by providing estimates of total spending, and spend per learner, based on past experience. However, their approach to planning tends to be higher level, including all qualifications and activities delivered by the learning provider, rather than in relation to any particular qualification.

72. Business development teams focus their continuous monitoring work on maintaining the numbers of learners and teachers that the plans suggest make a qualification financially viable. Their priority is to deliver best quality learning, while maintaining the finances healthy.

73. Finance teams do not monitor the finances for each qualification separately. Instead, they monitor the finances of the learning provider organisation as a whole, and work with senior managers and directors to address risks and opportunities. There are a number of reasons why monitoring individual qualifications is not happening, including:

- Audit and financial reporting requirements are resource intensive as they are, and do not necessarily involve separate reporting strands for each qualification. In accountancy terms, keeping separate cost centres for each individual qualification is not required.
- The qualifications in scope are flexible, including to meet changing employer requirements, which translates into learners from various qualifications sharing the same teaching sessions, and equipment. This makes separate planning and monitoring for each qualification difficult.
- The combination of classroom, and work based learning, and also the availability of modules within classroom learning, may change depending on the circumstances within the two years typically required to complete the qualifications, with certain modules being made available one year, but not the next.

74. As a result, providers do not normally have available estimates of spending and income of the sort provided in this report.

Spending drivers: human resources

75. To the question 'which types of spending are fixed, and which types are variable?', most participating providers responded that all types of spending are fixed. This was partly because the interviewees worked in business development. In this context, once a plan is approved all the associated spending will be most likely incurred, and the associated resources, such as teachers, will be put in place. 'The only bit that is not fixed is income!', as one interviewee put it.

76. Through discussion, we established that many non human resources, such as upfront investments, and some continuous one-off investments in equipment, can be

considered to be fixed. However, these tend to be excluded from the yearly planning and monitoring activities undertaken by the interviewees.

77. As shown in previous sections of this report, human resources represent half, or more of the spend per learner. In line with this, participating providers identified teachers, including lecturers and assessors, as the main spending driver.

78. Almost without exception, the participating providers identified challenges in recruiting teachers with the required qualifications and experience in science, technology, engineering, and maths (STEM) subjects. This was due to competition from other employers, such as engineering companies.

79. Some participating providers had seen themselves in situations where learner fees had been paid, and the classroom sessions were due to start shortly, but there were no teachers in place. Due to the relative shortage of teachers, some participating providers had recently raised their remuneration offer to teachers. In contrast, in one case, the participating provider explained that all teachers in their college receive the same remuneration, irrespective of whether they are teaching science, technology, engineering, and maths (STEM), or other subjects.

80. Taking all types of spending into consideration, teaching was identified as the main driver also because it is less flexible. As one interviewee explained, 'it is possible to run a classroom session based on a version of a piece of software that is not up to date, however, it is not possible to run the session without a teacher'.

81. Most participating providers used a combination of full time employed, and freelance teachers. This was particularly beneficial to address short term teaching needs, such as short notice unavailability of teachers.

Funding sources: economies of scales

82. One of the department's qualitative research questions was on economies of scale, which was defined as the minimum number of learners required for a qualification to be financially viable. The participating providers recognised that using all the capacity available for a particular qualification is desirable. However, they were also very clear as to the maximum number of learners above which the effectiveness of the learning experience becomes at risk, and therefore must be avoided.

83. In line with the approach to planning outlined earlier in this section, the participating providers thought of the number of learners on a per-classroom, rather than per-qualification basis. Where a participating provider feels that the number of learners for a particular module is too low, this may mean that the module is not made available that year, but will probably be available the following year, once new learners join the two year qualification cycle, and there is a greater chance that sufficient numbers will be interested in the module.

84. Through our questioning, we estimated in each case the minimum and maximum number of learners that could be accommodated as part of each qualification. This was the basis for our below, full, and above capacity scenarios in earlier sections of this report. We did not come across any qualification where less than six, or more than 20 learners was considered to be viable.

Cross-subsidies

85. Based on their planning and monitoring work, all the participating providers reported that the qualifications in scope were breaking even or making some operating surplus. It must be noted that their planning and monitoring work included only a subset of the spending types included in this report: mainly just teacher spending, whilst their income types were consistent with ours.

86. In line with the public sector ethos, one interviewee said that 'we are not here to make a profit', although the interviewee also stressed the importance of keeping the finances healthy. The participating providers explained that the initial years after having set up a new qualification can be challenging from a financial point of view. Smaller learner numbers than expected can translate into an operating loss.

87. In all cases, the priority of the participating providers was the finances of the learning provider organisation as a whole. As a result, just breaking even, or experiencing an operating loss in one of the qualifications might be acceptable if the finances of the organisation as a whole are healthy. One interviewee was clear that the qualification included in this report would not be viable if it stood alone without the backing of the wider college activities.

88. Some participating providers mentioned teaching activities for the private sector as particularly beneficial, because they were not constrained by fee caps and could attract income which could compensate for operating losses in some of the qualifications.

Section 6: Conclusion

89. Based on our sources and methods, higher apprenticeships at levels 4 and 5 face wide variation in their operating margins, ranging from a deficit of 24 per cent, to a surplus of 20 per cent. The main driver for this is teacher salaries, which represent 50 per cent or more of the spending incurred by learning providers. There is a perceived shortage of teachers in science, technology, engineering, and maths (STEM) subjects.

90. Our findings do not support the assumption that learning providers may choose not to put STEM qualifications in place due to the investment required in equipment. Instead, the priority for them is to secure engagement from employers, particularly local employers, by developing an offer that meets employer needs.

91. Learning providers focus on the financial health of their organisations as a whole, for example, all qualifications and activities delivered by a further education college, and not necessarily on the operating margins of each qualification individually.

Technical appendix

Sources and methods

92. We invited over 50 providers of further education, mostly colleges, in England to participate in the research for this report. We identified the providers through unstructured searches in internet search engines, including keywords such as ‘college’, ‘level 4’, and ‘apprenticeship’. We approached mostly providers that according to their websites offered level 4 and 5 qualifications in science, technology, engineering and maths (STEM) subjects. We also approached a minority that provided level 3, non STEM qualifications.

93. The invitation to participate in the research included an introductory letter from the department confirming that the identity of those learning providers who agreed and declined to participate in the research would only be known to us, and would not be shared, either directly or indirectly, as part of this report. The reasons for this included commercial sensitivities.

94. Through self selection, six providers agreed to participate in the research for this report. Their geographical locations covered most of the English regions, with one of the exceptions being London.

95. Research participation required a two hour interview over the telephone with two senior managers responsible for further education qualifications: one of them should have business development expertise, and the other one should have financial management expertise. Only one of the participating providers made a finance manager available for the interview, with the rest of interviewees having job titles such as ‘director of employment and skills’, ‘head of apprenticeships’, or ‘apprenticeship manager’.

Quantitative estimates

96. The sources for the information shared verbally at the interviews included a combination of accounting records, business plans, and expert knowledge held by the interviewees. We followed up the information shared at the interviews through email exchanges to seek clarifications, fill gaps, and double check the estimates. Of the six participating providers, three engaged with our follow-up requests, and the other three did not.

97. In no case did we verify the information provided at the interviews by reviewing supporting documentation independently. This was mostly because participating providers do not hold separate accounting records for specific qualifications, also referred to as ‘cost centres’ in accounting terms.

98. We assessed the quality of the information provided at the interviews, including follow-up requests, where available, and took this as the basis to create ranges, with poorer quality information resulting in wider ranges, as shown in Table 3, below.

Table 3 Quality assessments and resulting ranges

Spending		Income	
Lower bound	Upper bound	Lower bound	Upper bound
Reliable estimate: Estimate for a spending or income type provided at the interview with clear explanation of sources and underlying calculations for the estimate; no major reservation about the estimate provided; no inconsistency identified with respect to other information provided at the interview; double check received through follow-up email, and no reservation remaining			
-0.05	0.10	-0.01	0.02
Estimate with reservations: Neither reliable, nor unreliable, for example, estimates double checked through follow-up email, but mostly based on proportions and references developed as part of planning exercises, rather than actual spending and income			
-0.07	0.15	-0.02	0.03
Unreliable estimate: Estimate for a spending or income type provided at the interview without clear explanation of sources and underlying calculations for the estimate; inconsistencies identified with respect to other information provided at the interview; no double check, or incomplete double check received through follow-up email; mostly based on assumptions			
-0.09	0.20	-0.03	0.04

Source: Aldaba analysis

99. As an example, we reduced a reliable spending estimate by 5 per cent to create the lower bound, and increased it by 10 per cent to create the upper bound. The rationale is that a type of spending that is identified and quantified is likely to exist, and therefore it constitutes a reliable minimum. It can be lower due to error, but only slightly lower, which we assumed to be by 5 per cent. It can indeed be higher: we assumed that it can be 10 per cent higher. Our ranges between upper and lower bounds increase as reliability decreases. The middle estimates included in the body of this report are the average (mean) between the lower and upper bounds.

100. The rationale for the income ranges is similar. The main difference is that income is less vulnerable to errors because it largely follows fee caps set by the Government. As a result, our assumed ranges are narrower.

101. We obtained between 8 and 10 spending and income estimates for each qualification. Where we assessed three or more of the estimates as unreliable, the

summary quality assessment for that qualification became 'limited', otherwise it became 'medium'.

102. Other adjustments that we made to the spending and income estimates provided at the interviews include:

- Ensuring that the estimates are per learner, per year.
- Inflation adjustments for all estimates to be expressed in 2016-17 prices.
- Reductions or increases, depending on the participating provider's region, to make estimates representative of the English median labour costs.¹⁶

103. To create below, full, and above capacity scenarios we made a number of additional adjustments. We first adjusted the per-learner estimates to obtain estimates for the full capacity scenario. For example, if the estimates of spend per learner, as provided at the interviews, referred to a cohort of 12 learners, but the qualification was designed to support 15 learners, we decreased the per-learner spend estimate by multiplying the estimate referred to the 12 learner scenario by $(12/15) = 0.8$. The rationale is that total spending is fixed for the cohort, and in the full capacity scenario it would be divided by a higher number of learners, and result in a lower per-learner spend estimate. Income per learner estimates remained the same, because income per learner is not affected by the size of the cohort.¹⁷

104. Once we had developed the full capacity scenario, we produced the below and above capacity scenarios by applying the assumptions in Table 4, below. These assumptions were consistent with the proportions that the minimum and maximum numbers of learners identified at the interviews represented over the numbers at full capacity.

105. We applied these adjustments to the lower, middle, and upper estimates for the full capacity scenario, so producing nine estimates per qualification in total. The rationale for the adjustments was that in the below capacity scenario, spend per learner is twice compared to the full capacity scenario because the number of learners is half, and total spending remains fixed. In the above capacity scenario, spending is 20 per cent lower, because the number of learners increases by 20 per cent, compared to the full capacity

¹⁶ As an illustration, participating provider A spends £100 on a qualification, and participating provider B spends £110 on another qualification, however, salaries are 10 per cent higher in participating provider B's region, therefore, the actual level of spending that learners receive is more similar than the figures suggest. We used 2016 Annual Survey of Hours and Earnings, table 7.1a, weekly pay, gross, by place of work, available at

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/placeofworkbylocalauthorityshetable7>

¹⁷ There was one instance where the participating provider mentioned the possibility of adjusting learner fees depending on the number of learners required by an employer client, however, this was an exception and we decided not to incorporate it into the method consistently applied to all participating providers.

scenario. Per-learner income estimates remain the same across all three scenarios because income per learner is not affected by the size of the cohort.

Table 4 Below and above capacity scenarios

Spending		Income	
Below capacity	Above capacity	Below capacity	Above capacity
2.00	-0.20	0.00	0.00

Source: Aldaba analysis

106. We shared a draft of this report, including estimates for all scenarios, with the six participating providers, with the exception of one who was unavailable. Three of them acknowledged receipt and provided comments which we incorporated in this final version of the report.

107. The estimates included in this report must be taken as indicative, and not necessarily representative of all the equivalent qualifications. They are not suitable for accounting, financial, or funding management purposes.

Employer spending

108. The estimates included in Figure 6, in the body of the report, rely on the following assumptions:

- The salary of the learner is £23,500 gross per year.
- The on-costs are 30 per cent of the gross salary, including employer national insurance, and pension contributions.
- The learner has 33 non productive days a year, including annual leave, and bank holidays.
- The employer aims to make a profit equivalent to 50 per cent of the gross salary.
- The learner is released 30 days a year to participate in the qualification, or requires those days to learn while working, as opposed to being fully productive.
- 2 per cent of the time of a human resources employee is required to support the learner; the salary of the human resources employee is £45,000 per year, including on-costs.
- 3 per cent of the time of an employee acting as mentor is required to support the learner; the salary of the mentor £35,000 per year, including on-costs.
- A third of the learners, or 33 per cent of a modelled learner, require 30 days' worth of accommodation, subsistence, and travel expenses at a daily cost of £80.

Other publications

109. The focus of this report is on adult learners participating in further education at levels 4 and 5, mostly in science, technology, engineering, and maths (STEM) subjects. In contrast, a 2016 publication by the department provided estimates of the costs of apprenticeships, including both 16 to 18, and adult apprenticeships, across all levels.¹⁸ Table 5, below, sets out the correspondence of types of spending and income between the 2016, and this present report.¹⁹

Qualitative research

110. Discussing the spending and income estimates included in the body of the report took the bulk of the two hours available for each of the six interviews. We did not follow up the information from the qualitative research questions by email once the interviews had taken place. As a result, the findings from the qualitative research should be taken as indicative, and not necessarily representative of all the further education providers involved in levels 4 and 5.

111. We recorded the interviews digitally and took notes as the interviewees provided their views and perceptions on the qualitative research questions. Due to time and budget constraints, it was not possible to revisit the digital recordings for the purpose of the qualitative research. Inverted commas in the body of this report do not necessarily mean 'verbatim', word-by-word transcripts of the information provided by the interviewees.

¹⁸ Department for Education (2016), Costs and behaviours in the 16 to 18 apprenticeship system, available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/562403/Costs_and_behaviours_in_the_16_to_18_apprenticeship_system.pdf

¹⁹ Another relevant publication is HM Treasury; Business Innovation and Skills, and Department for Education (2014), Joint review of further education costs, <https://www.aoc.co.uk/sites/default/files/Joint%20review%20of%20Further%20Education%20costs%20-%20BIS%2C%20DfE%2C%20HMT.pdf>

Table 5 Correspondence between types of spending and income

This report		2016 report	
Category	Type	Category	Type
Spending	Human resources, core teaching staff salaries	Recurring cost	Teaching
		Recurring cost	Fees paid to external training, providers, assessors
Spending	Human resources, non teaching staff salaries	Recurring cost	Ancillary support
		Recurring cost	Admin
		One-off costs	Recruitment
Spending	Human resources, non salary, or on-costs	Recurring cost	No direct correspondence
Spending	Human resources, staff support	Recurring cost	No direct correspondence
Spending	Non human resources, equipment	Recurring cost	Equipment
Spending	Non human resources, premises	Recurring cost	Premises
Spending	Non human resources, business support	Recurring cost	No direct correspondence
Spending	Non human resources, other	Recurring cost	No direct correspondence
Income	Learner fees	Income	Funding, grants, and supplements
Income	Government grants		

Source: Aldaba analysis



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