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**Research to Assess the  
Nature and Annual Value of  
Student Start-Ups**

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A report prepared by

**PACEC**

on behalf of  
HEFCE

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## Executive Summary

### X1 Introduction

- X1.1 In July 2013 the Higher Education Funding Council for England (HEFCE) appointed PACEC to carry out exploratory research to consider ways to provide evidence on the value of student enterprise, including student start-ups and the contribution of graduates and students to spin-outs, from English higher education institutions (HEIs). HEFCE was seeking to examine further the effect primarily of its 'third stream' of funding for knowledge exchange (KE) through Higher Education Innovation Funding (HEIF).
- X1.2 The work was experimental, and Stage One of the research was to explore whether existing data sources, in particular the Destinations of Leavers from Higher Education (DLHE) Survey (the 'DLHE Survey') and the higher education-business and community interaction (HE-BCI) Survey, (the 'HE-BCI Survey') could deliver the HEFCE brief, and the consequent need for primary data collection through additional surveys to fill gaps.
- X1.3 Following Stage One, it was decided to undertake three interrelated surveys as Stage Two of the work, in an attempt to fill gaps in order to deliver the HEFCE brief. There was also recognition that it would be difficult to fulfil the project aims with one survey and gain sufficient coverage and high response rates from individual surveys. To gain insights on student start-ups, two main methods were explored - a survey of university alumni (the 'Alumni Survey'), and a follow-up of graduates in the last DLHE survey (the 'DLHE Follow-Up Survey') who said they were freelance/self-employed or starting a business. A separate survey (the 'Spin-Outs Survey') was conducted of student spin-out companies from universities that are distinguished from start-ups by the definition in the HE-BCI as new businesses based on university intellectual property (IP) and/or where the university makes an investment in the equity. Around 44 universities were involved, with the focus on those known to have higher numbers of leavers starting in business or spin-outs, leading to responses from about 800 alumni, 120 leavers, and 120 spin-outs over the last few years (relatively small in terms of overall numbers reported in DLHE and HE-BCI Surveys). The main focus of this work was to explore practicable methods to undertake investigations of this kind. It was recognised that the study was not able to examine various issues of response biases, such as the self-selection of respondents, without significant additional research, although the characteristics of students were similar in the DLHE study and the follow-up research. Hence all findings below should be taken as tentative.

### X2 Overview of Research Findings

- X2.1 The surveys provided information on the characteristics of student entrepreneurs surveyed, including qualification level, gender and age, in order to contextualise results. There was a roughly even split between those who were self-

employed/freelance or had registered a business (and sales/turnover figures were significantly lower for the former). Certain characteristics seemed to make it less likely that a registered business would be formed (for example, in the art and design subjects). A main reason for starting a business was the independence/flexibility it provided, and the opportunity for graduates to be their own bosses.

- X2.2 The surveys also provided information on the main industry sector classifications of start-ups and spin-outs, as well as the main products and services. The subjects of study of those who started up were a significant influence on the types of businesses started up by sector. Most critically, the surveys provided details on sales/turnover of companies, as a measure of quantified value that was used in later calculations in the report of the value of start-ups and the gross additionality of HEIF.
- X2.3 Around a fifth of start-ups surveyed had received some KE/enterprise support (including within the curriculum and through extra-curricular activities) at their university. Generally, where graduates had used KE/enterprise support, they found it effective, and they had gained skills in, for example, business management, innovation and financial management. This was a second qualitative measure of value in that the skills could arguably be used more widely for economic and societal benefits. Relatively high proportions (around two thirds) of respondents said they were influenced to start up by the university contribution, including subject/courses studied and the KE/enterprise element. Responses on whether graduates would have started in business if they had not attended university were used to calculate the gross additionality of HEIF, and the 'deadweight' – what would have happened without university support.
- X2.4 Around two thirds of start-ups and spin-outs said they faced business constraints at the time of the surveys, though these were fewer for spin-outs who generally received ongoing advice/support from the universities they were linked to or attended. The majority of those who started a business in all surveys were prepared to contribute back to enterprise activity in their original university, mainly through giving a talk, running a seminar, and/or providing direct business advice.
- X2.5 The core annual value has been defined as the sales and turnover of the student start-ups and spin-outs for the year 2013 based on businesses that set up from 2011 onwards. Using the results from the surveys of students and start-ups on value and deadweight, and data on the population from the DLHE and HE-BCI Surveys to gross up from the surveys to national totals, it has been estimated that the gross annual value was £2.7bn p.a. in 2013. The gross additional value accruing from all aspects of attendance at HEIs was £1.4bn p.a. when account is taken of deadweight; that which can be specifically attributed to business support at an HEI was £500m. The return on investment for every £1 of HEIF was £3.36 in business value (i.e. sales/turnover) due to all impacts of HEI attendance, and £1.14 for the impact of HEI business support.
- X2.6 Most importantly the research has provided a number of insights into how surveys of student start-ups and spin-outs could be improved in future to gain higher response

rates most effectively. The research has also generated insights into linking economic impacts resulting from student enterprises with funding inputs, to inform future policy developments. For the future, development of the alumni and spin-out surveys could be valuable, depending on research questions to be pursued.

X2.7 The research shows that the subject studied is influential in terms of types of businesses started. Engineering and art and design are subjects that particularly lead to enterprise pathways (over half of start-ups/spin-outs). Some of the reasons include lower market entry costs in some subjects, such as in art and design and computing/software development.

X2.8 There was evidence of significant contribution from university KE/enterprise support. Where respondents had received support it was generally regarded as effective. Support might be improved further through universities considering steps to alleviate the constraints that entrepreneurs actually experience later as they develop and grow.

X2.9 Discussions with the universities confirmed that a significant proportion of HEIF/KE funding supports start-ups, including through leveraging other funding, such as the European Regional Development Fund (ERDF). Other factors were relevant, such as subjects studied, and significant support, particularly in some disciplines, is from within the curriculum. There was more student enterprise activity from some HEIs with lower levels of HEIF, in particular the art schools where there were higher levels of start-ups with business formation in the art and design sectors.

## 1 Introduction, Research Aims and Work Stages

- 1.1.1 In July 2013 the Higher Education Funding Council for England (HEFCE) appointed PACEC to carry out research to provide evidence on the annual value and characteristics of student start-ups emerging from English higher education institutions (HEIs), and to identify the contribution of graduates and students to university spin-outs. HEFCE was seeking to examine further the effect primarily of its “third stream” of funding for knowledge exchange (KE) through Higher Education Innovation Funding (HEIF).
- 1.1.2 This study looked only at annual value in terms of quantified sales/turnover of the initial firm formed, but arguably much greater value will lie in the development of skills, capabilities and experience, some of which is based on initial university support, in the entrepreneur to grow their businesses, and who may use this in wider intra-preneurship in the economy and society throughout their life. These are softer features of value which help provide a wider, more rounded sense of value. This study could not examine all these aspects, but we have noted at the end that much more work is needed to understand the enterprise agenda more broadly.
- 1.1.3 The broad aim of HEFCE KE formula funding through HEIF was originally to enhance the economic and social impacts of higher education (HE) through embedding a culture and capacity within institutions to support the exchange of knowledge between HE and business, the public and third sectors, and communities and the wider public. Over time, HEIF has become embedded with a view to HEFCE providing an effective and efficient third stream of funding for KE alongside, but linked with, teaching and research.
- 1.1.4 KE includes support of direct economic and societal impacts through the development of new businesses – both commercial and social enterprises – by HE staff and students. This includes businesses based on intellectual property (IP) (spin-outs) and businesses focussed on a broader range of expertise (start-ups), from both graduates and academics. The inclusion of entrepreneurship and enterprise education within KE policy reflects that both KE and enterprises share common agendas and often infrastructures (such as incubator space, entrepreneurship training and, in a minority of cases, funding and venture capital support). There is also increasing interest in the contributions of students (including graduates, postgraduates, and post-doctoral) to the spinning out of companies which originated from faculty and other IP. Generally, HEFCE KE funding supports the non-curriculum aspects of enterprise education, with curriculum elements of enterprise largely supported by much greater sources of funding through tuition fees and teaching grant. Third stream funding also contributes to a broader agenda of developing an entrepreneurial culture to universities and supporting the contribution of HE to the economy and society (the third mission as described in the Witty Review<sup>1</sup>).

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<sup>1</sup> BIS. Encouraging a British Invention Revolution: Sir Andrew Witty’s Review of Universities and Growth. 2013



- 1.1.5 A major evaluation of HEFCE/BIS third stream funding from PACEC and the Cambridge University Centre for Business Research was published in 2009<sup>2</sup>. Part of that evaluation examined the impacts of the funding through monetised outputs/outcomes to create a cost-benefit balance sheet. It was not the aim, or the scope, of that evaluation to monetise all outputs as many were “softer”, qualitative, and non-monetisable. This current research was then aimed to explore the possibilities of monetising more of the outputs/outcomes in addition to those considered in the 2009 evaluation, and specifically considering whether the annual value of student start-ups and student contributions to spin-outs could be calculated in ways to conform with the balance sheet shown in the 2009 evaluation. The core quantified value was the sales and turnover of enterprises. However, the softer, qualitative value of the skills and capabilities that graduate start-ups acquire was also examined in the survey research.
- 1.1.6 While the aspiration of this work was to produce a return-on-investment figure for HEIF to sit alongside that produced for monetised benefits in the 2009 evaluation, it was recognised by HEFCE at the start that there were a number of challenges to achieving this, and that this study was primarily exploratory. The first challenge in the work was to examine whether existing data could answer the brief. The two main sources of data on graduate start-ups and spin-outs are the Destination of Leavers from Higher Education (DLHE) and the higher education-business and community interaction (HE-BCI) Surveys. Relevant data from these surveys are described in Chapter 2.
- 1.1.7 Work in Stage One was to appraise the existing data sources and then identify the ways to fill data gaps, particularly on the value of businesses (defined as sales/turnover), and the linkages of these with the university experience (the deadweight factor), to deliver the HEFCE brief. These data could only be derived by surveying leaver/alumni entrepreneurs. So a major part of the work was to explore how student entrepreneurs could be tracked since leaving university and their responses sought on the key information required. It was recognised at the outset that tracking students and gaining a reasonable response rate would be a challenge. Chapter 3 describes the work undertaken as a first stage to explore methods and options for the tracking stage.
- 1.1.8 The output of Stage One was suggestions for a feasible methodology for undertaking the full work specified by HEFCE which focussed on three interrelated surveys – the Alumni Survey, the DLHE Follow-Up Survey focussed on start-ups, and a Spin-out<sup>1</sup> Survey. The Stage One work found that alumni surveys were a potential route to find information about entrepreneurial destinations, and had a number of other benefits – many universities themselves are interested to track alumni, for fund-raising purposes, to be able to understand and illustrate the impacts of their teaching and other business support, and to gain the contributions of alumni as mentors for the next generation of entrepreneurs. (This work may make an additional contribution beyond the HEFCE specified goals, by informing universities themselves about the

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<sup>2</sup> HEFCE. Evaluation of the Effectiveness and Role of HEFCE/OSI Third Stream Funding. 2009

potential for extending their alumni links and for gaining greater alumni entrepreneur support.) As well as the alumni survey, Stage Two also explored similar terrain by attempting to follow up those HE leavers from the DLHE Survey who said they were freelance/self-employed or starting a business. Finally a survey was conducted via universities on spin-out businesses (the 'spin-out survey'). Chapters 4 and 6 present the results of the Alumni and Spin-out Surveys. Appendix D shows the results of the DLHE Follow-Up Survey.

- 1.1.9 It is likely that there were different biases in the different surveys (for example, it may be more likely that more successful alumni keep in touch with their universities). The main focus in the report is on the alumni survey given that it covered a larger population and produced a greater number of responses to analyse and deal with the research issues. Analysis is presented for the DLHE Follow-Up Survey in Appendix D, given that it covered a smaller population and generated relatively lower numbers of responses, and hence less detailed disaggregation and results were possible. The spin-out survey is also examined. While it was a smaller survey than the alumni research, it provided more detail than the DLHE Survey. The Spin-out Survey covered student spin-outs where the businesses are based on HEI IP and/or where HEIs make an investment in the equity. However, all results should be considered as tentative and much further work is needed to substantiate results, including looking in more detail at the methods of surveying, covering larger populations, improving response rates, biases etc.
- 1.1.10 Since the surveys placed emphasis on universities with high numbers of the target populations (start-ups and spin-outs), there are potentially further biases due to this focus, although the universities with few start-ups were also included to help balance the sample. This was necessary to improve the likelihood of reasonable numbers of responses to analyse.
- 1.1.11 We present the calculation of the value of student enterprise in terms of sales/turnover in Chapter 7, using the DLHE and HE-BCI data presented earlier and selected findings from our surveys. Chapter 8 provides the estimation of the gross additionality of HEIF based on the value calculation related to the level of HEIF funding over the relevant period.
- 1.1.12 The final chapter draws out tentative conclusions reflecting some key enterprise themes, but particularly focusses on future research methods and further research work needed. As noted above, all results should be regarded as tentative and exploratory, but this report should provide considerable value in demonstrating approaches that could be taken to improve the extent and robustness of the underlying evidence base for student enterprise policy development, as well as insights on calculating additionality of HEIF and adding to the previous 2009 cost-benefit balance sheet.
- 1.1.13 The appendices provide information on the Stage 1 research (covering the DLHE and HEB-CI surveys and options for utilising them to provide additional information than at present on student start-up and spin-outs), the survey topics for the three surveys in

this study (e.g. with alumni), the universities that participated in the surveys and the results of the DLHE follow-up survey. The acronyms used in the study are also shown as an appendix.

## 2 The DLHE and HE-BCI Surveys

2.1.1 The DLHE and HE-BCI Surveys provide a context for the research in this study, and important evidence on the incidence and nature of graduate business start-ups, those who are freelance or self-employed, and the spin-out companies from the universities. This analysis is based on the annual DLHE return published in July 2013 and an overview of the HE-BCI data published in 2013. Data used are as originally submitted to the Higher Education Statistics Agency (HESA). In a small number of cases, later corrections may have been made (e.g. following the restating of data), hence there may be some minor differences to HE-BCI data published elsewhere. These differences are not considered material to the analysis.

### 2.2 The DLHE Survey

2.2.1 The total number of UK domiciled full-time leavers in 2011-12 was 221,720.

2.2.2 The DLHE Survey included a new question for the 2012-13 survey (for the 2011-12 cohort leaving HE) as to whether graduates were “starting a business” as well as questions on self-employment/freelance activities. The results showed there were 1,390 registered business starts (0.6% of all leavers) and 10,100 who were self-employed or freelance (or 4.6% of all leavers). Table 2.1 shows a summary of the survey results for UK-domiciled full-time leavers in employment.

**Table 2.1 The DLHE Survey for UK-domiciled 2011-12 Full-Time Leavers in Employment**

	Self-employed/ freelance	%	Starting up own business	%	All leavers employed	%
<b>Postgraduate</b>						
Female	1025		90		24380	
Male	1075		125		16550	
<b>Total postgraduate</b>	<b>2100</b>	<b>20.7</b>	<b>215</b>	<b>15.5</b>	<b>40930</b>	<b>18.5</b>
Percentage by employment basis	5.2%		0.5%			
<b>First degree</b>						
Female	3270		480		94685	
Male	4020		615		66970	
<b>Total first degree</b>	<b>7290</b>	<b>72.2</b>	<b>1095</b>	<b>78.7</b>	<b>161655</b>	<b>72.9</b>
Percentage by employment basis	4.6%		0.7%			
<b>Other undergraduate <sup>1</sup></b>						
Female	300		40		12665	
Male	415		35		6470	
<b>Total other undergraduate</b>	<b>715</b>	<b>7.0</b>	<b>80</b>	<b>5.8</b>	<b>19135</b>	<b>8.6</b>
Percentage by employment basis	3.8%		0.4%			
<b>All UK domiciled full-time leavers</b>						
<b>Female</b>	<b>4595</b>	<b>45.5</b>	<b>610</b>	<b>43.9</b>	<b>131730</b>	<b>59.4</b>
Percentage by employment basis	3.5%		0.5%			
<b>Male</b>	<b>5510</b>	<b>55.5</b>	<b>775</b>	<b>56.1</b>	<b>89990</b>	<b>40.6</b>
Percentage by employment basis	6.2%		0.9%			
<b>Total UK domiciled full-time leavers</b>	<b>10100</b>		<b>1390</b>		<b>221720</b>	
Percentage by employment basis	4.6%		0.6%			

Source: PACEC analysis of HESA DLHE Survey 2013 Table H;

<sup>1</sup> Undergraduate qualifications other than a first degree. This group is largely made up of foundation degrees, diplomas and certificates of HE, HNC and HNDs, undergraduate PGCE and institutional undergraduate credit.

2.2.3 Of the leavers who were self-employed or freelance, just over a fifth were postgraduates (20.7%), just under three quarters were first degree graduates (72.2%), and 7.0% were other undergraduates i.e. with qualifications below first degree such as non-postgraduate diplomas; 45% were female and 55% male. Of those starting a business, 15.5% were postgraduates, 78.7% first degree graduates, and 5.8% were undergraduates; 43.9% were female and 56.1% male. Hence the profiles of those who were self-employed or freelance and those who were starting a business were similar, except that lower proportions of postgraduates were starting a business, and more first degree graduates were starting a business compared to those who were self-employed or freelance.

2.2.4 It should be noted that part of our research reported in subsequent chapters was to undertake a follow-up of leavers reported in the DLHE Survey. Our evidence from our survey suggests that some 30% of leavers who said they would be freelance/self-

employed or start a business in the DLHE Survey did not actually go on to do this. This would reduce the number of entrepreneurs (self-employed/freelance and registered businesses) overall to just under 8,000 for the UK. The number could actually be larger because some graduates probably did start a business even though they might not have intended to do so when they responded to the original DLHE exercise. Our Alumni Survey would pick up those entrepreneurs who made a later decision to start up, not covered in DLHE.

- 2.2.5 The number of start-ups varied considerably between universities, ranging from zero for a small group of universities to a maximum of some 400, with the median being around 90 start-ups taking all universities into account.

## 2.3 The HE-BCI Survey – National Results

- 2.3.1 The HE-BCI Survey for 2011-12 published in 2013 provides data on spin-outs (IP based) and start-ups (other businesses) arising out of HEIs. The headline results show that there were 125 spin-outs with some HEI ownership in that year (and a small number with no HEI ownership). Over the 10-year period from 2003 the number of spin-outs (graduate and postgraduate) with some university ownership peaked in 2011 at 183, following a gradual rise from 98 in 2005. The pattern was similar for spin-outs without HEI ownership (albeit the absolute numbers were much smaller). There was a high peak of 64\* in 2011 with the lowest number in 2003 (11 spin-outs). The trends are shown in Table 2.2.
- 2.3.2 The number of graduate start-ups was 2,359 in 2012. This number had risen every year from 380 in 2003 to a peak of 2,456 in 2011. This shows the increasing appetite for business start-ups and enterprise over the 10-year period. (HE-BCI also collects data on staff start-ups, which are not relevant to this study.) HE-BCI data is different from that collected in DLHE because HE-BCI only covers student start-ups where the university has provided formal enterprise/business support.

**Table 2.2 HE-BCI Survey - Spin-outs<sup>1</sup> and student start-ups 2003–2012**

	Spin-outs, HEI ownership	Spin-outs, no HEI ownership	Graduate start-ups
2003	147	11	386
2004	103	19	404
2005	98	18	811
2006	120	18	971
2007	139	22	1,294
2008	126	16	1,726
2009	154	28	1,823
2010	168	64*	2,048
2011	183	27	2,456
2012	125	16	2,359

Source: PACEC analysis of HE-BCI

<sup>1</sup> Spin-outs including graduates and postgraduates across all spin-outs.

\*Data was restated in a later data collection.

2.3.3 One of the major areas of investigation of the study was the value of start-ups, particularly considering the turnover of graduate start-ups (and also spin-outs for graduates and post graduates) as a measure of such value. The estimates made by the universities for the HE-BCI return show that in 2012 the turnover for spin-offs with some university ownership was £526m, and £967m for spin-outs with no university ownership. The turnover for graduate start-ups was £290m. Trends are shown in Table 2.3.

**Table 2.3 HE-BCI Survey - Spin-outs<sup>1</sup> and Student Start-ups: Turnover 2003–2012 (£000)**

	Spin-outs, HEI ownership	Spin-outs, no HEI ownership	Graduate start-ups
2003	167,862	84,216	98,898
2004	213,219	104,330	121,057
2005	266,568	42,826	106,136
2006	248,275	45,815	76,763
2007	314,605	41,906	253,083
2008	748,627	38,440	664,381
2009	354,020	728,792	137,462
2010	414,267	936,643	185,984
2011	511,875	1,036,725	224,781
2012	526,548	967,404	290,683

Source: PACEC analysis of HE-BCI

<sup>1</sup> Spin-outs including graduates and postgraduates across all spin-outs

2.3.4 Another potential measure to suggest value of student start-ups (and student contributions to spin-outs including graduate and postgraduates) is the employment generated by the company. The HE-BCI Survey for 2012 shows that there were

6,704 full time equivalent (FTE) jobs in spin-outs with some university ownership, and 5,134 jobs in companies without HEI ownership. The employment generated by graduate start-ups was 11,401. Trends are given in Table 2.4.

**Table 2.4 HE-BCI Survey. Spin-outs<sup>1</sup> and Student Start-ups. Employment (FTEs) 2003–2012.**

	Jobs in the year on a moving total		
	Spin-outs, HEI ownership	Spin-outs, no HEI ownership	Graduate start-ups
2003	4,218	5,900	1,284
2004	5,423	5,885	1,522
2005	5,695	5,588	3,943
2006	5,747	5,632	4,797
2007	5,647	1,088	4,798
2008	7,235	1,030	5,134
2009	8,459	909	7,557
2010	6,854	5,231	8,324
2011	7,131	4,946	9,961
2012	6,704	5,134	11,401

Note: <sup>1</sup> Spin-outs including graduates and postgraduates across all spin-outs  
Source: PACEC analysis of HE-BCI

2.3.5 The data showed variation by individual universities with some having around 100 or so spin-outs and others none.



### 3 The Methodology and Survey Response Rates

3.1.1 A major part of this study was to investigate current data sources – the DLHE and HE-BCI Surveys examined in Chapter 2 - to establish whether these were fit for purpose to underpin work towards the full aims of the HEFCE specification, and then to devise new and additional methods to address the work in full if needed. The work was conducted in two stages, with a substantial first stage focussed on optional methods to achieve the full specification. This chapter discusses the methods used in Stages One and Two.

#### *Stage One*

3.1.2 The Stage One work focussed on examination of the existing data as set out in Chapter 2, and then assessment of the data gaps needing to be filled to address the full brief. We then considered approaches – amendments to existing methods or novel ones - to enhance and improve data sources to fill any gaps. The criteria used to appraise options to fill gaps related to compatibility with existing approaches (DLHE, HE-BCI and other research carried out by the universities), coverage and quality of the data, timing, and the extent to which the approach could cover the stock of start-ups based on an agreed baseline year. Finally we undertook partial tests and validation of an approach and methodology, in discussions with universities and the project Steering Group that could be tested in Stage Two for all, or a sample of, HEIs, to provide reliable information. As well as desk research, we involved a sample of nine universities representative of the wider HE sector to examine their role in the implementation of the existing DLHE and HE-BCI Surveys, views on coverage and quality, the use they make of the survey results, additional information they may require and options to develop the methodology to allow the value of student start-ups to be assessed.

3.1.3 Overall, the HE-BCI data on spin-outs were considered to be reasonably good and in particular for the incidence of spin-outs, their duration, and the information on employment, turnover, and investment received. The universities were of the view that students/graduates account for the vast majority of spin-outs. In particular, the universities monitor the performance of enterprises where they have an equity stake or they license IP. However, our work identified that additional information would be required from the spin-outs on, for example, the nature of businesses, their size, and the influence of the universities on the spin-outs, to address the full HEFCE brief. The data returns for the HE-BCI results on spin-outs showed a degree of consistency over the years for which data was available on spin-outs.

3.1.4 The HE-BCI data on the student start-ups were less reliable (except where students fell into the category of spin-outs or there was cross-checking with the DLHE survey results by individual universities). The incidence of start-ups and their performance required considerable estimation.

3.1.5 The DLHE annual survey was considered to be reliable on self-employment/freelance activity and starting up in business, although 2011-12 was the first year for this

information on student start-ups in business so that the less regular longitudinal survey was the sole means of checking for consistency. However, additional data was needed on the performance of start-ups in terms of employment, turnover, and investment, and the influence of the university through the curriculum and support on start-ups.

3.1.6 The detailed results of the Stage One report are shown as Appendix A. In Stage One consideration was given to improving the DLHE and HEB-CI surveys to allow the aims of the study to be met in Stage Two. They were discussed in a workshop with HEFCE staff and representatives from a group of universities and from organisations with an interest in student enterprise. The options covered the HE-BCI and DLHE surveys with adjustments and the new and additional approach, for example an alumni survey with a sample of universities. The detailed options are also set out in Appendix C as a set of tables.

### *Stage Two*

3.1.7 Following the option discussed at the workshop at the end of Stage One a number of interrelated tasks were carried out in Stage Two. The main ones are shown below.

- The sampling frame of universities consisted of the 130 or so in England. The universities were characterised using HEFCE data, the number of students who were freelance/self-employed or starting a business in the DLHE survey, and the number of spin-outs in the HE-BCI return. To provide background information, KE/HEIF funding was also examined, along with the relative size of universities by student numbers, research intensity (reflecting research income and other variables<sup>3</sup>), and geographical location by region.
- The aim was to achieve a reasonably representative group of universities. The emphasis in the Alumni and DLHE Survey was on those universities who had the highest absolute numbers of graduates who were freelance/self-employed or starting a business in the DLHE Survey. Around 30 fell into this group (or almost a quarter of all universities). To match the profile, some other universities were included where there were relatively few start-ups. The focus for the spin-out research was, again, on those universities with the highest number of spin-outs in the HE-BCI return, again some 30 universities. To fill out the sample, other universities were included that had fewer spin-outs.
- A desk study and website research were conducted to identify the appropriate contacts at each of the universities who could potentially participate in the alumni, DLHE follow-up, and spin-out surveys. These primarily consisted of alumni offices, the careers/student development services, and those responsible for spin-outs and start-ups – usually a business enterprise department or unit.
- The development of questionnaires and survey methods for all alumni, the DLHE follow-up (i.e. those starting up), and student spin-out surveys, in conjunction with HEFCE and the universities concerned. To help secure their participation, questions were developed to help meet the interests and requirements of individual universities without compromising the thrust of HEFCE research. The Alumni and DLHE Follow-Up Surveys were designed

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<sup>3</sup> HEFCE. Report on the evaluation and role of HEFCE/OSI third stream funding. PACEC developed a research-intensity typology using data such as research income, number of academics, and average RAE score. 2009

as online surveys. The spin-out questionnaire was designed as a telephone survey to help ensure that quotas in terms of the known characteristics of spin-outs (by the university) could be met. The main reason for the different approaches was that the Alumni and DLHE Follow-Up survey populations were relatively large and could be contacted directly by the universities using e-mail addresses they had. The spin-outs were a relatively small group which was better suited to a telephone survey. Appendix A shows the main topics in the questionnaires.

- Contact with the universities was initially by telephone and e-mail to discuss their participation in the research. They were provided with information on the surveys and the approach to alerting their alumni and leavers to the online surveys and the link to the questionnaire websites. PACEC set up a website link to facilitate this. For the Spin-out Survey the universities were asked to provide telephone contact information and e-mail addresses for a reasonably representative group of spin-outs.

3.1.8 Agreement was reached with 43 universities to participate in the research. Thirty universities said they would participate in the Alumni Survey, representing many in the top 30 by the number of leavers self-employed/freelance or starting a business in the DLHE Survey (a quarter of all universities), as well as some with few start-ups to balance the survey. Twenty-three said they would participate in the DLHE Follow-Up Survey itself, that is around three quarters of the top 30 who had the highest number of graduates who were freelance/self-employed or starting a business (almost a fifth of all universities), along with a group that had fewer start-ups. Thirteen said they would participate in the Spin-out Survey or almost half of those in the top 30 with the highest number of spin-outs in the HE-BCI return (around one in 10 of all universities). Appendix C shows the universities in the survey research. The caveats in Chapter 1 on the potential biases from this sampling approach are relevant again, but the focus on universities with large numbers of the target population was important to enable a relatively large group of students to be involved in the follow-up survey (although some universities with fewer start-ups were involved). On the spin-out survey, universities were asked to provide a representative group to help ensure that the group surveyed matched the known population. For the Alumni and DLHE Follow-Up Survey all students were contacted for whom there were e-mail addresses. We stress that further work is needed to explore more fully all these aspects to the work.

3.1.9 The number of respondents in the alumni survey was almost 800, with around 120 in each of the DLHE Follow-Up and Spin-out Surveys. The estimated response rate for the Alumni Survey in terms of the numbers alerted is difficult to estimate but based on information from universities consisting of the number of alumni with live e-mail addresses who were contacted directly, the resulting estimated response rate was 3.5% to 4.5% and higher for some HEIs. The response rate for the DLHE Survey was around 12.5% based on the estimated reliable number of e-mail addresses. The response rate for the Spin-out Survey was 35% of the contacts supplied by the universities. This is a very small sample compared with DLHE data which reports 11,490 leavers with business start-ups (10,100 self-employed/freelance and 1,390 registered companies) in 2011-12. However, the Follow-Up Survey indicated that some 30% did not start their businesses or go freelance. In particular, the number of DLHE follow-up responses was relatively low and hence we would not place great

reliance on the analysis of that survey. For both these surveys, there was the likelihood of selection bias with respect to the uncertainty about the characteristics of the respondents and their businesses. However, based on the characteristics of students in the follow-up survey and the DLHE survey, the gender of students, the age, the level of degree studied, and the disciplines were similar. Appendix D shows the results in more detail.

- 3.1.10 Importantly though, the approach taken and the results give us insights on how further work might be conducted in future in these areas, where the focus should be on using the best means to contact the target populations and to boost response rates further.
- 3.1.11 The questionnaires completed for each survey show that the individual questions have been answered adequately by respondents in the vast majority of cases.
- 3.1.12 The Alumni and DLHE Surveys were for different years to ensure they did not overlap. Checks were made to ensure that the double counting was minimised where a graduate could have completed more than one questionnaire in different surveys. No duplicate questionnaires were identified. Given that the majority of universities tended to participate in one of the surveys only, the likelihood of this was minimised.
- 3.1.13 Results of the Alumni and Spin-out Surveys are presented in the next two chapters under key themes in the research:–
- Characteristics of alumni, for example, when they graduated, type of degree, and age of graduate.
  - Reasons for starting a business and reasons for not starting/ceasing, such as preferences for employment, or no marketable business ideas.
  - Sales and turnover of businesses. This is important data which is used in Chapter 7 to calculate the value of start-ups and spin-outs.
  - The types of businesses, for example, the industrial sectors they are classified within, and products and services. This is intended to give additional insights on potential value of businesses beyond the sales/turnover approach we have primarily focussed on.
  - KE/enterprise support and skills for enterprise. This includes support through the curriculum, as well as a broad range of non-curricular support such as workshops, talks, advice, and premises. This examined the effectiveness of support and enterprise skills obtained. The results gave further insights into the qualitative value of start-ups in that skills could be used for business development and more widely.
  - The influence of the university on the student's/graduate's decision to start a business (including subject, course/KE/enterprise support and broader influence). This is an important result area as we use these data to calculate the deadweight in Chapter 8, that is, the proportion of value that can be attributed to HEIF and which would not have happened otherwise.
  - Business constraints faced, such as the economic environment, lack of demand for products and services and finance. This information was collected to inform the issue of further support universities could provide.
  - Sharing business experiences with the university. Respondents were asked about their inclination to give back to the university, not just in monetary terms but also in terms of mentoring and advice to next cohorts of

entrepreneurs. The alumni route was found particularly useful by individual universities and survey results may then provide insights for universities on how to strengthen the entrepreneurial circle of past alumni giving back to next generations.

3.1.14 Appendix D shows the results of the DLHE Follow-Up Survey.

## 4 Results from the Alumni Survey: the Nature of Businesses

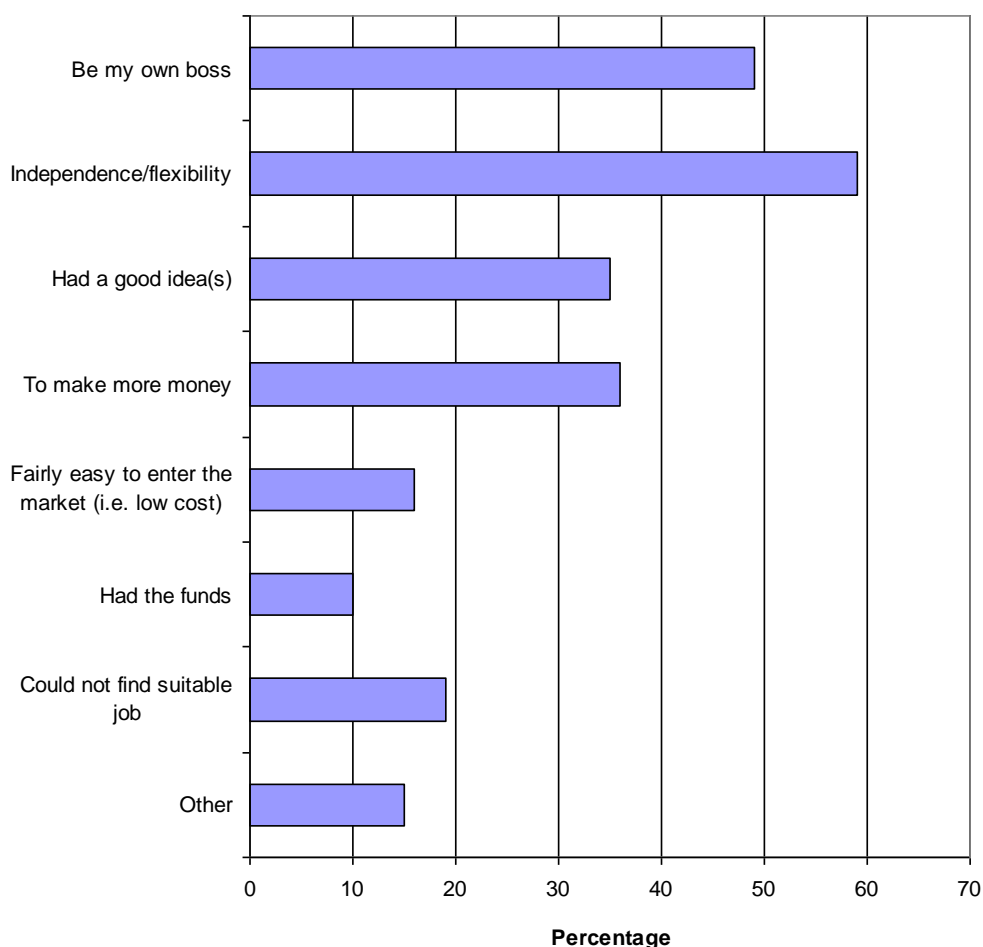
- 4.1.1 The Alumni Survey was new work conducted for this study with a view to gaining more detailed information about students/graduates, their businesses and the nature and effectiveness of the support provided by their universities for their entrepreneurial aspirations. The survey covered all alumni and not just those identified as having started a business. Of the 800 responses some 50% had started a business and provided the details.
- 4.1.2 The businesses were asked a series of questions about their experience in part to help understand their aims but also as a lead-in to obtaining the quantitative information on turnover (as a measure of value) and the soft benefits such as the business skills they gained.
- 4.1.3 The results for those that started a business are disaggregated where there were differences in the responses for different groups - for example, by level of study or discipline, industrial sector of businesses and types of KE/enterprise support received and of university (defined as relatively high, medium, or lower levels of HEFCE KE/HEIF funding 2008–2015). Where disaggregated information is not shown the responses of groups were similar.
- 4.1.4 For those that did not start a business they were asked why not.
- 4.1.5 Panel 4.1 on p24 provides a case study of an exemplar alumni business.
- 4.1.6 It is likely that there is a bias in using information from alumni because it seems likely that the more successful alumni will keep in touch with their universities – although the university considered that their alumni databases, for recent graduates, and the period the survey covered were reasonably comprehensive. It is notable, as an example, that the alumni survey had a much larger proportion of those with registered businesses over self-employed/freelancers compared with overall DLHE data (and registered businesses generally had higher sales/turnover). However the characteristics of those who started up were similar to those who started up on the leavers survey although they were an older age group. Further work would be needed to examine all biases to use findings further.

## 4.2 The Characteristics of Alumni

- 4.2.1 The vast majority of alumni that we surveyed had graduated over the past three years, with roughly equal numbers in 2010, 2011, and 2012. Half were female and half male. Some six in 10 alumni were in the 29 to 30 age range and a quarter in the 30 to 39 average. Around six in 10 of these had studied for a first degree, with just over a third having studied for a postgraduate qualification. The main subjects of study were creative art and design (a fifth), engineering and technology (one in seven) and business and social studies (one in 10), with the residual spread over

almost 20 disciplines. Some 42% had science degrees, 20% had degrees in the arts, 28% in humanities and 10% in the social sciences.

- 4.2.2 Half of the alumni had started a business since graduating; out of those over eight in 10 were still running the businesses. Around half of those running businesses were self-employed/freelance and half had registered their businesses with Companies House. The majority, or almost eight in 10, had started one business, but one in six had started two and 7% three or more.
- 4.2.3 More postgraduates tended to be freelance/self-employed compared to those with a first degree – who were more likely to register their businesses. By subject, those who studied art and design were more likely to be freelance/self-employed compared to those who studied other subjects. Those who studied social media, engineering and computing subjects tended to register their businesses. In terms of industry sectors, those in the professional services sectors and art/design sectors were more likely to be freelance compared to the other sectors. Hence the incidence of business registration was greater in manufacturing, ICT, and other services.
- 4.2.4 Generally there was little difference between the types of KE/enterprise support received and whether a business had been set up, and between freelancers/self-employed and registered businesses. The main types of support were via the course curriculum or networking and KE events, direct general business advice, innovation advice, and use of university finance/premises.
- 4.2.5 In universities where HEFCE KE/HEIF funding was lowest, start-ups were more prevalent and these were more likely to be freelancers/self-employed over registered businesses. Also the focus of businesses from these universities was more likely to be in graphics, art and design, which is where there would be likely to be lower start-up costs and better prospects for market entry and market growth. Graduates could operate on their own account in these sectors and did not need to partner with others, which could have necessitated registering a business with partner shares.
- 4.2.6 The survey also asked alumni about why they had started a business. The most common reason given was that the graduate was looking for independence and flexibility in their work and/or wanted to be their own boss; other responses given are in Figure 4.2. One in four considered that it was fairly easy to enter the market and the costs were relatively low.

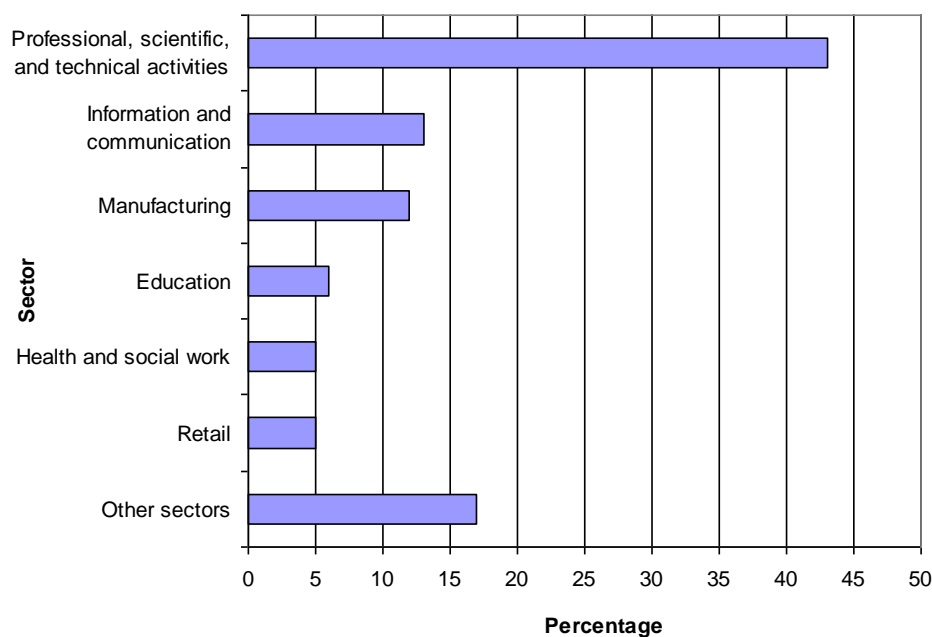
**Figure 4.1 The Reasons Alumni Gave for Starting a Business**

Source: PACEC Survey of Alumni, 2014

### 4.3 The Types of Businesses

4.3.1 The main industry sectors of alumni businesses were professional, scientific, and technical activities (43%), information and communications (13%) and manufacturing (12%). Full details are given in Figure 4.2. Examples of the main products and services produced by businesses were media/design, IT/computing, management consultancy, medical services and production/manufacturing. Around four in 10 were in the high-tech/innovation sectors. There is sometimes a view that student enterprises are often life-style ventures, but this evidence suggests a stronger knowledge base element.



**Figure 4.2 Business Sectors**

Source: PACEC Survey of Alumni, 2014

- 4.3.2 The types of businesses by industry sector for postgraduates and those with first degrees were similar. There was more variation by subject, with types of business reflecting the disciplines studied. For example, those who studied engineering subjects were more likely to have set up businesses in the light manufacturing sector, and graduates who studied maths and computing were more likely to set up firms in the professional, scientific, technical and ICT sectors. Similarly those who studied medicine set up businesses in the health and social work activities, while art and design graduates had businesses in art and design, professional services, arts and entertainment and ICT. This may be one of the most interesting aspects of this scrutiny of student businesses – that discipline seems significant in terms of the types of businesses that will come out of university study, and this in turn may suggest that the disciplinary dimension to entrepreneurship, including its support, should be explored further.
- 4.3.3 The industrial sectors that the businesses were in did not significantly affect the types of KE/enterprise support received, with the exception that the scientific and professional services sector received more support for innovation/IP.
- 4.3.4 HEIs with low levels of KE/HEIF funding also tended to produce more businesses in graphics and art and design, and to some extent in the light industrial manufacturing sectors. HEIs with higher levels of HEIF produced more student start-ups in professional scientific and technical services (such as engineering) and in IT/computing. There may be low entry costs for aspiring entrepreneurs in some disciplines over others, and where entry costs are high then the route to enterprise may only come about via initial employment. This may in turn influence the propensity of students from different disciplines to start-up businesses straight out of university.

- 4.3.5 The number of employees in each business was between one and 200, with a median figure of one (as over half the businesses had only one employee). The mean figure was 4.5 employees. The turnovers ranged from £0 (where businesses had just started) to £20m p.a. (for more mature firms), with a median figure of £12k and a mean of £300k. It is important to keep in mind that these were all businesses started by alumni graduating from university over the last three years of 2011, 2012 and 2013, and hence these are likely all to be fairly new businesses. In terms of longer term aspirations, just under half of all businesses sought to grow moderately and just over a third significantly.
- 4.3.6 The survey sought to gauge how innovative the businesses were. Just over four in ten had introduced new or significantly improved products and services or processes. This compares with almost one in five who were classified as product innovators in the CIS survey<sup>4</sup> and one in 10 who were process innovators, although these businesses, albeit small to medium enterprises (SMEs), were generally larger than the alumni businesses. A fifth used new technologies and one in 10 had registered or applied for patents in the UK.
- 4.3.7 In cases where the entrepreneur had ceased trading, the main reasons given were that there were insufficient sales/turnover, not enough funding could be found, the business ideas were not attractive enough, the business was not profitable, and/or employment was more attractive.

## 4.4 KE/Enterprise Support and Skills

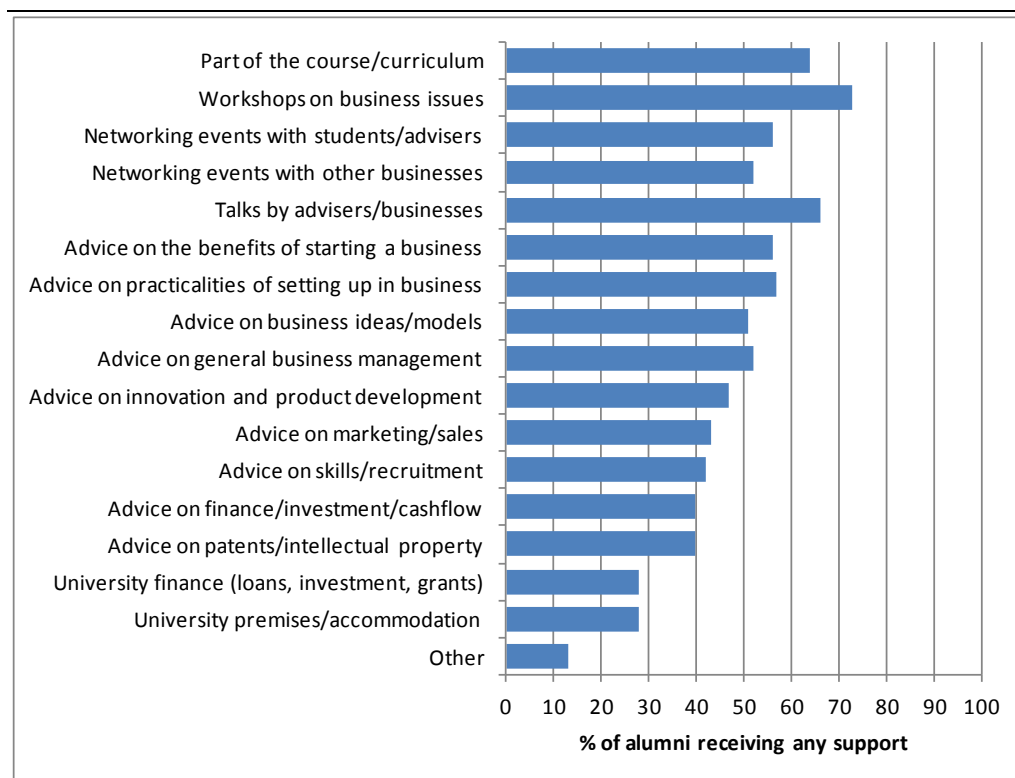
- 4.4.1 A key issue for the study was the type of KE/enterprise support received by alumni, and how effective it was in terms of providing business skills for graduates, leading ultimately to the success of the business, including the measures of value of sales/turnover. KE/enterprise support for this study included curriculum-based aspects, as well as the broader and diverse range of non-curricular forms, including business advice and events, through to premises and finance.
- 4.4.2 Alumni were asked about the KE/enterprise support from the university they had received that helped both with starting their business and running it thereafter. Fewer than one in three said that they had received advice and other forms of support, which potentially indicates that they were not fully aware of the support available as most universities offer it in some form. There were also additional students who received support but did not start up.
- 4.4.3 Of those receiving some support, around three quarters had attended a workshop on business issues, and around two thirds had attended a talk given either by business advisers or other businesses. Almost six out of 10 had attended networking events (with students, advisers and/or businesses) or had been given advice on the benefits of starting a business and the practicalities of setting up and a half had received advice on appropriate business models and general business management. Around

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<sup>4</sup> Community Innovation Survey, carried out annually by BIS.

two thirds said their course and the curriculum had provided them with useful information and advice, on setting up and running businesses, as part of an enterprise component. Figure 4.3 gives further information (and it is important to keep in mind that this reflects only the one fifth of alumni that said they had received enterprise support at university.)

**Figure 4.3** Types of KE/enterprise support and skills for those who received it



Source: PACEC Survey of Alumni, 2014

- 4.4.4 Generally, where the alumni had received KE/enterprise support from the university, it was considered to be very effective or effective. The most effective support (said to be very effective) was the course content and curriculum on enterprise (35%) and the workshops on business issues (31%), followed by the advice on the practicalities of setting up in business (29%).
- 4.4.5 The use of support and its effectiveness gives an indication of the enterprise skills graduates acquire. This is a softer form of value compared to sales and turnover. These skills can be used to develop and grow business and be transferred to any ultimate employment through intra-preneurship.
- 4.4.6 Similar proportions of postgraduates and those with first degrees had received KE/enterprise support at university. By subject, the engineering and technical (30%) and arts and design (27%) graduates were more likely to have had KE/enterprise support compared to maths and physics, medical, and social media graduates. The types of support were similar irrespective of the disciplines. The alumni with businesses in the arts and professional services industrial sectors tended to have

received more support than those with businesses in the other sectors. The type of support received was similar irrespective of the sectors businesses were in.

- 4.4.7 Alumni from HEIs with lower levels of KE/HEIF funding (33%) were more likely to say they received KE/enterprise support compared to others (noting though that this includes enterprise support within the curriculum which would have been supported from other sources than HEIF). The types of KE/enterprise support experienced by students were similar across all universities, irrespective of levels of HEIF funding.

## 4.5 The Influence of the University on Start-Ups

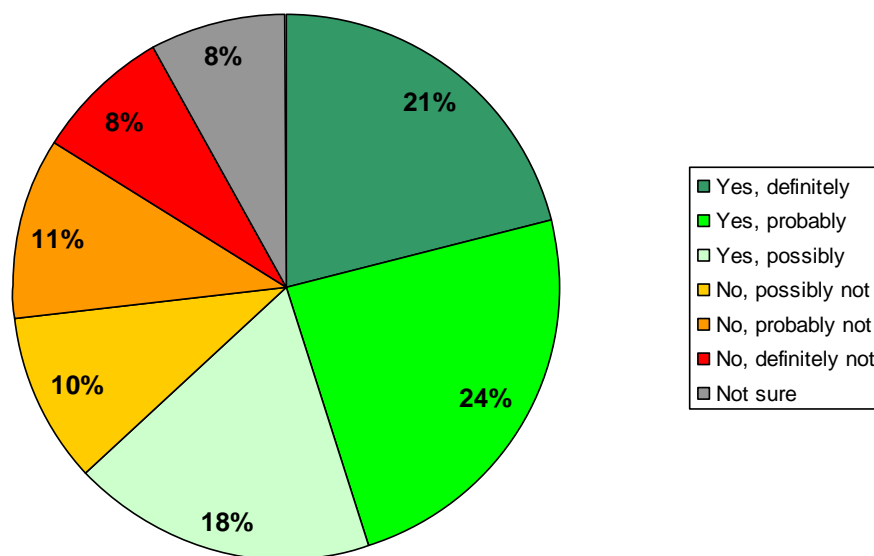
### *The Influence on Start-Ups*

- 4.5.1 Some seven out of 10 alumni (70%) who started a business said that the subjects on the course they studied influenced them to do so, with just over a third influenced to a great extent. This seems consistent with earlier results about the alignment between subjects studies and types of businesses started up.
- 4.5.2 Almost half of alumni who started up said that the KE/enterprise support they received had influenced them to start a business.
- 4.5.3 The postgraduates claimed to be influenced to a greater extent by both course content and KE/enterprise support than those with first degrees; as did the science, technology, engineering and mathematics (STEM) subject graduates, compared to those studying all other subjects. Those who had started up businesses in the manufacturing and arts sectors were more likely than those in other industrial sectors to say they were influenced by course content and KE/enterprise components.
- 4.5.4 The graduates from universities with low levels of KE/HEIF funding said that the course content influenced them to start a business to a greater extent compared to graduates studying at other universities.

### *The Likelihood of Starting a Business if University had Not Been Attended*

- 4.5.5 A key issue was whether the alumni would have started a business if they had not studied at the university. Around 45% thought they would have definitely or probably started a business even if they had not gone to university. The remainder were unsure or were not likely to have done so, i.e. some 55%.

**Figure 4.4 The Likelihood of Starting a Business, if Alumni had not Studied at University**



Source: PACEC Survey of Alumni, 2014

4.5.6 Those with first degrees and postgraduates had very similar views on whether they were likely to set up in business if they had not studied at university. By discipline, the arts and design graduates, followed by the computing and maths graduates, said they were more likely to have set up in business anyway if they had not attended university. The medical students were least likely to have done so. By industry sector, the graduates in the manufacturing, professional services, and general services sectors were least likely to have started a business if they had not studied at university; compared to those in ICT and arts sectors who were relatively confident that they would have started up anyway. In terms of types of KE/enterprise support, the only significant finding was that course content had a slightly greater influence on those who would not have started up without the university experience, compared to all other types of non-curricular support.

4.5.7 There was very little difference between universities in terms of levels of HEIF funding and the extent to which graduates attributed starting a business to the contribution of the university.

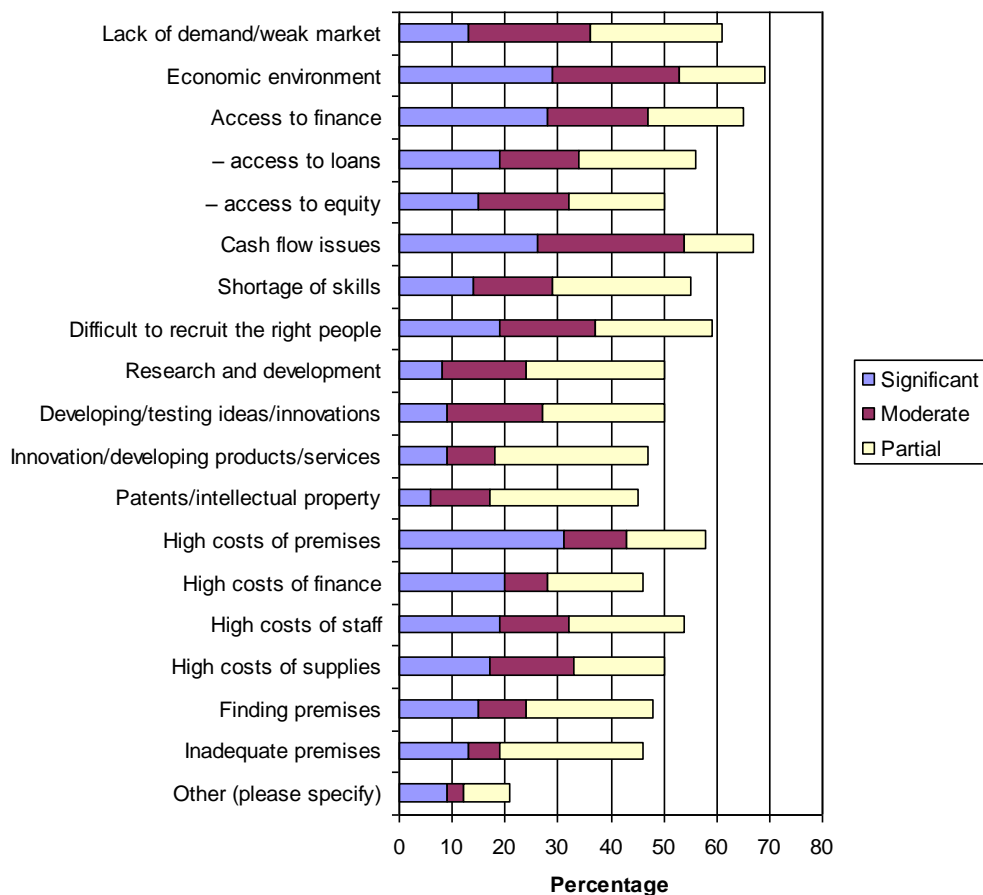
## 4.6 Business Constraints For Those Who Faced Them

4.6.1 The survey asked alumni about the constraints on their businesses as one way to understand more about whether university enterprise support had prepared the graduate for the right kinds of challenges.

4.6.2 Around two thirds of alumni said their businesses faced constraints at the time of the survey while a quarter did not and one in 10 was unsure. There was a wide range of

constraints for those that faced them, as shown in Figure 4.5. This may fit appropriately with the broad forms of KE/enterprise support that universities offer, as described in other sections.

**Figure 4.5 Business Constraints For Those That Faced Them**



Source: PACEC Survey of Alumni, 2014

- 4.6.3 Postgraduates appeared to face more constraints compared to those with first degrees, which could be because they intended to grow their businesses more rapidly than the first degree students. Engineering and art and design graduates were more likely to face business constraints than those from other subjects, though there was little variation across subjects in terms of the specific types of constraints faced. While constraints were faced in businesses in all industry sectors, more business constraints were faced in the manufacturing and arts/design sectors (especially access to finance issues).
- 4.6.4 Generally, the nature of constraints faced did not vary depending on the type of KE/enterprise support received at university. However, those who received support via their courses were less likely to face financial constraints.
- 4.6.5 The alumni from the HEIs with low levels of HEIF were more likely to face business constraints; the types of constraints experienced were similar across alumni of all universities irrespective of levels of HEIF.

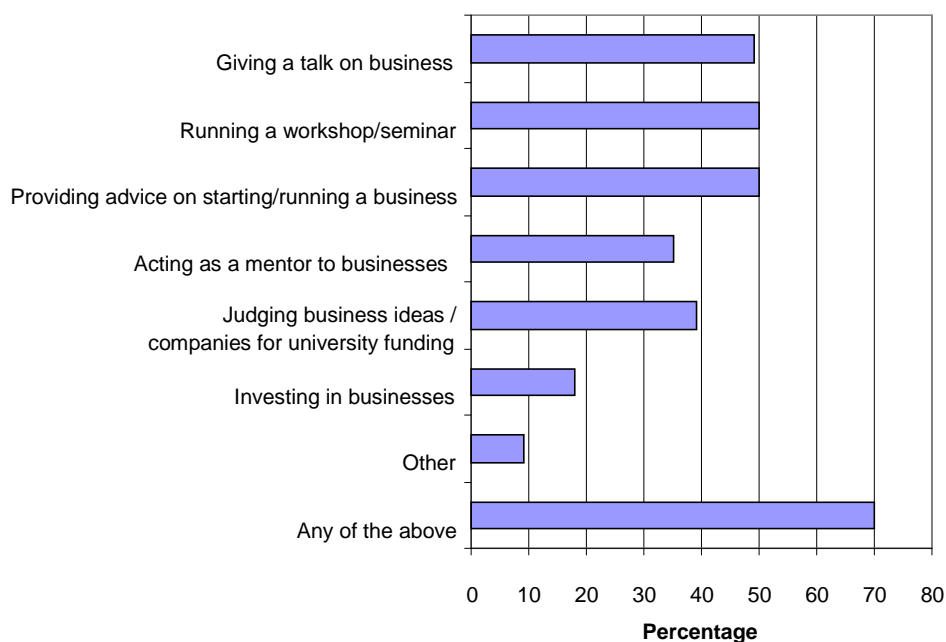
## 4.7 Reasons for Not Starting a Business

4.7.1 Some alumni that did not start a business responded to the survey, and gave reasons as to why they had not started up. The main reasons they gave for not starting a business were that they preferred to be employed (49%), they did not have a good business idea (26%), or they did not find the idea of business, in itself, attractive (20%).

## 4.8 Sharing Business Experiences with the University

4.8.1 Finally, alumni were asked if they would be willing to share their business experiences with university students and staff (as a means to create stronger entrepreneurial communities and links back to universities and future students, and hence improve data collection and information in future, as well as to enhance KE/enterprise support). Some 70% said they would, with types given in Figure 4.6 below.

**Figure 4.6 Types of Support Alumni were Prepared to Give**



Source: PACEC Survey of Alumni, 2014

**Panel 4.1 Case Study: Alumni Entrepreneur**

This business in jewellery design was started in 2010 by a 25-year old graduate with a higher degree in design. The freelance/self-employment option was taken with the aim of growing the business significantly over the next three to five years, with a focus on innovation and new products. Turnover had risen to some £20k per annum. The reasons for starting up were to be independent and flexible. It was fairly easy to enter the market as costs were relatively low and there were not suitable alternative jobs available.

The university had provided support through the course curriculum, linked to other support including attendance at business events (with businesses and advisers), using equipment at the university, and advice on product development and the testing of some ideas. Some of the university services had been paid for, with £200–£300 in fees, including some use of university 3-D printing facilities.

*“The facilities were good value and helped on the product design side – I could see the outcomes.”* (Graduate who started up.)

The subject studied and the university support had a significant influence on the decision to start up, and without them it was unlikely the business would have resulted at all.

The aims to grow, after starting up, were subject to significant constraints, especially access to finance (both debt and equity) and cash flow issues. Other constraints faced, but seen as moderate, included the resources to innovate, obtain the right skills, and innovate.

Based on the initial success, the owner was very willing to share experiences with the university and other students by giving a talk and running a workshop, providing advice, and even judging business ideas and investing.

*“I got something out of attending, so could give something back.”* (Graduate who started up.)



## **5 Results from the DLHE Follow-Up Survey: the Nature of Businesses**

- 5.1.1 As well as seeking to gain more information about student start-ups through the Alumni Survey, the work also included a route through following up the annual DLHE Survey for those who graduated in 2011-12. As discussed in Chapter 3, two research routes were used because of the anticipated difficulties of gaining a reasonable number of responses.
- 5.1.2 The DLHE Follow-Up Survey was focussed on leavers who had responded to the original DLHE Survey that were self-employed/freelance or had started a business. The number of responses for the DLHE Follow-Up Survey were much lower than for the Alumni Survey and hence findings are not disaggregated for different groups. Results from the DLHE Survey are included for completeness, though one finding from this study overall is that the alumni approach is likely to be more successful for future investigations of similar issues. Within the scope of this limited work, the different factors affecting the potential response biases of different approaches to surveying graduates were not explored, though this would clearly be important for any future work.
- 5.1.3 Given lower numbers of responses which enabled only limited disaggregation detailed results are only given in Appendix D.

## 6 The Spin-Outs: the Nature of Businesses

- 6.1.1 The HEFCE specification for the study included consideration of the value that may be created through the contribution of students/graduates to spin-out (IP based) companies. A bespoke survey was conducted to consider spin-outs, focussed on student/graduate spin-outs where the universities had an equity share and/or licensed IP. Universities confirmed that graduates and students account for the vast majority of spin-outs. Some students were initially involved in the graduate spin-outs. The businesses covered in this survey may include other graduate and academic contributions in addition to the founders (as staff or advisers).
- 6.1.2 The businesses were asked a series of questions about their experience in part to help understand their aims but also as a lead-in to obtaining the quantitative information on business turnover (as a measure of value) and the softer benefits such as the business skills and practices they gained.
- 6.1.3 As a reflection of the HE-BCI Survey definition for spin-outs, universities provided contact information for companies set up to exploit IP that had originated in the university. These were mainly spin-outs with some HEI ownership, which was the largest group in the HE-BCI Survey returns, along with a small number where the university has released ownership (i.e. sale of shares and/or IP).
- 6.1.4 The Spin-out Survey covered similar questions as the other two surveys. The research resulted in some 120 responses that are not disaggregated for different groups as the absolute number was not sufficiently high for each type. The survey sought to achieve a reasonably representative sample based on the characteristics of businesses provided by the universities and quotas were set for the interviews carried out by telephone. Compared to the DLHE surveys the graduates tended to be older and a higher proportion had postgraduate degrees. The characteristics were similar to those for the alumni survey although a proportion were older and more had postgraduate degrees. They were more likely to be IP-based companies with greater levels of innovation.
- 6.1.5 The graduates/students starting their businesses may have received support during their courses, and also since then, as the universities usually continue to provide the spin-outs with advice in some form as they are interested in the returns from IP and the businesses.
- 6.1.6 Panel 6.1 provides a case study of an example business spin-out with graduate contribution.

## 6.2 The Characteristics of Graduates

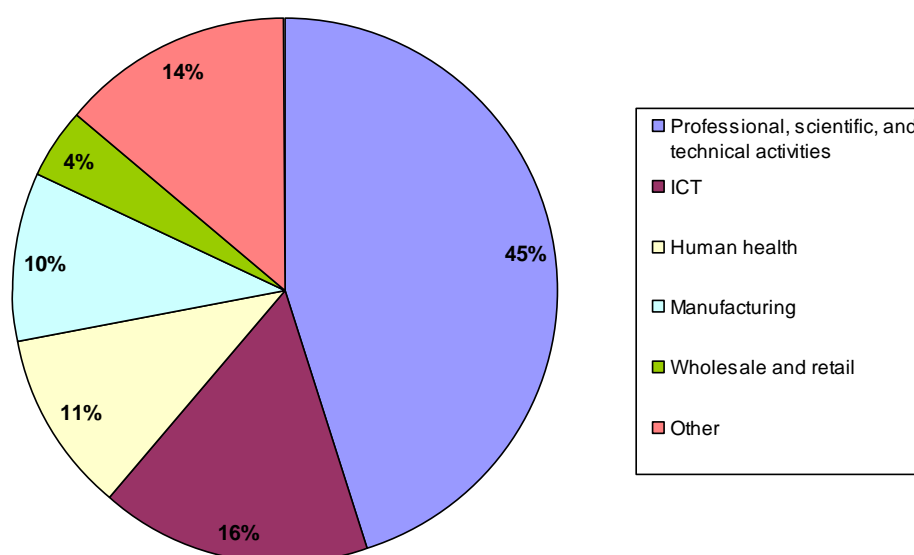
- 6.2.1 The graduates surveyed in the spin-outs exercise covered a greater range of cohorts than the other two surveys; with some two-thirds who had completed their courses in the periods 2005-2009 or 2010-2012, and under one in three that had graduated in the period prior to 2005. Just over half were in the 20-29 age range, with a quarter in

the 30–39 range and the rest older. Around six in 10 had a first degree and almost a quarter had higher degrees. Seven in 10 were male graduates. The main subject areas studied originally by the graduates that formed the spin-outs were business and administration (a fifth), creative arts and design (one in six), with the residue distributed across sciences, engineering and business and social studies.

### 6.3 The Types of Businesses

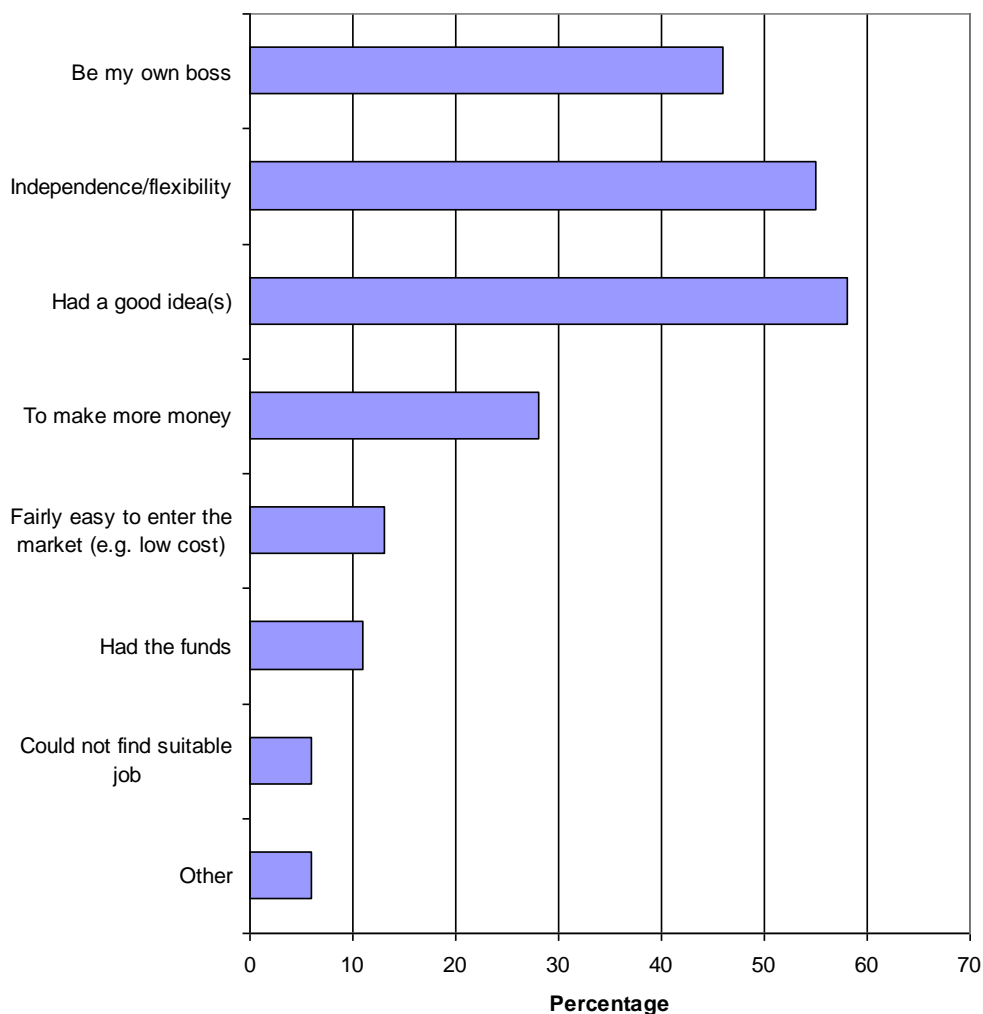
6.3.1 Some two thirds of businesses had started up from 2011 onwards. The key sectors were similar to those of other surveys, with professional, scientific and technical the single highest category (45%). The main products and services are given in Figure 6.1. Around half were in the high-tech/innovation sectors.

**Figure 6.1 Business Sectors**



Source: PACEC Survey of Spin-Outs 2014

6.3.2 The main reasons given for starting up were having a good business idea (60%), the independence and flexibility (55%), and the aim to be their own boss when they were involved in the start-up (46%). See Figure 6.2.

**Figure 6.2 Main reasons for starting a business**

Source: PACEC Survey of Spin-Outs 2014

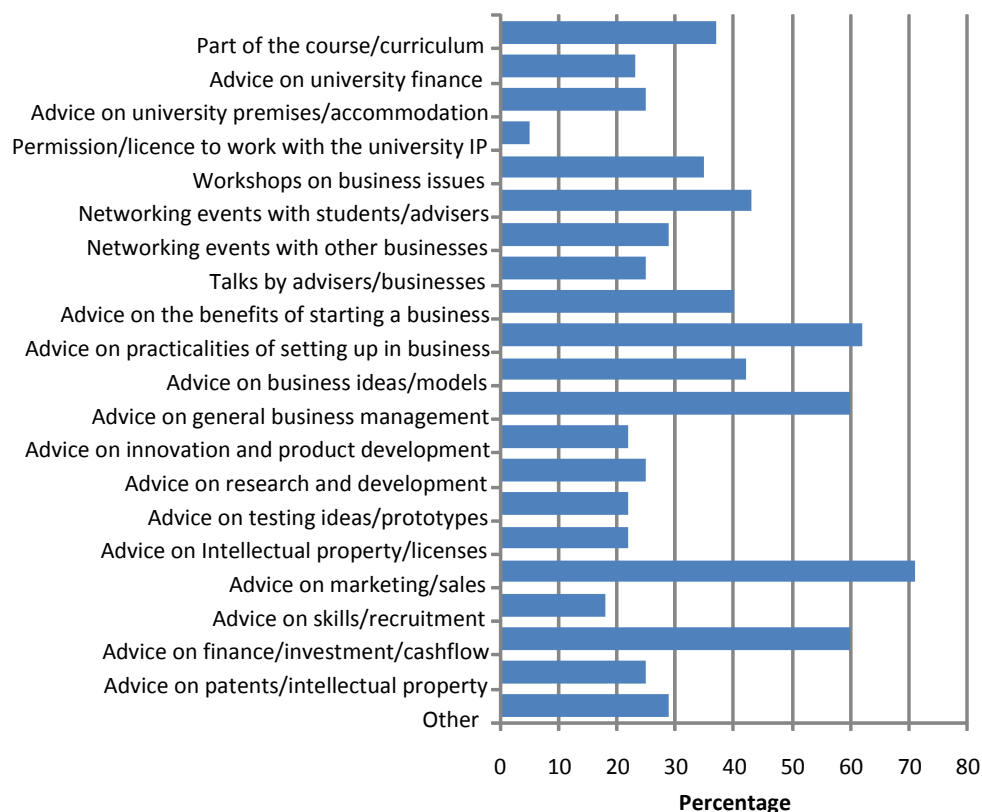
- 6.3.3 The number of employees (including the graduates themselves) was 3.6 on average. The turnover ranged from £0 (businesses not yet trading) to £5m per annum with a median turnover of just £15k. This is not surprising as many of the businesses were IP-based where the lead times can be relatively long. Some four in 10 businesses wanted to grow significantly and almost half moderately.
- 6.3.4 The survey sought to gauge the extent to which the spin-outs were innovative businesses. Since starting out a quarter had introduced new or significantly improved products or services to the market, and a fifth had introduced new or significantly improved processes. This compares with almost one in five who were classified as product innovators in the CIS survey and one in 10 who were process innovators, although these businesses, albeit SMEs, were generally larger than the alumni businesses. Almost one in five had used new technologies and a tenth had applied for or had registered a patent in the last two years. Some may have registered a patent before this, or were using IP that was not patented and/or under licence – not registered by the spin-out.

## 6.4 KE/Enterprise Support and Skills

6.4.1 As with the other surveys the research sought to explore the KE/enterprise support received by the spin-out owners and managers before they graduated and skills developed (noting that, for spin-outs, support was usually ongoing). 72% considered that they had received support, although there were likely to have been other discussions with the university prior to the spin-out. Almost all the spin-outs that had received support had improved their skills. After spinning-out they continued to liaise with and obtained advice from their universities who had an interest in helping to ensure growth. Hence their skills were likely to have been strengthened further.

6.4.2 The single largest category of support for those that received it was advice on marketing and sales (three quarters), followed by advice on the practicalities of setting up and growing businesses, business management and financial investment and cash flow issues. The businesses were usually working with the universities on IP and its potential exploitation so that this was less likely to be defined as separate support as such. Figure 6.3 gives the full range of support utilised.

**Figure 6.3 Types of KE enterprise support, and skills developed, for those that received it**



Source: PACEC Survey of Spin-Outs 2014

6.4.3 The most effective advice prior to spinning-out was said to be that provided for marketing/sales, financial support, finance and general business management. The effectiveness helps demonstrate that the skills capability of the businesses was

strengthened. These are arguably of significant value (in conjunction with the value arising from sales and turnover) which may be used to widen intra-preneurship in the economy and society at large.

## 6.5 The Contribution of Academics and Graduates

- 6.5.1 Part of the research seeks to examine the roles and influence of other graduates (not the founders) involved in the spin-outs and their contribution to them. A series of questions with the graduates who managed the spin-outs sought to provide insights into these issues. Qualitatively, they considered that potentially the post-graduates, because of their relative maturity, knowledge of business, and greater expertise, were likely to influence the direction and progress of the business, more so than the undergraduates. However, at a technical or operational level both could be equally effective depending on the precise tasks and expertise.
- 6.5.2 The research shows that almost one in three spin-out graduates started and ran their enterprises with other graduates, and one in five involved academics. The academics tended to act as advisers, and could be part-time employees, Directors, or small investors in a minority of cases. The respondents were asked if their businesses would have started anyway without the other graduates/academics. The responses covered the full range from 0% (i.e., would not have started at all) to 100% (i.e., would definitely have started), with a median answer of 50% and a mean of 46.7% (i.e., around a chance of one in two, or half).
- 6.5.3 The graduates who founded the businesses were also asked whether the spin-outs would have started if they had not been involved, i.e., other graduates or academics might have started them. Over half of the respondents (55%) thought the businesses would definitely not have started without their own involvement. Some 16% said it probably or possibly would not have started without them; 18% thought it might have started. The rest, 11%, were not sure. Hence the businesses were not likely to have started without the involvement of the founding graduate.

## 6.6 The Influence of the University on Spin-Outs

### *The Influence of KE/Enterprise Support*

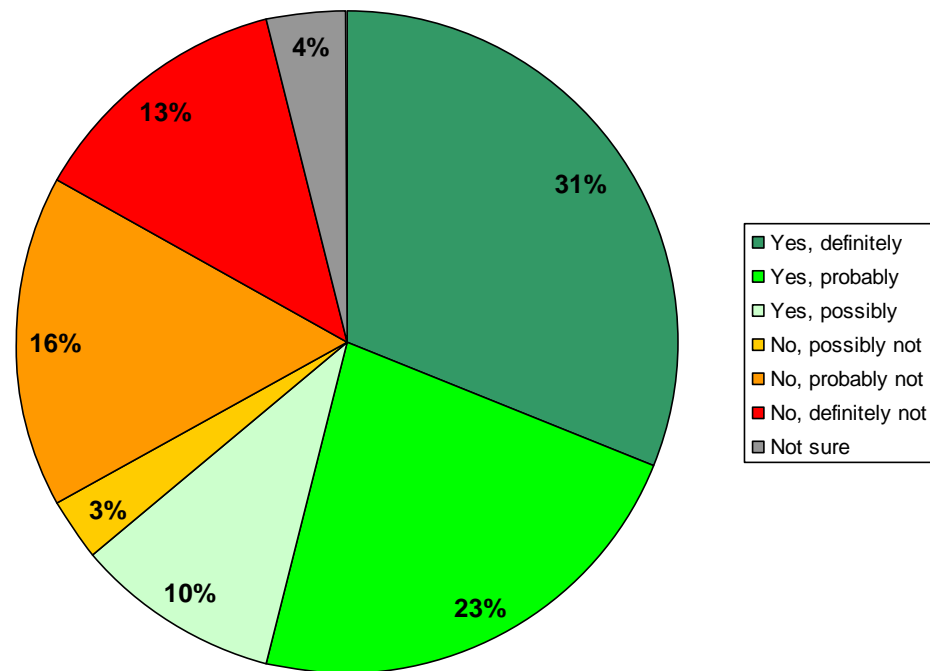
- 6.6.1 The survey asked questions about the influence of the university on the creation of the spin-out, as part of the overall research aim to measure value. For six out of ten respondents, the subject studied was an influence; with the KE/enterprise support received influencing a similar number.

### *The Likelihood of Starting Up if University had Not Been Attended*

- 6.6.2 On the issue of whether the graduates would have started the spin-out anyway if they had not attended the university, just over half thought they definitely or probably would have done, and conversely just under half were unsure or were unlikely to

have started the business anyway. It was noted that a business could have been started whether it took the form of a spin-out or not. See Figure 6.4.

**Figure 6.4 Likelihood of starting a business if the spin-out founders had not studied at the university**

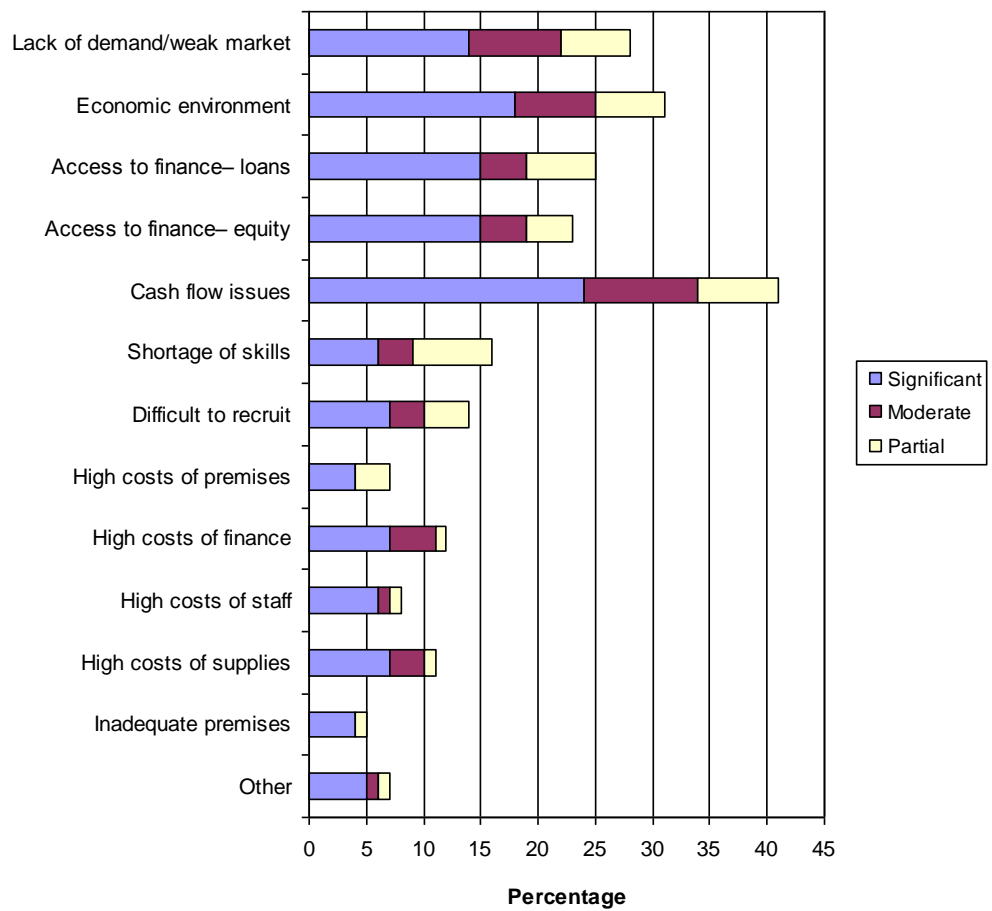


Source: PACEC Survey of Spin-Outs 2014

## 6.7 Business Constraints Faced

6.7.1 The graduates were asked if they faced any business constraints – six in 10 said they did, with details in Figure 6.5.

**Figure 6.5 Business Constraints For Those That Faced Them**



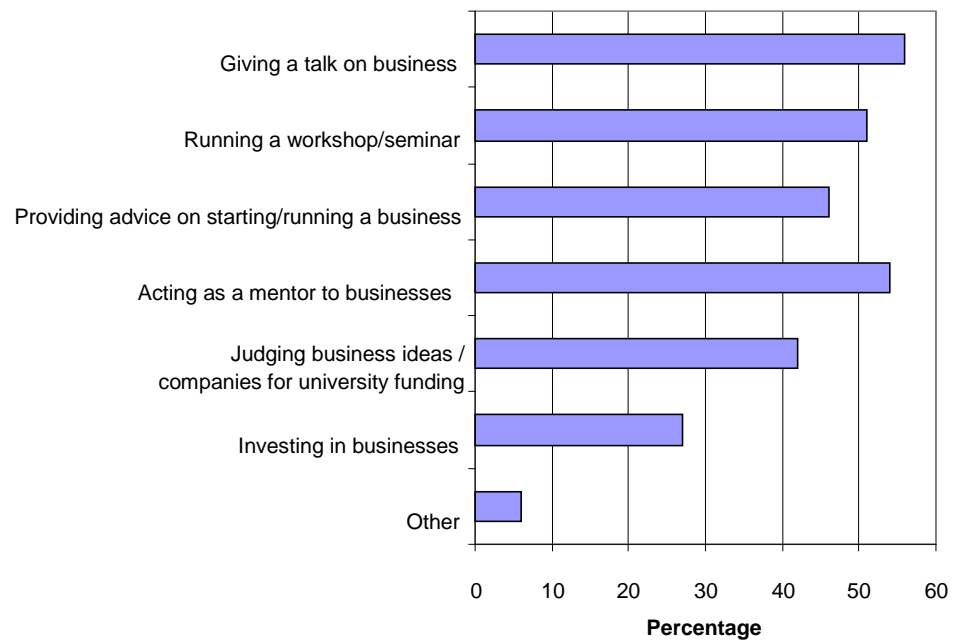
Source: PACEC Survey of Spin-Outs 2014

6.7.2 The most significant constraints were seen as cash flow and finance issues and the economic environment/weak market.

## 6.8 Sharing Business Experiences with the University

6.8.1 The survey respondents were asked whether they would share their business and entrepreneurial experiences with their universities. Around two thirds were happy to do so in formats described in Figure 6.6.



**Figure 6.6 Sharing Business Experiences with the University**

Source: PACEC Survey of Spin-Outs 2014

**Panel 6.1 Case Study. Spin-Out Entrepreneur.**

This spin-out was started in 2009 by a graduate as Managing Director (MD) with a Masters in Industrial Design, and registered as a business. The main product is a flexible building material, with an export market, and the company has grown to employ over 20 staff with a turnover of several million pounds. The aim is to continue the initial significant growth over the next three to five years. There were straightforward aims to successfully develop a good business idea, make more money than was possible through alternative employment, be independent, and “be my own boss and do things my own way”.

The enterprise support provided by the university comprised financial support following a competition on business ideas, advice on general business management, intellectual property issues, and the application and registering of patents which were very important to the company and reflected the aim to innovate significantly in the market with new products. The support was considered to be effective and a spur to the business concept, implementation, and subsequent growth.

Some £10k had been spent on university services for attending events, using equipment and incubation premises, and obtaining advice on intellectual property. This may have been while students were studying, but was more likely to be after the spin-outs were set up.

*“The IP issue was critical as we had a new transferable product that could be scaled up for the market.”* (Graduate who started up.)

The business was started and run with an academic input and some other graduates. It was highly unlikely that the business would have started without the MD. The university was influential to some extent in shaping the direction of travel but the business (or a business) may well have been set up if the MD had not studied at the university.

*“The other people and skills were important to link the design to the production side and implementation.”* (Graduate who started up.)

Reflecting the rapid growth, significant recruitment difficulties and skills shortages were faced and the general economic climate was a dampener on demand, albeit this was improving. It was also felt that SMEs needed greater representation with government to help make their case; universities should be given more freedom and encouraged to support businesses; and that health and safety and employment regulations should be more flexible to suit small firms.

The MD was willing to share entrepreneurship experiences with the university and students but only through acting directly as a mentor to businesses, not by attending events or giving talks.

## 7 The Annual Value of Start-Ups

- 7.1.1 A central aim of the research was to work towards a quantification of the annual value to the economy of graduate start-ups and the student contribution to university spin-outs i.e. in the sense that they started a business up. Value was defined as the sales/turnover of their businesses.
- 7.1.2 The estimates presented in this chapter are for the gross impacts in terms of turnover and employment in the year 2013 for businesses that started up over approximately three years<sup>5</sup>, and the proportion of these impacts which can reasonably be attributed to the activities of universities, allowing for deadweight and what may have occurred without the university - KE/enterprise support and the course of study - influence (the gross additional impact).
- 7.1.3 The estimates given in this chapter are informed by:
- The results of the additional surveys we undertook in Stage Two. The employment and sales/turnover figures used in this chapter, as well as the deadweight calculation (likelihood of starting up without attending the university) and the nature of businesses (e.g. registered with Companies House, self-employed/freelance), are taken from results of the surveys.
  - Data from the DLHE and HE-BCI surveys, set out in Chapter 2 (on students self-employment rates, the number of spin-outs and their employment and turnover).
- 7.1.4 To produce simple estimates of overall impact, we have taken the survey data shown above and scaled up the results from the surveys to give total figures for the English HE sector. We have split the data from students into three yearly cohorts (for students leaving in 2011, 2012, and 2013), and in each cohort have used the most recent average employment and annual turnover reported by students in two categories of business: “self-employed/freelance” and “registered (Companies House)” (as reported in our surveys). This was necessary to improve the accuracy of the impact estimates as our survey results show that the turnover and propensity to register a business with Companies House increase with time (i.e. the 2011 cohort have higher turnovers than the 2013 cohort).
- 7.1.5 We have assumed that the six-month DLHE results for 2011-12 on the share of students that are “self-employed” (5.4%) and those that are “setting up their own business” (0.7%) are the best available estimates of the share of students in the “self/employed/freelance” and “registered (Companies House)” categories in our survey for 2013. From this base, we have increased the proportion of students that have registered their businesses with Companies House in line with the survey results from the 2012 and 2011 cohorts. In this way, we have removed a source of bias in our survey results towards those that have started businesses, by ensuring broad compatibility with the results from the much more comprehensive DLHE

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<sup>5</sup> The businesses started by students who graduated in 2011, 2012, or 2013, or spin-outs started in those years.

survey, while retaining the information from our survey that students are more likely to form registered businesses as time goes on.

7.1.6 In summary:

- The survey results for students are split into three annual cohorts (2011-2013) and two categories (self-employed, registered businesses).
- The DLHE six-month results for self-employment and “starting a business” are applied to the 2013 cohort, as this cohort was surveyed roughly six months after graduation.
- Within these students (“self-employed” and “starting a business”), the share who are starting a business increases in line with the results from our survey from the 2012 and 2011 cohorts.
- Our survey statistics on turnover and employment for each cohort and business category are then applied to these population estimates to produce the national estimate of gross impact for 2013.

7.1.7 It is important to keep in mind that the study was intended to explore whether it was possible to devise a return on investment for HEFCE KE/HEIF funding that supported the student enterprise agenda. A number of innovative steps had to be taken to reach this point and hence the estimates provided are important as demonstrating an approach, and many caveats should be attached to their robustness.

## 7.2 Graduate Start-ups

7.2.1 The latest DLHE Survey reports that, six months after graduation (in the 2011/12 academic year), 5.4% of those graduates from universities in England who had found employment stated that they were self-employed or freelance, and 0.7% stated that they were starting up their own businesses. For this research, it has been assumed that the same proportions can be applied to students who graduated in 2013 and were surveyed in our survey in the first quarter of 2014.

7.2.2 The Alumni Survey indicated that businesses started by those who graduated in 2011 tended to have larger turnovers than those graduating more recently. The average turnover for businesses started by 2013 graduates was just £6k, whereas for businesses started in 2012 it was £29k and from those set up by 2011 graduates it was £56k. The overall mean was £35k, and the overall mean employment was 2.4.

7.2.3 Respondents to the surveys of alumni and DLHE respondents were asked to describe their main activity now (employed, self-employed, freelance, running a business etc), and those that had started a business were asked if their business activity could best be described as freelance/self-employed or registered companies. Registered businesses typically had a higher average turnover (£75k) than those administered on a freelance/self-employed basis (£12k).

7.2.4 The alumni and DLHE respondents were asked the likelihood of their starting a business if they had not studied at the university. The sum of those answering either “definitely” or “probably” was 46%.

7.2.5 The average turnover for the university spin-outs which started up between 2011 and 2013, in their last operating year, was £72k, and the average number of employees was 2.3. The spin-outs were also asked the likelihood of their starting a business if they hadn't studied at the university. The sum of those answering either "definitely" or "probably" was 65%.

7.2.6 The core annual value has been defined as the sales and turnover of the student start-ups and spin-outs for the year 2013 based on businesses that set up from 2011–2012 onwards. Using the results from the surveys of students and start-ups, and data on the total population from the DLHE and HE-BCI surveys, it has been estimated that the gross annual value was £2.7bn resulting in gross additional value of £1.4bn when account is taken of deadweight. (See Table 7.1.) The average turnover per business was c. £50k and the average remuneration per employee was c. £30k (for all employees, rather than FTEs).

**Table 7.1 Summary of Gross and Gross Additional Impacts of HEIs**

	Impact estimates
Total start-ups and spin-outs	55,400
Employment	89,600
Turnover	£2,700m
Deadweight (likelihood of starting business without studying at university)	46% (start-ups), 65% (spin-outs)
Gross additional start-ups and spin-outs	29,900
Gross additional employment	48,300
Gross additional turnover	£1,400m

Source: PACEC analysis of DLHE and HE-BCI

7.2.7 The above table shows estimates of impact for all start-ups and spin-outs in the year 2013. However, not all survey respondents received support during their time at an HEI, prior to starting a business. The survey results indicate that 29% of alumni that had started businesses, and 72% of those who had spun-out, had received support from their HEI. In order to calculate the value which is attributable to business support at HEIs (rather than the whole impact of attendance at the HEI), these percentages were applied to the impact calculations as set out above. The deadweight ratios for businesses that had received support were slightly lower; i.e. 37% of alumni that had received support stated that they would definitely or probably have started up if they had not gone to university, and 48% of those who had spun-out. The summary of impacts attributable to business support at university is shown below. The gross additional turnover attributable to HEI business support is estimated at £500m.

**Table 7.2 Summary of Gross Additional Impacts of Business Support at HEIs**

	Impact estimates
Total start-ups and spin-outs	55,400
Employment	89,600
Turnover	£2,700m
Attribution (those receiving business support at university)	29% (start-ups), 72% (spin-outs)
Deadweight (likelihood of starting business without studying at university)	37% (start-ups), 48% (spin-outs)
Gross additional start-ups and spin-outs	10,200
Gross additional employment	16,400
Gross additional turnover	£500m

Source: PACEC analysis of DLHE and HE-BCI

- 7.2.8 It should be emphasised that these impacts all occur as a result of the activities of businesses at a very early stage of development, many of which have not started making sales/turnover to any great extent – as they are still developing products and services. The turnover generated per employee is greatest for the oldest businesses (those in the 2011 cohort). However, turnover is still lower than that for businesses in the economy as a whole<sup>6</sup>. It seems likely that the contribution of the student start-ups to the economy will grow as the businesses mature and exploit their technology, products and services, especially as many are in the high tech and growth sectors. Hence the return in terms of turnover and income could potentially grow significantly over future years.
- 7.2.9 The high tech sectors mainly included engineering, electronics, and related activities, computing and IT (with, for example, website development and online payment systems), and design (such as graphics and film, often featuring computers).
- 7.2.10 It should be noted that the estimates are for businesses that started in a three-year period only with the figures shown for one year, 2013 (this is to enable a fit with the estimation of the impact of HEIF in the main 2009 evaluation by PACEC/CBR). The estimate does not include the sales and turnover for businesses started prior to this period and still trading in 2013. Otherwise the value would be substantially higher.
- 7.2.11 There are a range of reasons why the values calculated might be higher or lower and this should be taken into consideration in figures presented in the next chapter on additionality of HEIF.

<sup>6</sup> According to the provisional 2012 Annual Business Survey (Office for National Statistics), the average registered business in non-financial sectors had a turnover of £155k per employee. Businesses employing one to nine people had a turnover of £118k per employee.

## 8 Gross Additionality of HEFCE KE/HEIF Funding

- 8.1.1 A main aim of this research was to examine the annual monetised value of the student start-ups and spin-outs as a quantified output within the context of the balance sheet shown in the 2009 evaluation<sup>7</sup> of third stream/HEIF and produce comparable figures. The original 2009 third stream evaluation identified gross quantified outputs attributable to HEIF and other third stream funding of some £13.1bn over the period 2001-07 (at 2013 prices – we have updated the original estimates in the HEIF evaluation to reflect present-day costs). Allowing for potential deadweight (that is, what may have been generated without the third stream funding) but excluding displacement effects, the quantitative outputs over the same period are expressed within a range of £3.6bn to £5.4bn<sup>8</sup>. The quantifiable outputs included, for example, collaborative research, contract research, and courses.
- 8.1.2 The 2009 evaluation made a qualitative assessment of the likelihood of displacement (reflecting how the gross additional outputs could be substituted in particular by the private sector). It concluded that, while recognising that some of the KE activities could be substituted to some extent, the largest amounts of KE incomes are likely to have a low degree of substitutability. Hence the third stream funding is likely to have generated significant net additional outputs.
- 8.1.3 The main quantified output in this study is the annual value of student businesses and spin-outs, defined as the sales/turnover of businesses that have been generated by HE students/graduates through the support of their universities. This output is different from the third stream evaluation estimates which assessed the income for HEIs based on their KE activity. However, sales/turnover does represent income generated by entrepreneurs related to HEI activity, and hence is an appropriate measure of value.
- 8.1.4 This study indicates that the gross value of student start-ups and spin-outs, based on turnover for 2013, is in the order of £2.7bn for the cohort the research focussed on. The gross additional value was in the range of £500m to £1.4bn, depending upon the attribution of impact to business support at HEIs or HE participation as a whole, a wider KE definition – as set out in Chapter 7. If attributed to the HEIF funding of £431m between 2008-09 and 2010-12 (at 2013-14 prices), the estimates indicate that for every £1 of HEIF the gross additional turnover was £3.36 (if all HEI impacts are taken into account) or £1.14 (if only the impact of HEI business support is used).
- 8.1.5 Chapter 7 gave reasons why gross additional value may be in excess of or lower than £1.4bn, which would lead to a higher/lower return on HEIF. We also stressed in the introduction that this is a fairly narrow view of value, and leaves aside the potentially larger and longer term value of the individual entrepreneurs and their business skills and practices developed, and their impacts throughout their career and life.

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<sup>7</sup> HEFCE. Evaluation of the Effectiveness and Role of HEFCE/OSI Third Stream Funding. 2009

<sup>8</sup> The gross additionality is estimated from a Quotec survey. Quotec (2007) Higher Education Innovation Fund Impact Survey (Study C), a report for HEFCE.

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## 9 Conclusions

9.1.1 This chapter focusses on the main developments from the study which relate to the methods for achieving improved information on the contributions of students to enterprise, including methods to attribute these to specific interventions (such as HEIF) and hence to present information on value for public investment. The research has piloted a suite of optional methodologies which could potentially be used in the future, and have been used in this study to make the estimates of annual value here. Additionally, we draw attention to some findings that may be of current policy interest, but stress that these are highly tentative and should be taken as pointers towards areas for further investigation.

### 9.2 Key Insights Toward Future Research Methods

9.2.1 The most important factor to improve future results in this area is to generate increased response rates from graduates so as to achieve a more reliable evidence base that can be scrutinised in more detail on various important dimensions. This work suggests that the DLHE approach is the weaker, and hence further attention might be given to developing the Alumni and Spin-out Surveys. (It is important to note that start-ups and spin-outs have different characteristics and further consideration is needed of differences, and any future work would need to consider the appropriateness of combining the two, dependent on the research aims being explored.)

9.2.2 The results of the research allowed the aims of the project to be met to some extent. The databases allowed the nature of start-ups and spin-outs to be characterised and the annual value to be estimated. A pragmatic approach was taken and the research was not able to consider potential biases in the results, especially in the Alumni and DLHE Follow-Up Surveys resulting from the e-mail contact information and respondent selection bias. However, the characteristics of graduates in the DLHE Survey (for those that were freelance/self-employed) broadly matched those in the follow-up survey for the study. These caveats and qualifications need to be borne in mind.

9.2.3 Within this context some broad lessons have been learnt that may have potential implications for any future research which has the same, or similar, aims. The suggestions relate to the research carried out for this study and how the future DLHE survey and HE-BCI returns may be adjusted. The main lessons are:–

- a The Alumni Survey. This survey resulted in the highest number of responses, primarily as it covered a larger population than the other two surveys (DLHE and spin-outs), albeit not all alumni had started a business. It allowed a greater number of business start-ups to be contacted than the DLHE Survey as alumni may have started a business after their DLHE Survey return. The higher number of responses improves confidence in the information and the prospects for analysis, for example the extent to which data can be disaggregated and cross tabulations and grossing up of sample based estimates can be calculated. The response rate is difficult to estimate, taking account of the number of alumni and the share of those with reliable e-



mail addresses who could be alerted by the universities to the survey. The estimate is also complicated by the alert methods used, in that some universities contacted alumni directly while others used social media such as Facebook and LinkedIn.

The main ways of improving the Alumni Survey would be to take a more systematic approach comprising early engagement with the universities to set the surveys/alert up in a similar way. Approaching all universities and/or selecting a sample reflecting the likely higher levels of start-ups and spin-outs from the DLHE and HE-BCI Surveys, while including those with smaller numbers, and other relevant criteria (for example, relative size, location, disciplines studied, and KE expenditure, among others). Further work could also be carried out on the characteristics of alumni, to help ensure representativeness. The surveys and the alert methods could be implemented at the same time, along with a programme of reminders/requests for alumni to complete questionnaires. Monitoring of the returns can give an indication of the emphasis to be placed on reminders and the potential targeting of specific sub-groups who may be under-represented. In terms of the analysis this approach is likely to reduce, but not eliminate, the need for ex post weighting and adjustment of the responses to reflect the known population of universities and graduates.

In parallel with these points, the universities could provide additional information on the survey implementation methods. For example, the timing and alumni population contacted, with reminders, and complete a qualitative questionnaire to cover views on some of the issues in the Alumni Survey as a way of checking information.

It is noted that from discussions with universities there are a range of other benefits on focussing on alumni in terms of gaining better links and improving feedback loops of entrepreneurial mentoring and development. There is then potential wider value to the HE sector beyond the value to national bodies such as HEFCE from developing alumni surveying further.

- b The DLHE Follow-up Survey. This leavers' survey resulted in a relatively small number of responses compared to the Alumni Survey. This is in part a reflection of the smaller population contacted with actual or reliable e-mail addresses. The response rate, based on the universities involved and the leavers who were freelance/self-employed or starting a business in the 2011-12 cohort, was likely to be around 12.5%. The majority of HEIs used a similar alert process and reminders with the leavers. One of the issues in terms of estimating value was that the leavers' businesses were still relatively young which limited their growth and sales/turnover p. a.

The DLHE follow-up survey does not pick up graduates who may have started a business but did not identify this route in the original DLHE survey.

The main ways of improving the Follow-Up Survey would be to seek early engagement with universities, especially those known to have the higher numbers of leavers who were either self-employed/freelance or starting in business, as well as including some HEIs with smaller numbers, and ensuring that e-mail addresses were up to date. Further work could also be carried out on the characteristics of leavers who started up, to help ensure representativeness. A longer time period could also be allowed before the survey is carried out: say, two years after leaving.

- c The Spin-Out Survey. As with the DLHE follow-up survey, the absolute number of responses was relatively small compared to the Alumni Survey. This is a feature of the small population of universities who have spin-outs and the consequent number of spin-outs nationally. A response rate of 35% is estimated given the number of contacts provided by the universities. There was a constraint, in that some universities were not able to release contact information for individual businesses without the prior consent of spin-out owners/managers.

The main ways that the survey could be improved would be to liaise with the universities earlier on in the research process with a focus on those who are likely to have the higher numbers of spin-outs based on the HE-BCI return, while including some of the HEIs with fewer, and maximise the number of contacts available with telephone numbers and e-mail addresses. Further details could also be obtained on the characteristics of entrepreneurs and the businesses. The survey could be organised as an online and telephone survey to ensure under-response is addressed. The universities could make it clear to the spin-outs that they are carrying out the survey (with the use of sub-contractors), to enable the data protection issues to be addressed, to help ensure the spin-outs participated. The survey could also be designed so that it provided relevant information for the HE-BCI return that universities make. Greater liaison with the universities would also improve the outputs, including comparisons with the data on the HE-BCI returns and estimates of all sources of income. For example, IP licensing, the disposal of equity and dividends from shares.

- 9.2.4 For all three approaches above, steps could be taken at the design stage to ensure de-duplication and prevent double counting of individual graduate responses across the individual surveys.
- 9.2.5 Of the three options above the combination of the Alumni and Spin-out Surveys would probably provide the most useful and reliable results for further work. The process and the results would be enhanced with the suggestions above. The prospect of improving the evidence and the number of responses is likely to increase the participation of the HEIs. The universities were also interested in the opportunity to benchmark their activities and their outputs/outcomes against both all universities and ones of “similar” type to themselves.
- 9.2.6 The suggestions above focus on new methods of providing information based on the pilot approach in this study. Some suggestions are also put forward for adapting the existing main approaches used that have featured in this study, namely the DLHE and the HE-BCI Surveys.
- a The Annual DLHE Survey. The primary option here is to include a section in the annual survey which allows additional information to be collected on the nature of businesses set up (covering graduates who are freelance/self-employed and starting a business) and the value of start-ups (for example, sales and turnover). The overall length of the questionnaire would need to be taken into account, together with the fact that the businesses are likely to be very young and still at a pilot stage which limits the extent they can be characterised and value estimated. The data on value are likely to be relatively small, and the process of design and testing the questionnaire is likely to be relatively long. All of this creates some uncertainty as to whether new questions could be introduced.
  - b The Longitudinal DLHE Survey. The suggestions are similar to those above for the DLHE Annual Survey, that is, a new section in the questionnaire to gather additional information on start-ups. The points on design for the annual survey still apply, although there would be more time until the next longitudinal survey to deal with these. However, the advantages are that the businesses are likely to be more mature, making it easier to have more reliable data on the characteristics of businesses and their value as sales and turnover.

- c The HE-BCI Survey. The suggestions made above on the Spin-outs Survey are relevant to the HE-BCI return and cover all universities rather than just those with the higher number of spin-outs.

9.2.7 For the existing approaches, steps could be taken to ensure the results could be de-duplicated to prevent double counting of individual graduate responses.

9.2.8 At the analysis stage for the methods in this research and existing methods appropriate weighting of the results and modelling will be required to characterise the graduates and businesses and make the estimates of value.

### 9.3 Some Key Issues Arising from the Results of the Research

#### *The Influence of Subjects/Disciplines Studied*

9.3.1 An interesting and potentially unexpected insight from the research was the extent to which subjects studied influenced the nature of start-ups. This pattern was reflected in all three surveys. This indicates a relatively strong link between subjects studied and the types of businesses set up, and is potentially an important area that should be examined further in policy on enterprise education.

9.3.2 There also seemed some skewing, with students in some subjects, notably art/design more likely to start-up. The main reasons given by graduates in disciplines producing more start-ups (maths, computing, art/design, graphics, and media) given for starting in business, compared to students from other disciplines, were that the market entry was relatively low cost, capital expenditure was minimal, and the market for products and services was growing. It is important then to reflect that it is easier to start up at an early stage in your career in some subjects over others, and that therefore some forms of entrepreneurship (such as in sciences) may only become expressed longer term, probably after some period of employment.

9.3.3 There may also be significant differences in the value – sales/turnover - created by start-ups in different disciplines, which was not examined in detail in this study (notably self-employment/freelancers seem likely to generate lower value by sales/turnover than registered businesses and are more represented in some subjects over others).

#### *KE/Enterprise Support from Universities*

9.3.4 The research also provides some insights into whether universities offer sufficient enterprise support, and whether they could do more. Some 25% of alumni and 72% of leavers who started a business, and almost all spin-outs, claimed that they had received some form of enterprise support from their universities comprising the course content/curriculum and direct support. Among the alumni, leavers and spin-outs who did use some support, almost all said that some part of the support was effective. Enterprise support areas considered the most effective included the course curriculum, workshops, talks by advisers and networking events and advice on

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marketing/sales, finance, business management and business models for the spin-outs.

- 9.3.5 As the surveys for this study focussed on those who started a business, or intended to for the DLHE survey, it is not possible to say whether those who did not start a business sought support and could not obtain it. As the support is generally available to all students, those who did not start a business (as with those who did) could have accessed the support if they had required it. The survey results indicate that some 13% who did not start a business had used support services.
- 9.3.6 Whether the universities provided the right type of support is probably borne out by the fact that most graduates who had support thought that it was effective and met their needs.
- 9.3.7 A further issue is whether enterprise support could be made more effective by considering the evidence in this study about later business constraints. Discussions with universities suggest that the support available to students is customised to their needs at a time while they are still studying and may not have made up their minds about their destinations after graduating. Hence much of it focuses on general business issues, business ideas, the practicalities of setting up a business, business models, products/services, and marketing and sales. The support can be part of the course curriculum and/or offered separately.
- 9.3.8 The research showed that once leavers or graduates have set up in business, and while the businesses are relatively young, the profile of constraints and barriers tends to change and focus more on access to finance, recruitment and skills issues, and the cost of staff and premises. These costs are important to the operation and prospects of the businesses as they can become “fixed” costs unless flexibility can be built in. Some universities recognise this by providing relatively low-cost workspace and incubation units with flexible terms. Given these findings, the profile of university support could address further the constraints that the businesses face in their early stages when important operational decisions need to be made - that is finance, cash flow management, and issues on premises and hiring staff with flexible options.

### *KE/HEIF Funding and Support for Enterprise*

- 9.3.9 Finally, the research gives some findings relevant to the issue of the extent to which HEFCE KE/HEIF funding helps to stimulate start-ups and grow businesses. Previous research by PACEC on KE/HEIF<sup>9</sup> shows that the funding goes to support a range of KE, innovation and enterprise services. The mechanisms to strengthen student employability and enterprise include support for student enterprise, the provision of enterprise and entrepreneurship training and internships and placements, along with business plan competitions. Support for innovation includes networks and advice, for

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<sup>9</sup> HEFCE. PACEC. Report on strengthening the contribution of English HE institutions to the innovation system. KE and HEIF funding. April 2012.

HEFCE. PACEC report on the evaluation and role of HEFCE/OSI third stream funding, 2008.

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example on new products and services and improved technological capability. HEIF funding leverages in other sources such as EU structural funds. Interviews with universities participating in the surveys for this work confirmed that HEIF was used to support the student enterprise agenda through workshops on business issues, networking events, business advice and, for some universities, workspace and premises. The spin-outs benefitted in many cases from finance, use of IP, and regular advice, funded by HEIF.

- 9.3.10 While HEIF was influential in encouraging business start-ups, the research shows that universities with higher levels of HEIF funding did not stimulate the greater numbers of start-ups. Both the DLHE and the HE-BCI Surveys show that HEIs with lower levels of HEIF funding produce the higher absolute numbers of graduate start-ups and the higher ratios based on start-ups per total student numbers. These tend to be the universities that specialise in art and design.
- 9.3.11 The survey results for alumni show that art and design were the main courses studied for graduates (especially in the universities with lower levels of HEIF funding) and they started businesses in these sectors. HEIs with the higher levels of HEIF did stimulate start-ups, but in smaller numbers, and more often in professional scientific and technical services (such as, engineering) and in IT/Computing.
- 9.3.12 Universities with lower levels of HEIF tended to provide more KE/enterprise support to students than those with more HEIF, though KE/enterprise support includes contributions in the curriculum which will not be supported by HEIF. Alumni from HEIs with low levels of HEIF were also more likely to be influenced by their courses than others.
- 9.3.13 One of the reasons given by alumni/leavers for higher start-ups in art and design was the lower costs of entry. Generally, these were more likely to be freelance/self-employed over registered business, with consequent lower sales/turnover.
- 9.3.14 The findings suggest that further exploration is needed of characteristics of entrepreneurship in different disciplines, the different effective sources of KE/enterprise support (within the curriculum and extra-curricular) and the likely value created from enterprise (short and long-term), with a view to determining appropriate funding policies. This includes consideration of whether HEIF is allocated most appropriately to secure highest impacts, including in relation to student enterprise.

## Appendix A The Stage One Research

### A1 Introduction

A1.1 As part of the Stage One research to explore the options for gaining additional information on the graduate start-ups and the spin-outs, a review was undertaken of existing methods of collecting data for the DLHE survey. As well as a desk study, there were interviews with HEFCE and HESA staff as well as a group of universities on the methods deployed and how data were used.

### A2 How the DLHE Survey is Implemented

A2.1 This appendix examines the way in which the DLHE Survey is implemented and what the options are for developing the methodology and outputs to help meet the aims of the study. For example, the incidence of business start-ups, their duration, and the tracking of performance including turnover. This appendix summarises how the DLHE Survey(s) are implemented. Based on the interviews with the case study universities, it outlines their role in the survey, the methods they use, the coverage and quality of data, their use of the survey results, additional information required, and the options for developing the methodology. This appendix covers both the DLHE Annual and Longitudinal Surveys.

A2.2 The DLHE Annual Survey is carried out in two phases after the end of each academic year by each university based on guidance issued to them by HESA. The main features are:–

- a The survey is designed by HESA, in conjunction with the Department for Business, Innovation & Skills (BIS), HEFCE, other agencies, and the universities. Primarily this covers the sample size and the questionnaire itself.
- b The survey questionnaire is distributed by universities to all leavers with a requirement to obtain an 80% response rate for all UK students on the core questions.
- c In the 2011-12 survey (carried out in January 2013 for the first time) there was a question on whether students were “starting up own business” and “self employed/freelance” (Q5 for both), together with other questions for potential cross-tabs to enrich the information. For example, full/part-time work, details of the company (e.g. name and potential sector), annual salary (with a possible link to turnover), place of work, whether qualifications were needed, reasons for employment and how it was found (e.g. the university’s role), and how well the experience in HE prepared the student for self-employment/freelance work and starting the business.
- d The results of the survey that are received by HESA from each university are processed and checked by HESA and published. The 2011-12 survey results were published at the end of July 2013.

The headline results showed there were 1,390 business start-ups (0.6% of employment) for 2011-12 leavers (UK) and 10,000 self employed/freelance graduates (4.6% of employment).

- A2.3 The DLHE Longitudinal Survey, which is conducted every two years (as a three-year follow-up), is carried out by HESA using the IFF survey research group. Again the survey is designed by HESA. The other main features are:–
- a The survey questionnaire is distributed to a stratified sample of 25% of students and a 40% response rate is achieved on the core questions. The contacts are provided by all the universities.
  - b In the 2008-09 survey (carried out in May 2013) on what students were doing on 26/11/12, there were questions on “self employed/freelance” and “setting up and managing your own business” (Q12) together with questions for possible cross-tabs as in the Annual Survey above.
  - c The results of the survey are received by HESA and subsequently published. The 2008-09 follow-up is due out at the end of August 2013.
- A2.4 The next Longitudinal Survey is likely to be carried out for the 2010-11 leavers’ cohort (for November 2014) in March 2015 (for publication in August).

### A3 The Role of the Universities

- A3.1 The DLHE Annual Survey is carried out by the universities (in two waves). The role was to complete the survey and make the return to HESA. Tasks for the Annual Survey involved commenting on the survey design stage (which was considered to be a long process), accessing the student records database, issuing the questionnaires either by post or e-mail alerts (for students to use the university website), follow-up/reminders (often by telephone using a team recruited to carry out this task), preparing the database on returns made by students, with checking/validation, and submission of the results to HESA (with some follow-up liaison).
- A3.2 One university sub-contracted the survey to a specialist group. It is estimated that 24–30 universities probably do this nationally.

### A4 Coverage and Quality of the Data

- A4.1 This was considered to be pretty good as universities need to ensure an 80% response rate on the core questions. This was also the case for the questions on students self-employed/freelance and starting up in business. The universities were not aware of any non-response issues for example, by gender, subject studied/disciplines, location, or the likely self-employed/freelance/business start-up activities that students may carry out. However, it was considered that the numbers of the latter were likely to be very small which created some uncertainty over reliability. The universities did not carry out any cross-checking or referral to the HE-BCI Survey return, for example, on student start-ups.
- A4.2 On the Longitudinal Survey, the universities considered that, in spite of the smaller sample size, the quality of the data was acceptable. Some queried why the Annual Survey required by HESA was so large when a smaller survey would satisfy requirements, for example, related to the levels of statistical confidence needed for

the main results. Some universities had developed databases for ongoing alumni contact but they tended not to be used for surveys.

## A5 Use of the Surveys by Universities

A5.1 Careers and Student Services made most use of the research in each university, primarily to:–

- a Benchmark the university performance against other HEIs, for example, on how successful students are at gaining employment after leaving and setting up in business.
- b Helping to improve the skills of students to win jobs (e.g. job search skills, making applications for jobs, and interview techniques).
- c Curriculum development, to some extent, to help improve the employability of students, related to some specific subject areas.
- d Liaison with employers to help demonstrate the skills and employability of students.
- e Promotion of the universities to encourage applicants for places. This includes presentation on websites, publications and annual reports, and promotional material for industry and employers.

A5.2 The information on self-employment can be used to give an indication of the number of students and start-ups that could benefit from university business support services and the development of entrepreneurship skills amongst students. A further use is providing data to assist with university bids for funding (e.g. via ERDF funds) to run entrepreneurship and start-up programmes.

## A6 Additional Information Required by Universities

A6.1 The discussions with universities also covered whether they would like to have additional information on graduates starting up in business to help improve their use of the information shown above. For example, information on the size of start-ups over time (by employment, turnover, exports, and profitability), IP and patents, and innovation activity.

A6.2 By and large, few suggestions were made for additional information. The point was made that in the last survey (2011-12) the business start-up issues and questions had changed to ask whether students were “starting a business” as well as whether they were self-employed/freelance. It was considered that the new question was partly ambiguous as it could be interpreted by students as thinking about starting a business, in the process of starting a business, or had started a business.

## A7 Options to Develop the Methodology

A7.1 Several options were discussed to explore possibilities for improving the information on student start-ups and obtaining reliable information that would inform this study. For example, to ascertain whether or not students had actually started up in business,



combined with basic information on the products/services (and sector), the size of the business (e.g. by annual turnover and employment), funding sources used, location, innovation activity, business support required, and the influence of the university on the business starts. The discussion focussed on methods of research and carrying out surveys rather than specific questions and details of design. By and large the universities considered there were several options which could be feasible subject to design issues, compatibility with the existing approach, length of the questionnaire, and costs. The options and outline views were:–

- a DLHE Annual Survey. Refinement of existing questions and the inclusion of new ones, and/or a separate section on business start-ups. Interviewees thought this could be feasible, but were mindful that the design of the questionnaire took some time to complete and if new questions were involved other existing questions would probably need to be deleted or shortened to retain what was seen as a workable length. Those who used postal survey methods were keen to ensure a maximum of two pages of A4 (four sides of A4).

There was a view that the results of the last survey should be examined first. It may not be possible to amend the questionnaire for a couple of years, given the process required, i.e. for the 2015–16 Annual Survey.

- b A Follow-up Survey on the Annual Survey. An option to be considered is a follow-up survey with the graduates who said they were starting a business to obtain the additional information on continued activity, employees, turnover, etc. This could take place a year or so after the main survey with all the students (subject to data protection issues) and be carried out by telephone or as an e-mail web survey by the universities. The Annual Survey form asks graduates if they would be willing to take part in a follow-up survey, which would give an indication of the potential sample size.
- c Longitudinal DLHE. Similar options to the Annual Survey, i.e. the refinement of existing questions and/or a new section on start-ups. Interviewees made similar points to the design issues above. The approach was potentially feasible for the 2015 Longitudinal Survey to explore the outcomes and characteristics of businesses that had started up then or since. There was more time to design the questions.
- d A Follow-up Survey on the Longitudinal Survey. An option to be considered, as with the Annual Survey, is a follow-up survey, based initially on the 2012 survey (based on the 2008-09 cohort), with the graduates who said they were starting a business to obtain the additional information on continued activity, employees, turnover, etc. This could take place a year or so after the main survey with all the students (subject to data protection issues) and be carried out by telephone or as an e-mail web survey by the universities.
- e Alumni Survey. An option was an alumni survey which could be used to identify and track start-ups over time where universities had developed a database of contacts and maintained this. A questionnaire could be included with newsletters and other information sent out.

A7.2 Any new survey would need to be compatible with other student leaver surveys undertaken by individual universities, for example, on teaching issues (which have been carried out at a similar time to DLHE), and surveys with students taking specific subjects (e.g. the University NHS Survey with students on healthcare courses).

## A8 DLHE Links with the HEBCIS Return

A8.1 There were very few links between university staff responsible for the DLHE Survey and the HEBCIS (HE-BCI Survey) returns. There was some awareness of the HEBCIS return but virtually no use was made of it by HESA staff.

## A9 The HEBCIS Return

A9.1 This appendix also examines the way in which the HEBCIS return from the universities is administered and, as with the DLHE Survey, options are considered on how the information may be improved to meet the requirements of the study. The chapter summarises the HEBCIS return, the role of the universities and methods they use, the coverage and quality of information, the use the universities make of the results, and additional information that the universities may require. It concludes with the options for improving the information.

## A10 How the HE-BCI Survey is Implemented

A10.1 The main features of the annual return are as follows:–

- a The HE-BCI Survey, now in its 13th year, aims to be the key source of information on KE between the HEIs and the wider world on business and the community. It usually includes 163 publicly funded universities.
- b The survey is designed by HEFCE/HESA in conjunction with BIS and the universities.
- c The universities complete the survey response for HESA/HEFCE based on detailed guidance for Parts A and B. The information on spin-outs and start-ups forms part of Table 4 in Part B which deals with IP.
- d Spin-outs are companies where the university has some ownership in the IP and there may be some HEI investment (either as equity or a loan or convertible loan), or there is no ownership but some form of agreement to use the university's IP or technology, but the university has released ownership. Staff start-ups are set up by active (or recent) HEI staff but not based on university IP. The graduate start-ups include all new businesses started by graduates (in the last two years) regardless of where the IP resides. Undergraduate start-ups are only included where there has been some HEI formal business enterprise support.

A10.2 The results of the 2011-12 survey show that there were 170 spin-outs with some HEI ownership, 21 spin-outs which were not HEI owned, 87 staff start-ups and 2,726 graduate start-ups.

A10.3 There were 1,048 spin-outs with some university ownership that were still active, 232 spin-outs with no HEI ownership, 372 staff start-ups and 7,036 graduate start-ups.

## A11 The Patterns for Universities Interviewed

A11.1 There was considerable variation between the universities interviewed. Royal College of Art, Oxford, and UCL had relatively high numbers of both student start-ups

and spin-outs (with university ownership) but very few in the other categories, while Central Lancashire and Leeds Metropolitan had higher numbers of student start-ups but very few in the other categories.

A11.2 In terms of spin-outs (with some university ownership) RCA had the highest number. In recent years (14). Innovation RCA as a relatively new initiative provides workspace and incubation facilities with advice/mentoring and loans (with convertible equity options) to graduate start-ups. Central Lancashire had a high number of student start-ups as a relatively large university and primarily in the web-based, media, photographic, film, and programming/software sectors where start-up costs were relatively low. There were both sole traders and registered businesses. The students and graduates had workspace and office facilities available to them combined with business advice and mentoring programmes. RCA had a similarly high number of start-ups across the range of art and creative sectors which included sole traders and registered businesses.

A11.3 The results of the HEBCIS return for the universities interviewed are shown below for 2011-12.

**Table A11.1 The HEBCIS Return for Universities Interviewed (2011-12)**

	Spin-outs		Start-ups	
	University ownership	No university ownership	Staff	Student
Imperial	4	0	0	0
UCL	4	1	0	29
Royal College of Art	14	0	0	150
Oxford	4	0	0	36
Cambridge	2	0	0	0
UWE	0	0	2	0
Central Lancashire	1	0	1	191
Hull	0	0	0	8
Leeds Metropolitan	1	0	0	13

Source: PACEC analysis of HEBCIS;

## A12 The Role of the Universities

A12.1 The departments or teams who complete the HEBCIS returns are usually concerned with university business growth and development, university investments, business start-ups and knowledge exchange, and university finance and administration. These may be in one department or several. On average two to four staff may be involved in making the return in each university.

A12.2 No other methods were used to the ones below. Some universities had set up alumni databases for the distribution of newsletters and/or seeking sponsorship etc., but they generally were not used for surveys.

A12.3 Tasks involved vary depending on spin-outs or start-ups:-

- a Spin-outs (with university ownership). The combination of sources are annual financial statements and accounts of spin-out firms, management accounts, information from board members (university representatives) and direct contact with the businesses (comprising interviews and e-mail sometimes linked to proformas or questionnaires).

These spin-outs at some universities often consist of graduates and do not form part of (d) below.

The universities usually track the business changes and set up a system or database. Some are setting up a Client Relationship Management (CRM) system.

- b Spin-outs (without university ownership). The combination of sources usually involves liaison and access to financial statements, direct contact by telephone or e-mail with businesses who have an agreement to use the technology or university IP, or with others who keep in touch with the university. Other sources include the grapevine and general feedback from university and business contacts, company websites, Companies House for financial statements (often abbreviated accounts, as the spin-outs are small) and commercial databases (e.g. FAME and Dun and Bradstreet) where the name of the business is known.

As above, some of these spin-outs can comprise graduates.

- c Staff start-ups. It was considered that staff usually inform the university if they are starting up in business when they leave (or continue to work at the university), although their status may be as a freelance or consultant without incorporation as a business. Staff completing the HEBCIS return obtain the information by contact with the departments and their direct contact with the staff (usually by telephone). Some information is picked up on the grapevine. Where information is not available on whether the businesses are still running use is made of financial statements at Companies House, FAME, and Dun and Bradstreet.

This approach applies to the staff that carry out consultancy services, which is permitted by the universities.

However, HESA staff are not able to carry out a trawl of the whole university so there is likely to be an underestimate of staff start-ups estimated to be 20% or so.

- d Student start-ups. Two main approaches were discussed. Firstly, information obtained from university enterprise programmes designed to encourage and support start-ups. Secondly, liaison with staff where enterprise is featured in courses and part of the curriculum.

Where start-up programmes are run they can range from significant support involving one-to-one advice over time, the provision of incubation space, and finance (sometimes with enterprise competitions) to business ideas “events” including the development of product ideas and networking. Where support is given usually student/start-up records are maintained which track the start-up and subsequent employment, turnover, and investment changes, along with other information. To complete records there is e-mail and telephone liaison with businesses and discussions with other businesses in the “network” and staff running management courses with a strong enterprise element. The HEBCIS submission can culminate in a “heads down” market intelligence brainstorm. Some Management Information System (MIS) and CRM systems are being developed.

The second approach to making estimates for the returns is less systematic and primarily involves liaison with staff running courses with an enterprise element, follow-up with students on who has started a business, and direct

liaison with those students known to have started up. Records are maintained but considerable estimation is required especially where tracking whether businesses are still active and what the employment, turnover, and investment is.

Staff thought that the estimate could be 50% of the true picture.

**Table A12.1 Summary of Sources used for the HEB CIS Returns**

	Sources						
	Financial Statements /Accounts	Direct Contact	Regular Tracking	Programme Monitoring	Commercial Databases	Web Sites	Informal Networks/ Grapevine
Spin-offs (UO)	✓✓	✓✓	✓✓				
Spin-offs (NUO)	✓	✓✓	✓		✓✓	✓✓	
Staff starts		✓✓		✓	✓✓	✓✓	✓
Student starts		✓	✓✓	✓✓	✓	✓	✓

✓✓ : Main method    ✓ : Other methods  
Source: Interviews with Universities

## A13 Coverage and Quality of the Data

### A13.1 The main observations were:–

- a Spin-outs (with university ownership). This data was considered to be reliable as the universities have a financial interest in the start-ups and have developed systems to store and track information.

It was considered that there were between two and 10 spin-outs over two years.

- b Spin-outs (without university ownership). This information was considered to be reasonably reliable where university IP was being used and contact was maintained especially with staff and graduates. Some estimates of the financial data had to be made on turnover and investment. However, there was a view that some firms did not wish to disclose information as there can be a view that the HEI was being too inquisitive (and university IP could be used without consent).

- c Staff start-ups. The information here is seen as reasonably reliable, subject to the points made above. However, it is difficult to track over time. There is greater reliance on estimates and external sources (e.g. contacts, Companies House, and commercial databases).

It is considered that the number of start-ups is relatively small (i.e. one to three per university over two years). Some 80% of initial start-ups are known about, and estimates are required for the returns on financial information. There is no grossing up for the HEB CIS return.

- d Student start-ups. Where formation results from enterprise programmes the information is regarded as reasonably reliable. However, where other students start-up the information is very patchy both for the start-up phase and changes to the business over time.

It is considered that start-ups may be in the range of two to 45 per university. Interviewees thought that probably some 50% of start-ups were known about. Considerable estimation is required for the information on investment and turnover. There is no grossing up for the HEB CIS return.

## A14 The Use of the HEBCIS Return Made by Universities

A14.1 The Enterprise/Business Development Departments and Careers Services made most use of the research, primarily to:–

- a Monitor the development of the spin-outs especially where they were university owned in part and give insights into the future business support needed and the university's exit strategy for disposing of shares.
- b Monitor the continued use of university IP and agreements where staff use the IP and to assess the extent to which it may be being used.
- c Strengthen the business support services and programmes, including the use of external high profile speakers, mentors such as business angels, and investors.
- d Use the evidence in bids for funding (e.g. ERDF and HEIF) for start-up/business support programmes.
- e Benchmark the university performance against other HEIs.
- f Curriculum development, to help improve the enterprise skills of students and staff.
- g Promotion of the university and liaison with employers, businesses, and the wider community.

Some universities produce significant promotional material and publications for dissemination that show case studies of successful businesses, especially on spin-outs with university ownership and the additional funding they attract.

## A15 Additional Information Required by Universities

A15.1 Few suggestions were made apart from the view that the universities would like to improve the information on graduate start-ups and tracking, followed by staff start-ups. It would be used to enhance the university stock of knowledge and improve the curriculum and business support programmes. It would strengthen the position in terms of the use of data above.

## A16 HEBCIS Links with the DLHE Return

A16.1 There were few links between the staff organising the HEBCIS return and those working on the DLHE survey. There was some awareness of the approach and cross reference to the results.

## A17 An Alumni Survey

A17.1 Several universities interviewed have an alumni office or sector which is sometimes part of the careers services. As part of this they hold information on alumni and have set up, or are setting up, a contacts database. They vary in how far they go back. For example, up to three years for a core group, or exceptionally over decades. The reasons for having the alumni office were to inform alumni of news and events at many of the universities, information exchange on news about alumni, encourage

relationships to be built with the universities, participation in events, and sponsorship. A small group have carried out surveys/sought feedback on alumni services.

A17.2 Of the universities interviewed, six had a live alumni database. These ranged in size from a few thousand contacts to up to 160,000 for one university. For those that held databases the coverage and quality was considered to be good for both e-mail and postal contact methods. One which had used the database for survey research on their alumni services obtained a response rate of 30% using a combination of a web-based and postal survey. At some universities the contacts were held by colleges rather than centrally (e.g. Cambridge and Oxford).

A17.3 Discussions were had with the universities on how alumni could be contacted and whether they had started a business or not, and the growth/development of businesses. The main methods suggested were a web-based and/or postal survey reflecting the preferences of the alumni held on the databases. The main features were:–

- a Choosing a practical baseline year – say five years ago, in 2008.
- b Using the whole population or a sample of alumni.
- c Linking the questions to alumni's views on the university alumni services and the willingness of alumni to participate in university entrepreneurship/start-up initiatives, e.g. talks, attending events, judging competitions, business mentoring, and support for graduate/students internships etc.
- d Conducting the survey every two years or so. It was considered that more frequently could overlap too much with the main information exchange activities with alumni.
- e Designing a relatively short questionnaire which would reflect the information required by the HEBCIS return (and be used as a basis for making the return in the graduate start-ups section).
- f When the survey was updated recognition of previous contact would need to be made.

A17.4 The issue of additional costs also arose and what the responsibilities could be for individual universities. The view was that the universities should conduct the survey themselves as part of their alumni services.

A17.5 There was agreement from five or six universities to become involved in discussions about a pilot stage.

## A18 Options for Further Research on Start-Ups

- a Spin-outs (with university ownership). The information was considered to be reliable. Strengthening the CRM and MIS systems was sufficient.  

A pro-forma/questionnaire could be used to obtain additional information (e.g. in addition to the current HEBCIS return), for example, on the graduate and HEI contributions to start-ups.
- b Spin-outs (without university ownership). The information was considered to be reasonably reliable. The approach could be strengthened by steps to keep in touch/liaise with businesses, setting up a CRM and MIS system, and providing business support/advice to businesses where it was possible for

the university to do this – making it clear the university was there to assist them re a combination of direct support and “softer” networking opportunities.

A pro-forma/questionnaire could be used to obtain additional information (e.g. in addition to the current HEBCIS return) and on the contribution of graduates and the HEIs to the start-ups.

- c Staff start-ups. The information was considered to be reasonably reliable with suggestions made to strengthen it as above.

A pro-forma/questionnaire could be used to obtain improved information (e.g. in addition to the current HEBCIS return).

- d Student start-ups. This was considered to be the most difficult area. The main suggestions made were:–
- To develop a voluntary approach and influence students to keep in touch and provide information as this could help improve curriculum development and business support.
  - To offer students an incentive of some kind to market their businesses. For example, by using the universities’ web sites to allow students to promote their businesses, products, and services (as free marketing) and update this. This would allow the university to set up a database on starts and to track the students.
  - To make students aware that the university could provide business advice to the students at start-up and later stages of development, coupled with “events” and networking that would improve university intelligence of start-ups and a basis for tracking them. Students could register their interest in the opportunity to obtain business advice. To offer this service the university would need to resource advice services and/or be able to refer or divert services to this advice, which could be provided externally.
  - To carry out a survey of the graduate start-ups that were known to university staff. This would require some research to put together a database with contact information.
  - To carry out a follow-up to the DLHE Survey targeting the students who had said they were starting a business. This would focus on those who were willing to be re-contacted. Responsibility for the survey, and access to the graduate contacts, would need to be agreed with HEFCE with the context of KE activities and as part of the HEBCIS return. See the DLHE chapter above.

A18.1 An additional idea was an alumni survey, where the universities had set up a database and, subject to existing contacts made by them with alumni, could be used as a basis for a survey. The tables below set out suggestions for developing the existing HEBCI and DLHE surveys for Stage Two as well as an alumni survey. Table A18.1 makes suggestions for the HEBCI survey. They were developed further when implemented in Stage Two.



**Table A18.1 The HE-BCI Survey: Options for Development**

Type of data	Options for development	Main Advantages and Disadvantages
Spin-outs (with some HEI ownership)	<p>PACEC to work with universities to continue with and develop current methods.</p> <p>Carry out a survey of spin-outs.</p> <p>Add new questions on:–</p> <ul style="list-style-type: none"> <li>- whether spin-outs were graduate or staff owned</li> <li>- the number of employees who were students or staff</li> <li>- the business skills obtained, together with networking and other activities</li> <li>- the extent to which the students or staff influenced the spin-outs</li> <li>- the contribution of students or staff to turnover</li> <li>- the influence of the HEI on the spin-out</li> </ul>	<p>This option is compatible with existing university approaches which can be developed for the small survey suggested. The quality is likely to be reliable. The timing: the research can be carried out in Stage Two.</p> <p>This approach would take account of the stock of spin-outs from an agreed baseline year. This would permit cumulative estimates.</p>
Spin-outs (with no HEI ownership)	<p>PACEC to work with universities to continue with and develop current methods.</p> <p>Carry out a survey of spin-outs.</p> <p>Add new questions on:–</p> <ul style="list-style-type: none"> <li>- whether spin-outs were graduate or staff owned</li> <li>- the number of employees who were students or staff</li> <li>- the business skills obtained, together with networking and other activities</li> <li>- the extent to which the students or staff influenced the spin-outs</li> <li>- the contribution of students or staff to turnover</li> <li>- the influence of the HEI on the spin-out</li> </ul> <p>Improve estimation techniques for employment, turnover, and investment</p>	<p>This option is compatible with existing university approaches which can be developed for the small survey suggested. The quality is likely to be reliable. The timing: the research can be carried out in Stage Two.</p> <p>This approach would take account of the stock of spin-outs from an agreed baseline year. This would permit cumulative estimates.</p>

<p>Staff start-ups</p>	<p>PACEC to work with universities to continue with and develop current methods.</p> <p>Carry out a survey of start-ups.</p> <p>Add new questions on:–</p> <ul style="list-style-type: none"> <li>- the number of employees that were students</li> <li>- the business skills obtained, together with networking and other activities</li> <li>- the extent to which students influenced the start-ups</li> <li>- the contribution of students to the turnover</li> <li>- the influence of the HEI on the start-up</li> <li>- the likelihood that the start-up would have gone ahead without the university links</li> </ul> <p>Improve estimation techniques for employment, turnover, and investment</p>	<p>This option is compatible with existing university approaches which can be developed for the small survey suggested. The quality is likely to be reliable. The timing: the research can be carried out in Stage Two.</p> <p>This approach would take account of the stock of spin-outs from an agreed baseline year. This would permit cumulative estimates.</p>
<p>Student start-ups</p>	<p>PACEC to work with universities to continue with and develop current methods where students have participated in business start-up and enterprise support programmes and can be tracked with a database set up. Strengthen the database and tracking mechanisms where this is not the case.</p> <p>Carry out a survey of start-ups.</p> <p>Add new questions on:–</p> <ul style="list-style-type: none"> <li>- the number of employees (and graduate employees)</li> <li>- the business skills obtained, together with networking and reputational benefits</li> <li>- the turnover of businesses</li> <li>- the investment received</li> <li>- the influence of the HEI on the start-up</li> <li>- the likelihood that the start-up would have occurred without the university support</li> </ul> <p>Improve estimation techniques for employment, turnover, and investment</p> <p>PACEC to work with universities to continue with and develop current methods where little business support is given, i.e., liaison across the departments to identify start-ups.</p> <p>Carry out a survey of start-ups where the contact information is reliable.</p> <p>The introduction with the questions above.</p> <p>Improve estimation techniques for employment, turnover, and investment</p> <p>Strengthen the overall methodology with the inclusion of the suggestions on DLHE and the alumni surveys below</p> <p>All the above could be carried out by PACEC with the HEIs.</p>	<p>Student start-ups – where business support is given.</p> <p>This option is compatible with existing university approaches which can be developed for the small survey suggested. The quality is likely to be reasonably reliable depending on the university tracking of start-ups. The research can be carried out within the Stage Two timetable.</p> <p>This approach would take account of the stock of spin-outs from an agreed baseline year. This would permit cumulative estimates.</p> <p>Student start-ups where business support is not given.</p> <p>This option is reasonably compatible with existing university approaches. However, the start-up tracking information is very patchy, which limits quality and reliability. The timing: the work could be carried out in Stage Two.</p>

Source: PACEC

A18.2 The suggestions in Stage Two for the DLHE Annual and Longitudinal Surveys are shown in Table A18.2 below. They were developed further when implemented.

**Table A18.2 DLHE Surveys**

Survey	Options for development	Main Advantages and Disadvantages
DLHE Annual Survey	<p><b>Interim option for a follow-up survey with students who said they were starting a business and were self-employed/freelance</b> using graduate contact information (for those who agreed to follow-up questions). A sample may suffice for the self-employment/freelance graduates.</p> <p>This could be carried out through a survey by PACEC working with HESA or HEIs.</p> <p>New questions on:-</p> <ul style="list-style-type: none"> <li>- Business status – registered or not</li> <li>- Turnover</li> <li>- Number of employees</li> <li>- Investment received</li> <li>- The business support received from the university</li> <li>- The business skills obtained, together with networking and reputational benefits</li> <li>- The influence of the HEI on start-ups</li> <li>- The influence of the subject studied by graduates</li> <li>- The likelihood that the start-up would have occurred in the absence of study at the university</li> </ul> <p><b>More long-term option for the 2015 survey, and repeated annually:</b> The introduction of a new sub-section to focus on characterising the nature of business start-ups and self-employment/freelance activities, subject to retaining the length of the questionnaire.</p> <p>This could be carried out by HESA or HEIs and would depend on the outcome of the interim options above.</p> <p>New questions as above.</p> <p>This would need to be combined with a follow-up survey to update the information for previous years to obtain the information on business development. It would not deal with the overall stock.</p>	<p>This option is compatible with existing university approaches, which can be developed for the survey. Access to the contact lists would need to be agreed with the universities to allow PACEC to carry out the survey. Sample sizes would need to be agreed. The quality is likely to be reliable. The timing: the work can be carried out within Stage Two.</p> <p>Estimates would need to be made of the stock of businesses from a baseline year.</p> <p>This option depends on the outcome of the above.</p>

<p>DLHE Longitudinal Survey</p>	<p><b>Interim option based on the appropriate leavers' cohort.</b> A follow-up survey with graduates who said they were starting a business and were self-employed/freelance, using the existing contact information (for those who agreed to follow-up questions). A sample may suffice for the self-employment/freelance graduates</p> <p>This could be carried out through a survey by PACEC working with HESA.</p> <p>New questions on:–</p> <ul style="list-style-type: none"> <li>- Business status – registered or not</li> <li>- Turnover</li> <li>- Number of employees</li> <li>- Investment received</li> <li>- The business support received from the university</li> <li>- The business skills obtained, together with networking and reputational benefits</li> <li>- The influence of the HEI on start-up</li> <li>- The influence of the subject studied</li> <li>- The likelihood that the start-up would have occurred in the absence of study at the university</li> </ul>	<p>This option is compatible with existing university approaches, which can be developed for the survey. Access to the contact lists would need to be agreed with the universities to allow PACEC to carry out the survey. Sample sizes would need to be agreed. The quality is likely to be reliable. The timing: the work can be carried out within Stage Two. Estimates would need to be made of the stock of businesses from a baseline year.</p>
	<p><b>The more long term options are repeated in each longitudinal survey.</b></p> <p>The introduction of a new sub-section to focus on characterising the nature of business start-ups and self-employment/freelance activities, subject to retaining the length of the questionnaire.</p> <p>New questions as above.</p> <p>This would need to be combined with a follow-up survey to update the information for previous years to obtain the information on business development.</p> <p>This could be carried out by HESA and would depend on the outcome of the interim options above.</p>	<p>This option depends on the outcome of the above.</p>

Source: PACEC

A18.3 Discussions with universities in Stage One identified the potential to use an alumni survey to gain the fill the data gaps. Some universities agreed in principle in Stage One to pilot the alumni survey, and further work was carried out on 24 additional universities, almost all of which have alumni offices. The sample was stratified to cover universities that reflect the different degrees of research intensity, location, size, age, and number of spin-outs and graduate start-ups based on the HE-BCI and DLHE Surveys. The indications are that there could be over 100 universities in England with reasonably active alumni offices that could be used to scale up the research.

A18.4 Suggestions on the Alumni Survey in Stage Two were as follows in Table A18.3. They were developed further when implemented.

**Table A18.3 An Alumni Survey**

Survey	Options for development	Main Advantages and Disadvantages
Survey with alumni from a sample of universities	<p>This survey could be carried out annually or biannually depending on the preferences of HEIs and what is practical. An e-mail and postal survey carried out by PACEC and the universities with alumni (preferably a year after the most recent cohort of graduates), covering all alumni.</p> <p>Questions to include:–</p> <ul style="list-style-type: none"> <li>- Background characteristics on the alumni: age, gender, subject(s) studied, etc.</li> <li>- Whether they started a business or not and status: registered or not, subsidiary</li> <li>- Whether the business is still running (closed or merged, etc.)</li> <li>- Date of start-up (and wind-up)</li> <li>- Initial support from the university</li> <li>- Products/services</li> <li>- Location</li> <li>- Last five years: <ul style="list-style-type: none"> <li>- Turnover</li> <li>- Number of employees</li> <li>- Investment received</li> <li>- The business support received from the university</li> <li>- The business skills obtained, together with networking and reputational benefits</li> <li>- The influence of the university on start-up</li> <li>- The influence of the subject studied</li> <li>- The likelihood that the start-up would have occurred if the student had not attended the HEI.</li> </ul> </li> </ul>	<p>This option is compatible with existing university approaches and can be developed on an individual basis with each of the universities that participate. Access to the alumni contact lists would need to be agreed with the universities as well as whether the university or PACEC carries out the survey. The quality is likely to be reasonably reliable. The timing: the survey can be carried out in Stage Two but within this there is likely to be some phasing given the practicalities for some of the universities in terms of what other alumni activities are being planned.</p> <p>This approach would account for the stock of start-ups from an agreed baseline year.</p> <p>This approach would permit cumulative estimates to be made.</p>

Source: PACEC

- A18.5 Finally in Stage One, we explored economic modelling approaches which would combine existing data (modified as appropriate) with other published and existing unpublished sources to fill gaps. These are used in Chapter 7 for the value calculations. In broad terms this process would require the following main steps:–
- a The establishment of a base year from which the estimate should be made, that is the current year or three to five years ago (i.e. 2010 or 2008).
  - b Estimating the stock of spin-outs, staff and student start-ups, and applying survival, duration, and age weights to these. For example, using existing university and Office for National Statistics (ONS) data on business survival and growth rates. The estimates would cover both the recent and past years.
  - c Adjusting the existing HEBCI and DLHE data (with some cross checking between the two).
  - d Use results from the three new surveys proposed – Spin-outs, DLHE Follow-Up and Alumni – to examine the influence of HEIs on graduates/students, start-ups, and spin-outs and what may have occurred if the student had not attended the HEI, i.e. whether businesses would have started or not and the consequences for value, including sales, turnover, and skills.

- e Completion of the weighted grossed up estimates reflecting the university population as a whole for the income and turnover data for the different types of businesses.

## Appendix B Survey Questionnaire Topics

B1.1 The main topics which formed the questions in the surveys are shown below. There were variations in the topics and the specific questions depending on the type of respondent.

### B2 Alumni and Business Start-Ups

#### Topics for the Survey with Alumni

- Background characteristics
- Business started-up, or not, and reasons
- Date business started up and main products/services
- Whether freelance/sole trader or registered business
- Reasons for setting up in business
- Employment and sales/turnover
- Future growth and innovation activities
- KE and enterprise support
- The influence of the university on starting up
- Sharing business experiences with the university
- Other comments

### B3 Graduates. Self-employed/Freelance and Business Start-Ups.

#### Topics for the Survey with Start-Ups

- Background characteristics
- Business started-up, or not, and reasons
- Business not continuing, with reasons
- Date business started up and products/services
- Whether business run as freelance/sole trader or registered business
- Reasons for setting up in business
- Employment and sales/turnover
- Future growth and innovation activities
- KE and enterprise support
- The influence of the university on starting up
- Business constraints faced
- Sharing business experiences with the university
- Other comments

## B4 University Spin-Outs and Start-Ups

### Topics for the Survey with Spin-Outs and Start-Ups

- Date business started up and products/services
- Reasons for setting up in business
- Employment and sales/turnover
- Future growth and innovation activities
- Who the business was started with: academics/graduates
- The role(s) of academics/graduates
- KE and enterprise support
- The influence of the university on starting up
- Business constraints faced
- Other comments

B4.1 The topics allowed both qualitative and quantitative information to be obtained.



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## Appendix C University Participation

C1.1 The 43 universities who agreed to participate in the surveys are shown below. Over a third participated in two or more surveys.

**Table C1.1 Universities that Participated in the Surveys**

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Aston University  
University of Birmingham  
University of Brighton  
University of Bristol  
University of Cambridge  
University of Central Lancashire  
Cranfield University  
University of Durham  
University of East Anglia  
University of Essex  
University of Exeter  
Goldsmiths, University of London  
University of Hull  
Imperial College London  
University of Kent  
Kingston University  
University of Leeds  
Leeds Metropolitan University  
University of Leicester  
University of Lincoln  
University of Liverpool  
Liverpool John Moores University  
London Metropolitan University  
Loughborough University  
University of Manchester  
Manchester Metropolitan University  
Middlesex University  
University of Newcastle upon Tyne  
University of Nottingham  
Nottingham Trent University  
University of Oxford  
University of Plymouth

University of Portsmouth  
University of Reading  
Royal College of Art  
University of Sheffield  
Sheffield Hallam University  
University of Sussex  
University College London  
University of Warwick  
University of the West of England, Bristol  
University of Westminster  
University of Wolverhampton

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## Appendix D Results of the DLHE Follow-Up Survey

- D1.1 As with the Alumni and Spin-out Surveys, the DLHE Follow-Up Survey was new work carried out for the study. The sample was smaller than in the other surveys. The results presented in this appendix cover the characteristics of graduates who were freelance/self-employed and started a business, the sectors, products and services, reasons for starting up, KE/enterprise support and skills, the influence of the university, constraints faced and willingness to share experiences with the university.
- D1.2 The businesses were asked a series of questions about their experience in part to help understand their aims but also as a lead-in to obtaining the quantitative information on business turnover (as a measure of value) and the softer benefits such as the business skills and practices they gained from attending University and in some cases receiving business support.
- D1.3 Those who thought about starting a business but did not do so gave their reasons why.
- D1.4 The survey resulted in 120 responses which was not a sufficient number to allow the data to be disaggregated on some of the key characteristics.

## D2 The Characteristics of Leavers

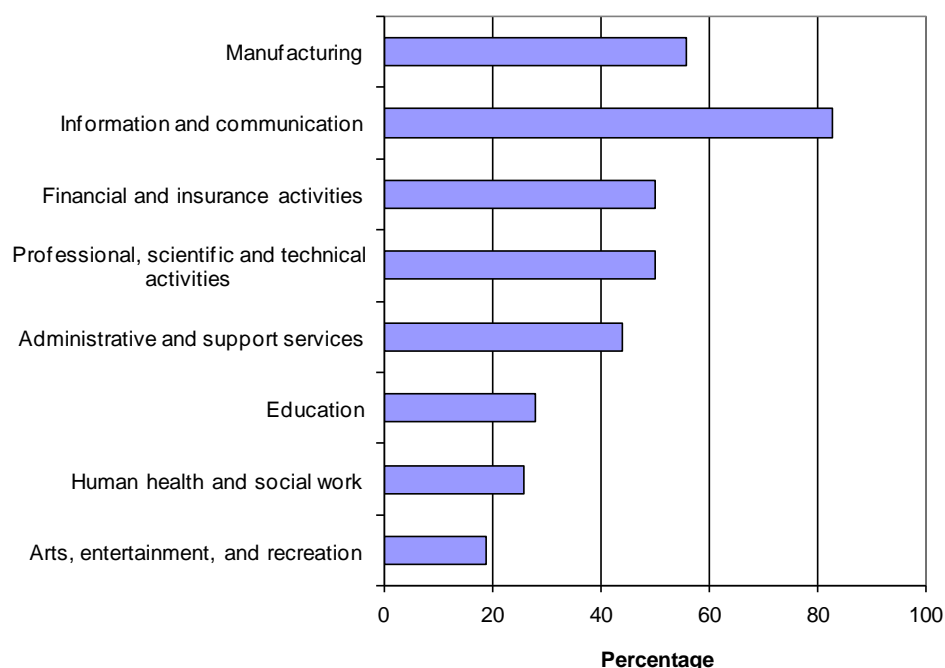
- D2.1 The vast majority of leavers in this survey finished their university courses in 2011-12. Around half had a higher degree (with around half at Masters level and a tenth at PhD/MPhil levels) and just over one in four a first degree. Males and females each accounted for about half each of the respondents. The majority were in the 20-29 years age range. The largest single subject area studied was business studies (12%), with a great range of other disciplines represented in the residual. Some 45% were science graduates, 44% were humanities graduates and 11% had arts degrees.
- D2.2 In terms of the nature of responses and potential biases by characteristics of those starting up, the results of the national DLHE and the DLHE Follow-Up Surveys show that there was a degree of similarity. The national DLHE Survey showed that for those who were freelance/self-employed in 2011-12, some 60% were male and 40% female (see D2.1 above), 74% were 20–29 years old and 26% 30 years or older, by level of degree, a quarter had a higher degree and three quarters a first degree, which is the main variation with those in the follow-up survey. In terms of subject area, business studies was the main subject (15%). Some 46% had degrees in sciences, 46% in the humanities and 8% in the arts.
- D2.3 Although all had said they were freelance/self-employed (88%) or starting a business (12%) in the original DLHE Survey, only seven in 10 were now still doing so, with the remainder now either employed, studying or unemployed. As well as running their businesses a small number were engaged in other activities, such as other jobs, voluntary work, on a course or seeking employment.

### D3 The Types of Businesses

D3.1 Some six in 10 of the leavers were freelance/self-employed, while four in 10 had registered their business with Companies House.

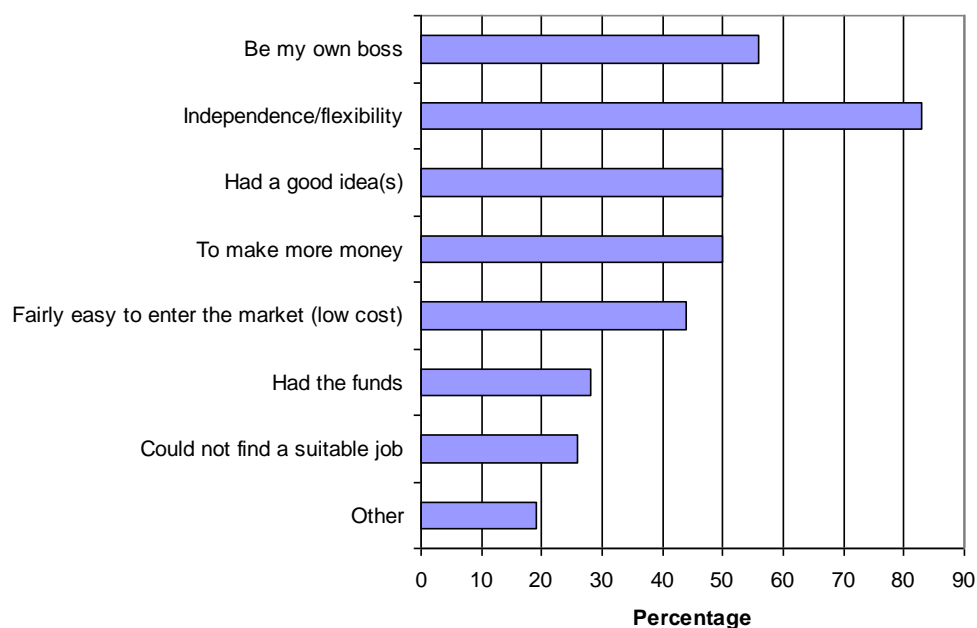
D3.2 The largest industrial sector of the businesses of the leavers surveyed was information and communications (with one in three respondents); other sectors are given in Figure D3.1 below. Some of the main products and services flowing from businesses of leavers were media and design, writing and translation, IT and computing (with consultancy), marketing/events, and medical services. Around a third were in the high-tech/innovation sectors.

**Figure D3.1 Industrial sectors of businesses of DLHE leavers**



Source: PACEC Survey of DLHE Leavers 2014

D3.3 The most common rationale for starting a business for both self-employed/freelancers and registered companies was the desire for greater independence and flexibility in their work compared to employment (eight out of 10) and the opportunity for students to be their own boss (almost six in 10). Other rationales are given in Figure D3.2.

**Figure D3.2 Reasons for Starting a Business**

Source: PACEC Survey of DLHE Leavers 2014

D3.4 The number of employees in start-ups (including the leavers themselves) was between one and 10 with a median figure of two. The turnover ranged between £4k and £150k p.a. with a median of £11k. One in four said they wanted their businesses to grow moderately, with a similar proportion seeking significant growth.

D3.5 The survey sought to gauge how innovative the businesses were. Just over half had introduced new or significantly improved products and services and a similar proportion new or significantly improved processes. This compares with almost one in five who were classified as product innovators in the CIS survey<sup>10</sup> and one in 10 who were process innovators, although these businesses, albeit SMEs, were generally larger than the alumni businesses. One in 10 DLHE leavers used new technologies, but few patents had been applied for or registered.

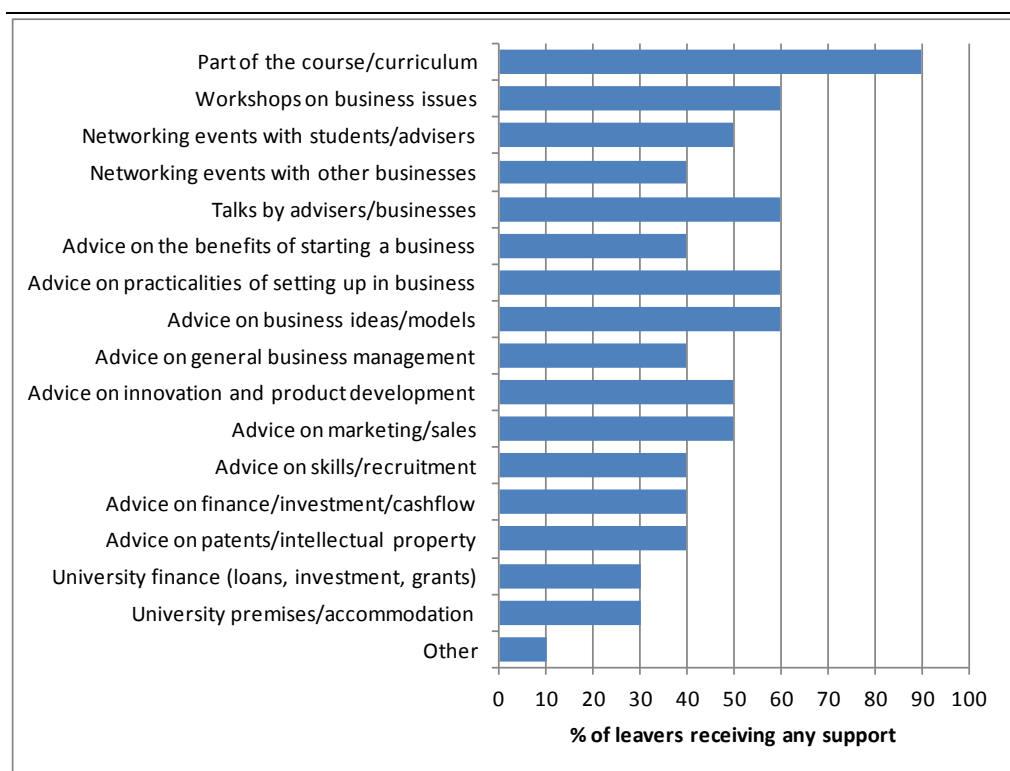
## D4 KE/Enterprise Support and Skills

D4.1 Some one in six respondents to the survey had received KE/enterprise support of some form from their university.

D4.2 Of those receiving KE/enterprise support, for around 90% this took the form of support within their course, with a range of other non-curricular support experienced by others – see Figure D4.1. The main support comprised workshops on business issues, talks by advisers and businesses and advice on setting up in business and business models.

<sup>10</sup> Community Innovation Survey, carried out annually by BIS.

**Figure D4.1 Types of KE/Enterprise Support and Skills for Those That Received It**



Source: PACEC Survey of DLHE Leavers 2014

D4.3 Generally KE/enterprise support was deemed to be very effective or effective and provided skills for graduates such as awareness of business issues and starting up as well as a range of skills for product development and innovation (with advice on patents and IP), marketing and sales, business management, finance, financial management and recruitment. These skills indicate the softer value of support and the skills which may be used in wider intra-preneurship in the economy and society.

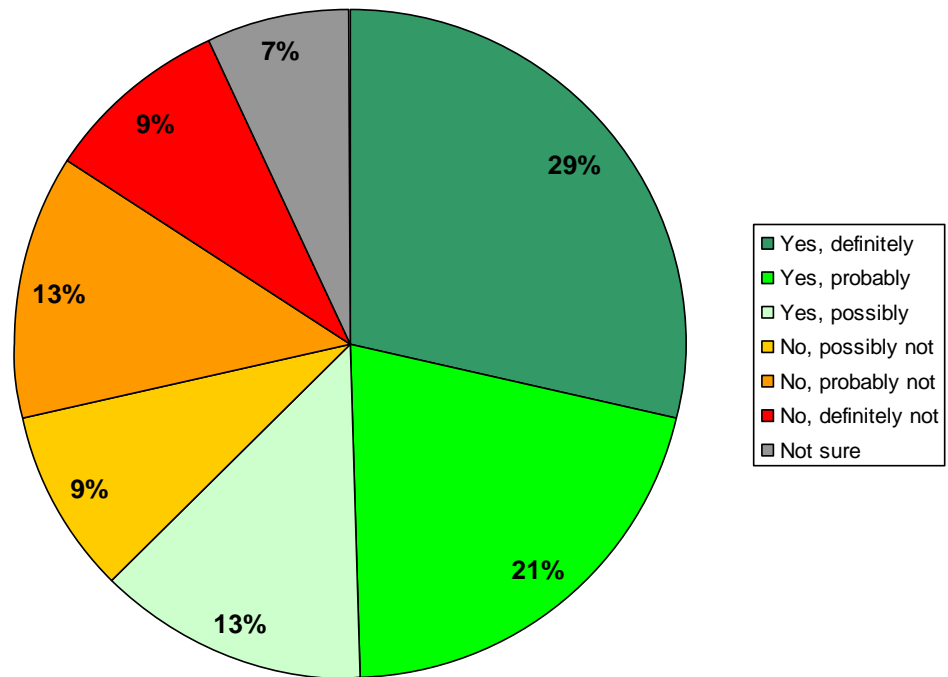
**D5 The Influence of the University and KE/Enterprise Support on Start-Ups**

D5.1 Two thirds of the leavers said the course they had studied at university had influenced them to set up in business, while four in 10 were influenced by the other KE/enterprise support they had received.

*The Likelihood of Starting a Business if University had Not Been Attended*

D5.2 On the issue of whether the leavers would have started a business anyway if they had not studied at the university, around half said they would definitely or probably have done so. Half were unsure including a fifth who would definitely or probably not have started a business. See Figure D5.1.

**Figure D5.1 The Likelihood of Starting a Business if Leavers had not Studied at the University**

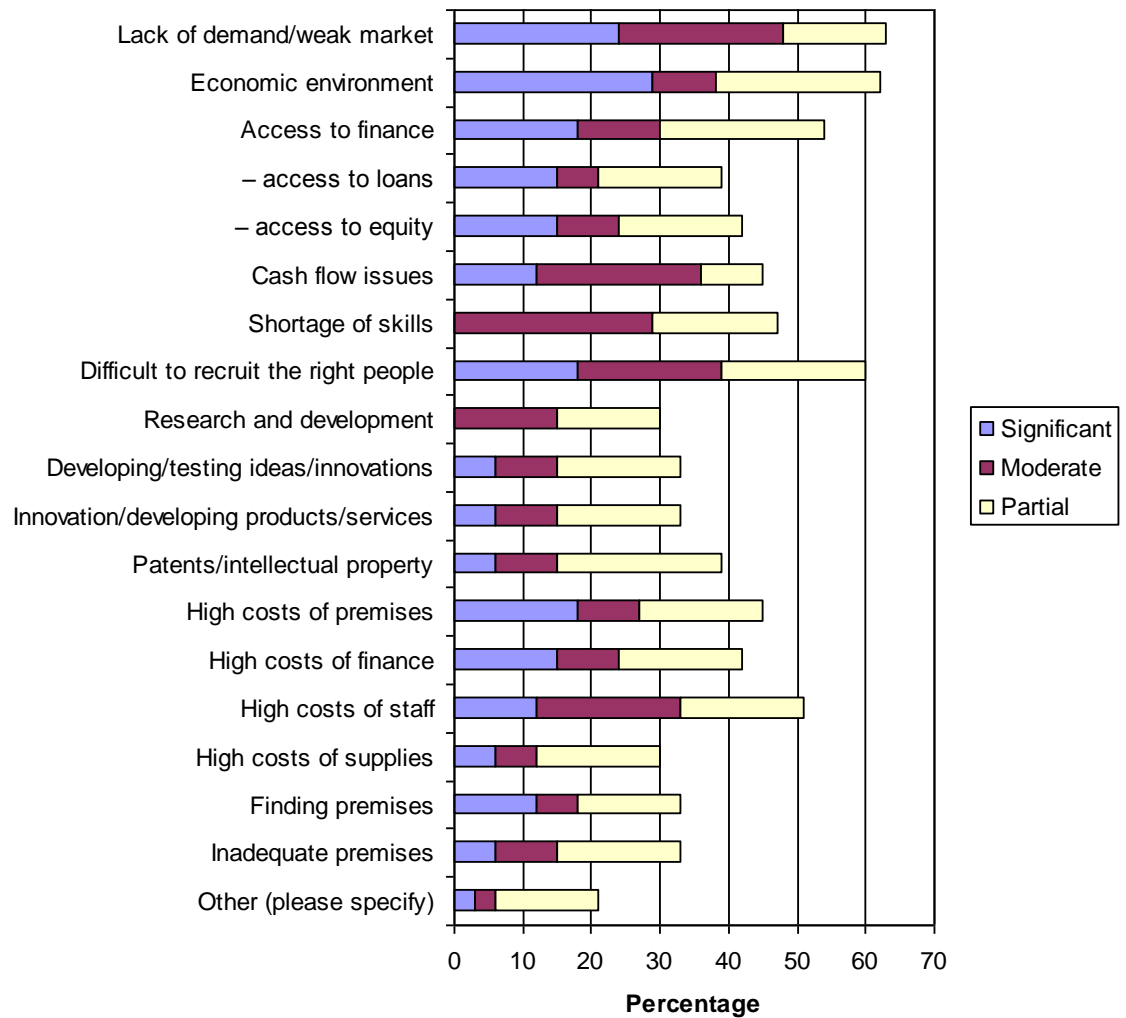


Source: PACEC Survey of DLHE Leavers 2014

## D6 Business Constraints Faced

D6.1 The leavers were asked if they faced any business constraints at the time of the survey. Six in 10 (60%) said that they did. The range of issues for those that faced constraints is set out in Figure D6.1.

**Figure D6.1 Business constraints for those that faced them**



Source: PACEC Survey of DLHE Leavers 2014

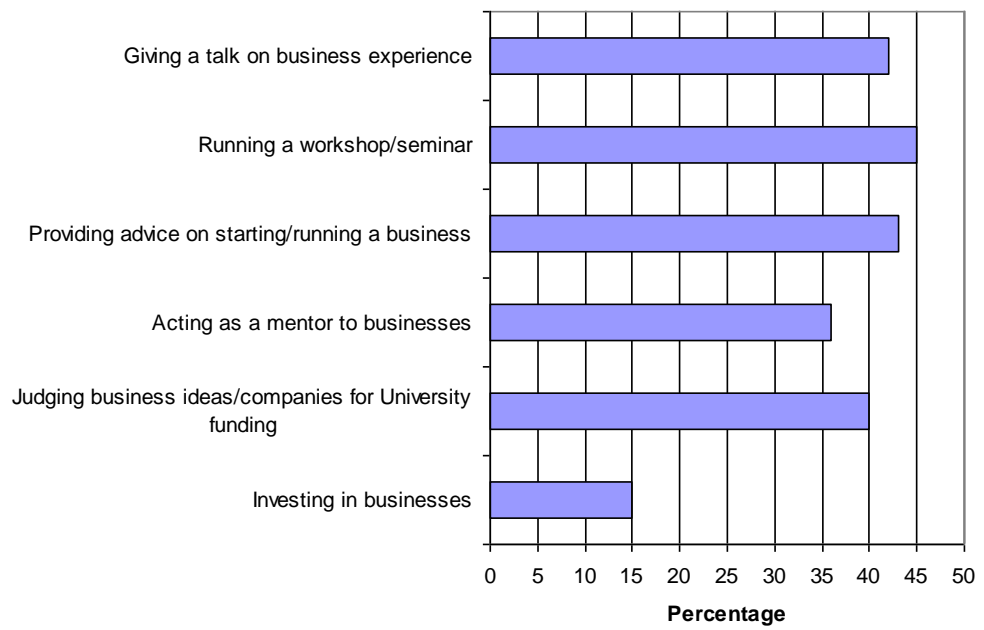
D6.2 For the one in five leavers that did not start a business following the DLHE Survey the predominant reason was that they took a job (47%).

**D7 Sharing Business Experiences with the University**

D7.1 Finally leavers were asked whether they would be willing to share their experiences with the university. Some four in 10 said they would. See Figure D7.1.



**Figure D7.1 Sharing the Business Experience with the University**



Source: PACEC Survey of DLHE Leavers 2014

**Panel D7.1 Case Study. Freelance/Self-Employed DLHE Leaver**

This business providing services for the broadcasting and media sectors is three years old, having been set up by a postgraduate in interactive multi-media studies. The aim is to grow moderately to significantly over the next few years and continue to provide innovative products and services using state of the art technology. Turnover has reached £40k per annum and provides income for one full-time employee and one part-time. The aim was “to be my own boss and have my independence”, and to make more money than could be earned through employment. It was fairly easy to enter the market, as costs were relatively low, and exploit the contacts and network set up as part of the course.

As part of the original period of study, the university had provided networking events and advice on business ideas, practicalities, and markets, which was effective for the needs at the time. However, there has been no need to purchase university enterprise services after graduation and starting up.

*“Networking is a good way of exchanging ideas and making contacts – so long as the right people get along.” (Graduate who started up.)*

The subject studied and the KE/enterprise support given had had a positive influence on setting the business up. They helped to nudge the graduate to start up and improved confidence, although she may have done so anyway at some point in time.

Although the business was underway and still relatively young, access to finance (for loans and equity funding) posed significant constraints, together with the high costs of premises (many of which were inadequate), staff and supplies. Variations in the demand for services and the uncertain economic environment posed moderate constraints to the extent to which income needed to be supplemented by other part-time employment in the media sector, but the business plan remained on track.

The owner would consider giving a talk to university staff and students on her business experience, but other support such as providing advice and mentoring would be too time-consuming at a time when she needed to focus on the business.



## Appendix E The Acronyms Used in the Report

BIS	Department for Business, Innovation & Skills
CIS	Community Innovation Survey
CRM	Client Relationship Management
DLHE	Destinations of Leavers of Higher Education
ERDF	European Regional Development Fund
FTE	Full-time equivalent
HE	Higher education
HE-BCI	Higher education-business and community interaction
HEBCIS	HE-BCI Survey
HEFCE	Higher Education Funding Council for England
HEI	Higher education institution
HEIF	Higher Education Innovation Funding
HESA	Higher Education Statistics Agency
IP	Intellectual property
KE	Knowledge exchange
MIS	Management information system
ONS	Office for National Statistics
OSI	Office of Science and Innovation
RAE	Research Assessment Exercise
SME	Small or medium enterprise
STEM	Science, technology, engineering and mathematics