

First Destinations of UK Computing Graduates

A report based on data from 25 HEIs

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Contents

Background	p.1
Hypothesis	p.2
Trends	p.2
ICT-supply vs. ICT-user employment	p.3
Further study & training	p.4
‘Graduate’ vs. ‘non-graduate’ work	p.5
Institutional differences	p.6
<i>Findings by institution</i>	p.6
<i>Findings by region</i>	p.6
<i>Findings by no. of students surveyed</i>	p.7
2002 compared with earlier years	p.7
Acknowledgements	p.8

FIRST DESTINATIONS OF COMPUTING GRADUATES

Background

Data was obtained for 25 HEIs. In ten cases the information was publicly available on the website of the university in question, and a further fifteen institutions responded to a request for relevant data to be used in this project. All of the figures in this report are approximate, although I have tried to the best of my ability to make them as accurate as possible.

There will inevitably be some inconsistencies in the way in which the data has been collated for each institution. The courses considered are all Bachelor's courses in Computing, Computer Science, ICT and related subjects. No HND, Certificate or Diploma courses have been included, and all of the students included are graduate from full-time programmes. Where I have selected the courses to be included, I have attempted to include only the same range of course titles. However, for several institutions the data was available only in an aggregated form, and this may have included a small number of programmes not central to the project. In particular, the policy over the inclusion of joint honours courses may vary to some extent. I believe that such discrepancies will not have had a serious impact on the results obtained. A small number of institutions have a policy of not publicising the outcomes for students on courses where fewer than ten people graduate, for data protection reasons. To the best of my knowledge, these figures relate only to UK students. Destination statistics are publicised by an institution, data for overseas students is included.

The data received from each institution consisted of a list of job titles and employer names for all 2002 graduates in ICT subjects who responded to the 'First Destinations of Leavers from Higher Education Survey'. The number of students in ICT work was then counted, and the numbers of students engaged in ICT work in the ICT-user rather than the ICT-supply sector were identified. Where only a sample of job titles and employer names was offered, rather than a full list of all respondents, the institution has been excluded from the survey.

It was usually possible to determine from the job title whether the student had entered ICT-related work. In a few cases there was room for doubt. Where this occurred I assumed that the individual was *not* in ICT work. For example, a 'manager' was counted as non-ICT, although an 'ICT manager' might have classified him/herself as a 'manager'. Similarly, where the job title appeared to relate to non-graduate employment (e.g. 'customer service representative') despite the employer being listed as an ICT-supply organisation (e.g. 'Compaq'), I counted the student as being in 'non-graduate' rather than 'ICT-related' employment, even though s/he may be using ICT skills or 'lying in wait' for an ICT-related position within the organisation. Finally, a job title such as 'clerk' may indicate an occupation involving considerable use of ICT skills, but this was also counted as 'non-graduate work'. The figures given here for the number of graduates in ICT-related work may therefore be conservative.

The figures indicating 'split' between 'IT User' and 'IT Supply' employers are approximate, although they will broadly reflect the situation. I attempted to ascertain the nature of business for employers whose names were unfamiliar to me, but this was not always possible.

The list of job titles counted here as 'ICT-related work' may not intersect precisely with the classification of 'Information Technology Professionals' used by HESA or Prospects.ac.uk. A reasonable number may fall into the category of 'associate professional and technical' operations; for example, a number of students are listed as 'technical support' or 'ICT support' workers. A small but significant number of graduates work in technical occupations within the health service, local government and education, and many work in the ICT departments of financial institutions. It is possible that some of them are listed as working in these sectors in the HESA analysis, while others will have been classified as 'managers'. The proliferation of multimedia courses means that many students work in organisations which may be counted under either 'media, literary, design and sports professionals' or 'marketing, sales, PR and advertising'.

Hypothesis

The hypothesis underlying this research was that the number of ICT graduates entering ICT employment may be higher than is often suggested in press reports on graduate destinations. Relatively low figures have been widely quoted, causing concern for employers and HEIs.

Discrepancies may arise partly because some students who enter an ICT role in the ICT user sector are coded by the sector into which their organisation falls, rather than the nature of their work. The official statistics for 2003 graduates may avoid this difficulty to some extent, because graduates are required to enter both employer's name *and* individual job title. However, difficulties remain in classifying roles (and even organisations) in the rapidly changing ICT field. For example, Prospects.ac.uk lists the following 'ICT professional' occupations:

- Analyst/programmer
- Computer operations managers
- Computer programmers
- Consultants
- Others
- Software engineers
- Systems analysts

Alongside roles of this sort, data for the 25 HEIs indicates that small but significant number of graduates work in e-business or website development, many of them in the retail or leisure sectors. Roles of this sort are themselves relatively new, and will probably form a category of their own in subsequent classifications. Another growing field appears to be mobile communications, where once again new roles will emerge to be added to the list.

In addition, as noted above, official classifications separate ICT professionals from 'associate professional and technical' workers. Many ICT graduates may begin their professional life in jobs which fall into the latter sector and move into standard 'professional' roles as they gain experience and additional training, or simply as opportunities arise. Some graduates in 'technical' jobs may also develop their own roles to use their graduate skills.

General trends

In total, data relating to 2002 students who graduated from the 25 HEIs in 2002 has been examined. Outcomes for these students with known destinations six months after graduation are shown in Table 1, along with Prospects figures for all UK Computer Science/IT graduates (based on HESA statistics). The 2002 HESA statistics are based on returns for 8855 graduates. I have not included 'unknown' outcomes in the survey where these were received from the 25 HEIs.

The figures for the 25 institutions are broadly in line with the HESA figures for all UK ICT graduates in 2002, which suggests that these 25 institutions may reflect national trends.

Students from the 25 HEIs have a slightly higher rate of employment, and of entry into further study or training. Slightly fewer are unemployed or unavailable. Some of those who state that they are in stereotypically 'non-graduate' work, counted simply as 'employed' in the survey of the 25 HEIs, may fall into the category 'seeking employment, study or training but not unemployed' in the HESA figures. This accounts for 2.2% of all graduates included in the HESA figures.

2002 graduates	Graduates from the 25 HEIs in the study	HESA figures for all UK Computer Science/IT graduates¹
Employed	69.1 %	66.4
Further study or training	13.7 %	11.9 %
Not available for work	4.8 %	5.1 %
Unemployed/seeking work	12.3 %	16.8 %

Table 1: Destinations of 2002 graduates with known outcomes

The job titles and employer names of the ICT graduates from the 25 HEIs surveyed here were examined. Figures indicating their pattern of employment within six months of graduation are given in Table 2, alongside Prospects figures for graduates employed as 'ICT professionals'. Unlike Table 1, Table 2 shows a considerable difference between the two sets of figures.

	Graduates from the 25 institutions in the study	Prospects figures for all UK Computer Science/IT graduates
Graduates in ICT-related work/employed as ICT professionals	50.7 %	27.8 %
Working graduates in ICT-related work/employed as ICT professionals	73.4 %	42.2 %

Table 2: ICT employment among Computer Science/ICT graduates

ICT-supply vs. ICT-user employment

It is likely that some of the discrepancy between the Prospects figures and the figures obtained in this study arises from the difficulty of classifying returns from students who enter ICT roles in non-ICT organisations. Table 3 shows the distribution between ICT-supply and ICT-user organisations of ICT graduates from the 25 institutions in the study².

¹ These figures are available in the publication 'What do graduates do?', at http://www.prospects.ac.uk/cms/ShowPage/Home_page/What_do_graduates_do__2004/charts_and_tables_pages/plledXLFe?subject_id=7

² These figures are subject to the caveats on page 1

	ICT work in an ICT-supply organisation	ICT work in an ICT-user organisation
% of all graduates	24.9 %	25.8 %
% of graduates in ICT work	49.0 %	51.0 %
% of all working graduates	36.0 %	37.4 %

Table 3: Distribution of ICT work between ICT-user and ICT-supply organisations, for graduate from the 25 institutions in the survey

This indicates that some, but not all, of the graduates doing ICT-work outside the ICT-dedicated sector are being counted among ‘ICT professionals’ in the Prospects figures. As discussed above, this disparity may result partly from the sectoral split and partly from the employment of graduates in ICT-related associate professional or technical roles.

One institution (excluded from the survey³) provided a breakdown of the sectors in which its ICT graduates worked. A relatively low number (just under two thirds) of its working graduates are listed as having jobs in ICT, but around a quarter work in ‘science or engineering’.

However, when the job titles for the latter group are examined, it turns out to include numerous software engineers, as well as several university researchers and research and development professionals in ICT supply companies. This group are quite clearly using core skills from their degree studies, but might not always appear as such in aggregated data. Once again, this illustrates the difficulties of obtaining accurate statistics for a sector which is developing so rapidly and such diverse ways.

Further study and training

Using the data from the 25 HEIs, it was also possible to examine the number of graduates who enter further study or training in the ICT field.

11.5% of all graduates enter further study or training in ICT
2.2% of all graduates enter further study or training in other areas

84% of graduates who are in further study or training follow courses in ICT
16% of graduates who are in further study or training follow non-ICT courses

The vast majority choose higher degree, diploma or training programmes in an area relevant to their first degree. Many of these are taught Masters courses which will allow the graduate to ‘specialise’ their skills in relation to their subject area. A few enter directly into research towards a doctorate, or join a PGCE course in ICT.

Data on the destinations of graduates from ICT-related Masters programmes was examined for 8 of the 25 HEIs. Within six months of graduation, their outcomes are as follows:

³ This was because the data which was available online did not include figures for the number of graduates in further study or training, unavailable for work, or unemployed.

- 63.3% are in ICT-related work
- 12.2% are in further study in ICT (in all cases this is at doctoral level)
- 1.4% are in further study or training in a business-related field
- 4.1% are not available for work or further study
- 4.8% are unemployed or still seeking work
- 14.3% are in non-ICT related work (much of which may be temporary, see below)

It can therefore be safely assumed that most graduates with Bachelor's degrees in ICT who enter further study or training in this field will eventually enter ICT-related work. 75.3% of graduates from Masters' courses are working in the field six months after graduation.

Given the outcomes for graduates of Masters programmes, the figure of 50.7% of graduates from ICT-related courses in the 25 HEIs who enter related work within six months may be misleading as an indication of the number who will eventually gain employment in ICT. The 'overall ICT outcome' figure, based on the number of graduates who within six months are in work *or* further study/training related to their undergraduate course, is a better indicator of the number who will *eventually* work in a related area.

For the 25 HEIs surveyed, this figure is 62.2% of all graduates.

'Graduate' and 'non-graduate' work

4.5% of all graduates (6.6% of working graduates) have job titles which may be broadly described as indicating 'graduate work' outside the ICT field, i.e. jobs which would normally be assumed to require a degree. A further 13.8% of all graduates (20% of working graduates) have job titles which indicate that they are in 'non-graduate' work. This category includes various 'unskilled' or semi-skilled jobs which would not normally require a degree for entry. Within this group, many graduates work as bar or waiting staff, retail sales assistants and in various roles relating to leisure and tourism. Also common are clerical, secretarial and data entry positions, many of which may require graduate employees to use their ICT skills and which may themselves be developed when they are filled by an employee with an ICT degree.

It is possible that these figures are somewhat distorted by the date at which the survey is undertaken; graduates are required to provide information within six months of graduation. In a few cases, the 'non-graduate' job titles clearly reflect a career path (e.g. 'police officer', 'ambulance paramedic', 'pub manager'), and may be assumed to represent a complete change of direction following graduation. However, in many cases a graduate undertakes routine, unskilled or other non-graduate work in order to take 'time out' while s/he considers long-term work or training options, or saves money for further study, training or travel. In a few cases, the fact that they have indicated this on their return to the survey is reported alongside their job title, or the job may be explicitly classified as 'temporary' or 'vacation work'. These graduates may at a later date enter ICT-related work, study or training.

Institutional differences

Of the 25 HEIs for which data was considered:

- 18 were pre-1992 institutions
- 7 were post-1992 institutions

- 8 are in the south-east of England (including London)
- 3 are in the south-west of England
- 5 are in Scotland or Northern Ireland
- 9 are in the midlands or the north of England

- 7 had returns for under fifty graduates in ICT-related subjects
- 12 had returns for 50 – 100 graduates in ICT-related subjects
- 6 had returns for 101 or more graduates in ICT-related subjects

Findings by type of institution

There appears to be no significant difference between the employment prospects for graduates from ‘old’ and ‘new’ universities. The difference between the total number of ICT graduates in employment for each category is less than 2%, and the difference between the number of ICT graduates in ICT employment is under 1%. ‘Old’ universities appear to have a slightly higher number of graduates with an ‘ICT outcome’ within six months because these graduates are *slightly* more likely to undertake further study or training in the ICT field.

One interesting contrast is between the sectors in which ICT graduates who undertake ICT-related work are employed. For ‘old’ universities, around 5% more of all graduates work in the ICT-supply sector than in the ICT-user sector. However, for ‘new’ universities, around 5% more of all graduates appear to work in the ICT-user sector than in the ICT-supply sector. This figure should be read with caution, given the problems with determining the sectoral classifications for all employers. It may well result from the particular placement and recruitment arrangements which are in place in the particular institutions surveyed, and it should not be assumed to apply to the UK university sector as a whole.

However, it is also possible that the contrast results from an historical difference between the type of curriculum taught in the pre- and post-1992 sectors. The more mathematical and logarithmic focus of some ‘old’ universities may mean that a greater number of graduates are drawn to work in systems and programming, which is more likely to be done in ICT-supply firms. ‘New’ universities often include a higher level of applied and business-focussed subjects in their computing courses, which may incline more of their graduates towards work in ICT-user companies.

Findings by region

In the discussion of regional contrasts, the figures for the south-west of England are excluded because of the small number of institutions from that area for which data was received.

The total number of graduates in work of any sort and the total number of graduates in ICT work does not vary greatly by region. Despite concern over the availability of ICT work outside the south-east of England, the contrast between the highest and lowest rates of ICT employment is less than 5%, and the overall rates of employment vary by less than 1%. Location of employer was not always indicated, so it was not possible to determine whether graduates had moved in order to obtain work, or in order to obtain their preferred work.

Graduates in the south-east of England appear slightly more likely to choose further study or training as an option after graduation, although the contrast between the lowest and highest figures for graduates entering further study or training in ICT is again less than 5%. This regional contrast is not attributable to the distribution of 'old' and 'new' universities, which is fairly even between the regions.

The highest contrast (of around 7%) between ICT-supply and ICT-user employers is found in the south-east of England, where considerably more graduates work in the ICT-supply sector. In the other regions, the majority of graduates work in the ICT-user sector, although the contrast is relatively small (between 2% and 5%).

Findings by number of students surveyed

It should be noted that student numbers relate to students who returned information to their HEI about their destination within six months of graduation, and *not* to the total number of ICT graduates. There was no significant variation between the total number of students with an ICT outcome. However, the distribution of students within this category did vary slightly. Institutions with fewer than 100 students submitting returns had a slightly higher number of graduates undertaking further study or training in an ICT-related subject, while institutions with more than 100 students submitting returns had a slightly higher number of graduates entering ICT-related work.

2002 compared with earlier years

In the letters and reports which accompanied the information submitted to the survey by the Careers Departments of the 25 HEIs, several mentioned that they had observed a decline in the employment rates of graduates, in particular ICT graduates, between 2002 and previous years. In order to observe this, I compared the 2002 and 2001 figures for eight of the institutions in the survey. The institutions selected were simply those for which 2001 figures had either been sent to me or were available on the internet. However, they turned out to be a representative sample in terms of their institution type, size and location.

The 2002 figures for these institutions are broadly similar to the averages for the survey.

Table 4 compares the 2002 figures for the eight institutions with the 2002 figures for all 25 institutions in the survey, and with 2001 figures for these eight institutions. The comparison of the 2002 figures indicates that these institutions are broadly representative of the sample as a whole. Slightly more of their graduates go directly into employment rather than further study or training, but levels of unavailability and unemployment are almost the same. Very slightly fewer of their graduates enter ICT-related work.

2001 graduates have higher overall employment, and considerably higher employment in ICT-related work. Only 2% more are unemployed in 2002 than in 2001, but employment in non-graduate work is considerably lower in 2001. In addition, it appears from these figures that more 2002 graduates enter further study or training in ICT. This may be because they encounter more difficulty in finding work, and therefore choose study or training rather than unemployment or non-graduate work. Alternatively, they may be *aware* that there is less ICT-related work available than before, and have decided prior to graduation that they will stand a better chance of getting a job in their chosen fields if they have an additional qualification.

Also striking is the split between ICT-user and ICT-supply. In 2001, considerably more graduates enter ICT-supply organisations. More graduates are still employed by ICT-supply than ICT-user organisations in 2002, but the split is smaller. This may reflect the growth of ICT use in business, in particular the development of e-business. However, this effect may result from specific placement or recruitment programmes within the institutions surveyed.

	2002 figures for all 25 institutions	2002 figures for the eight institutions	2001 figures for the eight institutions
Employed	69.1 %	72.0 %	78.3 %
Further study/training	13.7 %	11.2 %	7.5 %
Not available for work	4.8 %	4.8 %	4.1 %
Unemployed/seeking work	12.3 %	12.0 %	10.0 %
Graduates in ICT work	50.7 %	51.4 %	64.0 %
Working graduates in ICT work	73.4 %	71.4 %	81.7 %
Graduates in graduate non-ICT work	5.4 %	5.4 %	5.7 %
Graduates in non-graduate non-ICT work	13.8 %	15.2 %	8.6 %
Graduate in ICT further study/training	11.5 %	9.4 %	7.5 %
Graduates in non-ICT further study/training	2.2 %	1.8 %	1.1 %
Graduates in ICT work in ICT-supply	24.9 %	29.0 %	38.6 %
Graduates in ICT work in ICT-user	25.8 %	22.4 %	25.3 %

Table 4: Comparison between 2002 and 2001 figures

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