Research Bulletin 22/10 | Skills Demanded by the ICT Sector

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Summary

This Bulletin examines the growth of the ICT sector and the demand for IT workers more broadly within Northern Ireland and is the third annual report to focus on this data. It considers the latest statistics on jobs, business registrations and economic output for the ICT sector as well as examining the number of online job advertisements for IT workers across all sectors. It also uses qualifications data as well as figures from Burning Glass, an unofficial source for online job advertisements, to discuss what companies are demanding from IT workers.

Overall, whilst in the longer term the data indicates that the ICT sector has continued to grow at a faster rate than the economy as a whole in terms of jobs, registered businesses, and economic output, in the past year this has slowed and is in some cases declining. It is expected that this sector will return to growth, and it is therefore important that supply of labour keeps pace with demand.

Introduction

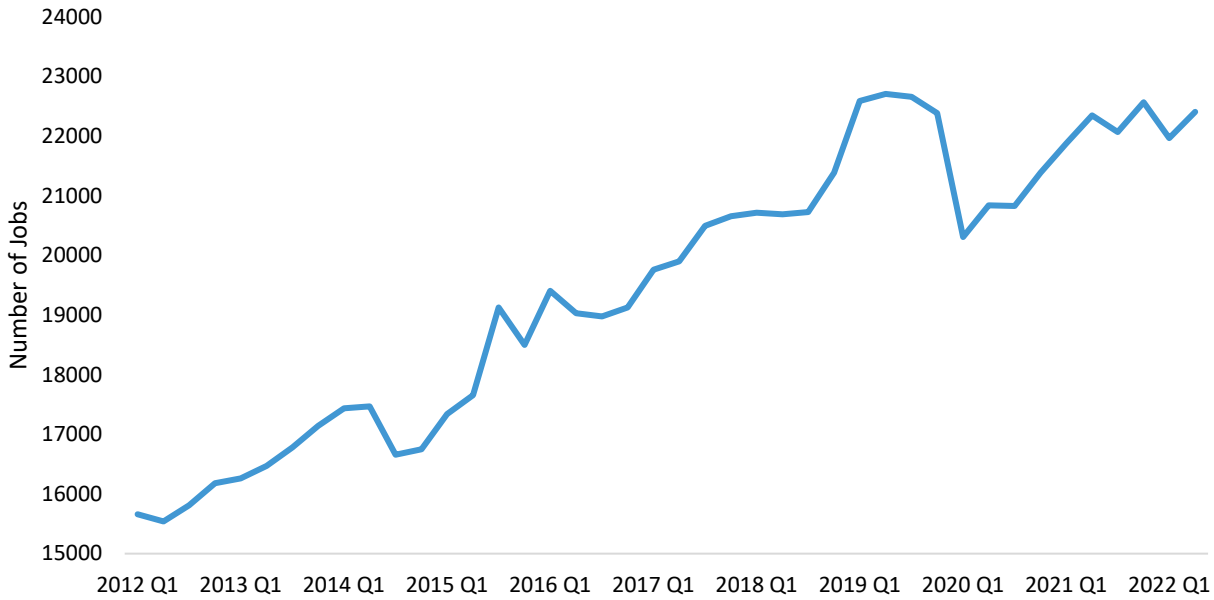
This Research Bulletin considers a range of data and statistics for the ICT sector as well as demand for IT workers across the whole economy regardless of the economic sector they work in. It examines a range of official data from NISRA, the Department for the Economy, as well as unofficial data from Burning Glass, a web-scraping tool of online job advertisements.

ICT Sector Employee Jobs

There are currently over 22,000 employee jobs in the ICT sector[i] in Northern Ireland (Figure 1), growing by almost 7,000 (42%) between the start of 2012 and 2022. This is a much higher rate of job creation compared with the whole economy which witnessed 16% growth in jobs over the same period. Computer Programming and Consultancy and Telecommunications jobs accounted for 81% of all those in the ICT industry.

Out of all jobs created since 2012 in Northern Ireland, approximately 6% were in the ICT sector. The number of employee jobs in ICT increased by 10% between Q1 2020 and Q2 2022 to 22,300 whilst only increasing by 3% across all sectors, showing a strong recovery after the impact of the pandemic when there was a fall of more than 2,000 jobs (between Q4 2019 and Q1 2020). Despite the higher rate of growth, ICT jobs remain around the same level as in 2019.

Figure 1: Jobs in the ICT Sector



Source: Quarterly Employment Survey, NISRA, Q2 2022

Sub-sector Jobs

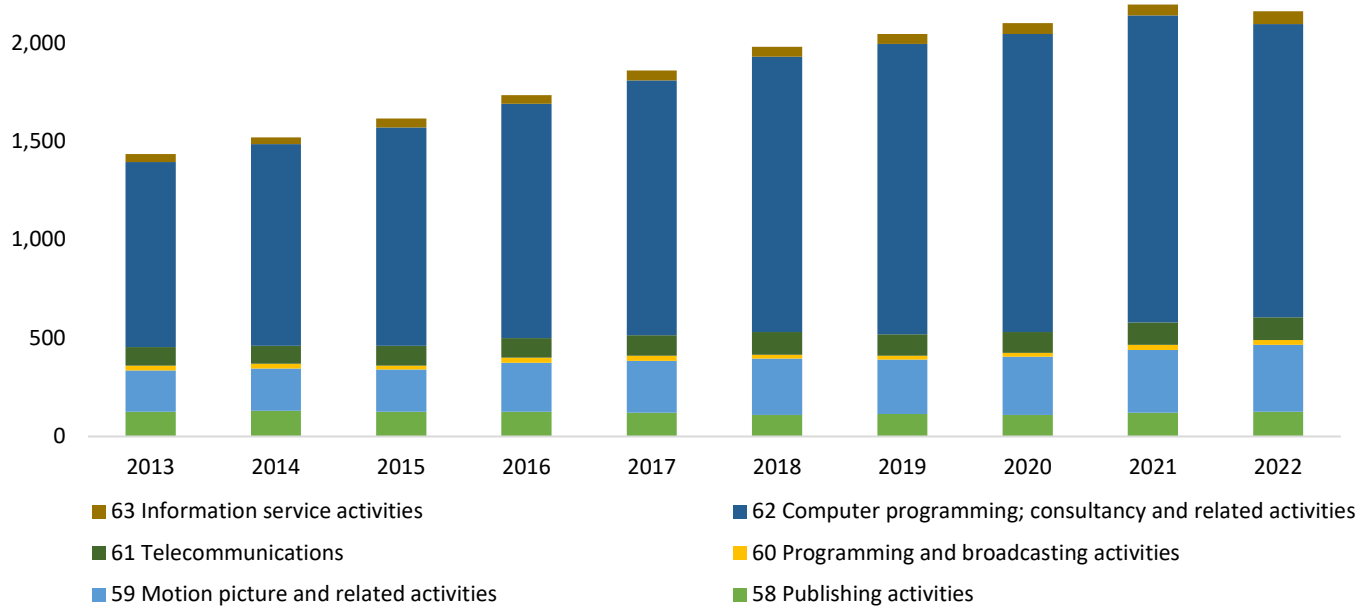
Job growth in the ICT sector has been concentrated in Computer Programming, Consultancy and Related Activities. This sub-sector alone witnessed growth of 85%, equivalent to 7,100 additional jobs, between the start of 2012 and Q2 2022, whilst Telecommunications decreased by 22% (750 jobs). There were an additional 500 jobs in Information Service activities which represented a 625% increase, however in 2012 there were only 80 jobs in this subcategory.

ICT Businesses and Economic Output

Number of Businesses

In 2022, there were 2,160 VAT and/or PAYE registered businesses in the ICT industry in Northern Ireland[ii], increasing by 51% since 2013. This growth was driven by a 59% increase in the number of 'Computer Programming; Consultancy and Related Activities' businesses, which make up 69% of businesses in ICT, as illustrated in Figure 2. However, in the last year the number of businesses in this subcategory fell by 4% which led to an overall contraction of 2% across the sector, whilst the number of businesses across all sectors grew by 2%.

Figure 2: Number of ICT Sector Businesses by Sub-Sector



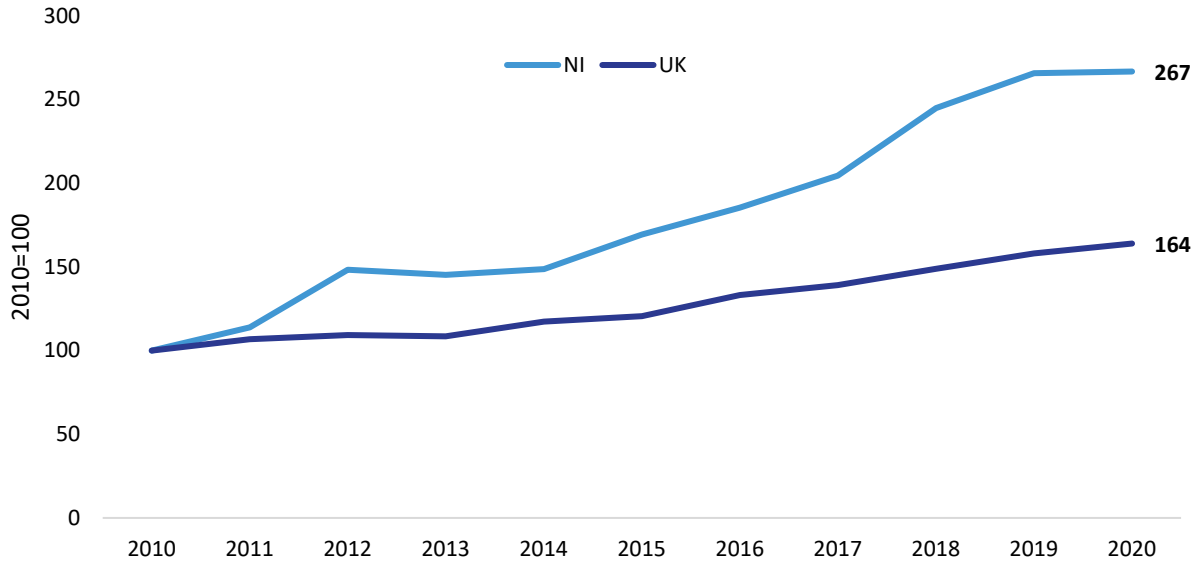
Source: Inter Departmental Business Register, NISRA, 2022

Economic Output

Economic output in the ICT Sector was worth £1.5 billion in 2020[iii], a 58% increase since 2010 and growing at a rate faster than that seen by the whole economy over the period (39%) (as measured by Regional Gross Value Added (GVA) per industry). The ICT sector made up 3% of all economic output in Northern Ireland in 2020. In terms of growth in economic output, the ICT subsector Computer Programming and Consultancy was 167% larger in 2020 than in 2010 and is growing at a faster rate than the UK average, which increased by 64% over the same period. However, as shown in Figure 3, the pace of growth in the subsector levelled off from 2019 to 2020, only growing by a marginal amount, whilst in the UK overall this subsector grew by almost 4%. Economic output across all sectors in the UK fell (-3%) from 2019 to 2020.

Within Northern Ireland, the Computer Programming and Consultancy subsector of ICT is continuing to steadily grow in terms of its contribution to total economic output, almost doubling from 1.0% to 1.9% of all output from 2010 to 2020. Whilst the gap with the UK is narrowing, the subsector still accounted for a lower proportion of economic output when compared to the UK overall, where the Computer Programming and Consultancy sector accounted for 2.7% of total UK economic output in 2020. Across the other ICT subsectors from 2010 to 2020 economic output in Northern Ireland fell in Publishing Activities (51.6%), Motion Pictures (10.0%) and Programming and Broadcasting (43.1%); however, these subsectors combined only accounted for 11% of the ICT sector's total output or 0.4% of total economic output.

Figure 3: Economic Output Growth in Computer Programming & Consultancy, NI & UK (2010 = 100)



Source: Regional GVA (balanced), ONS

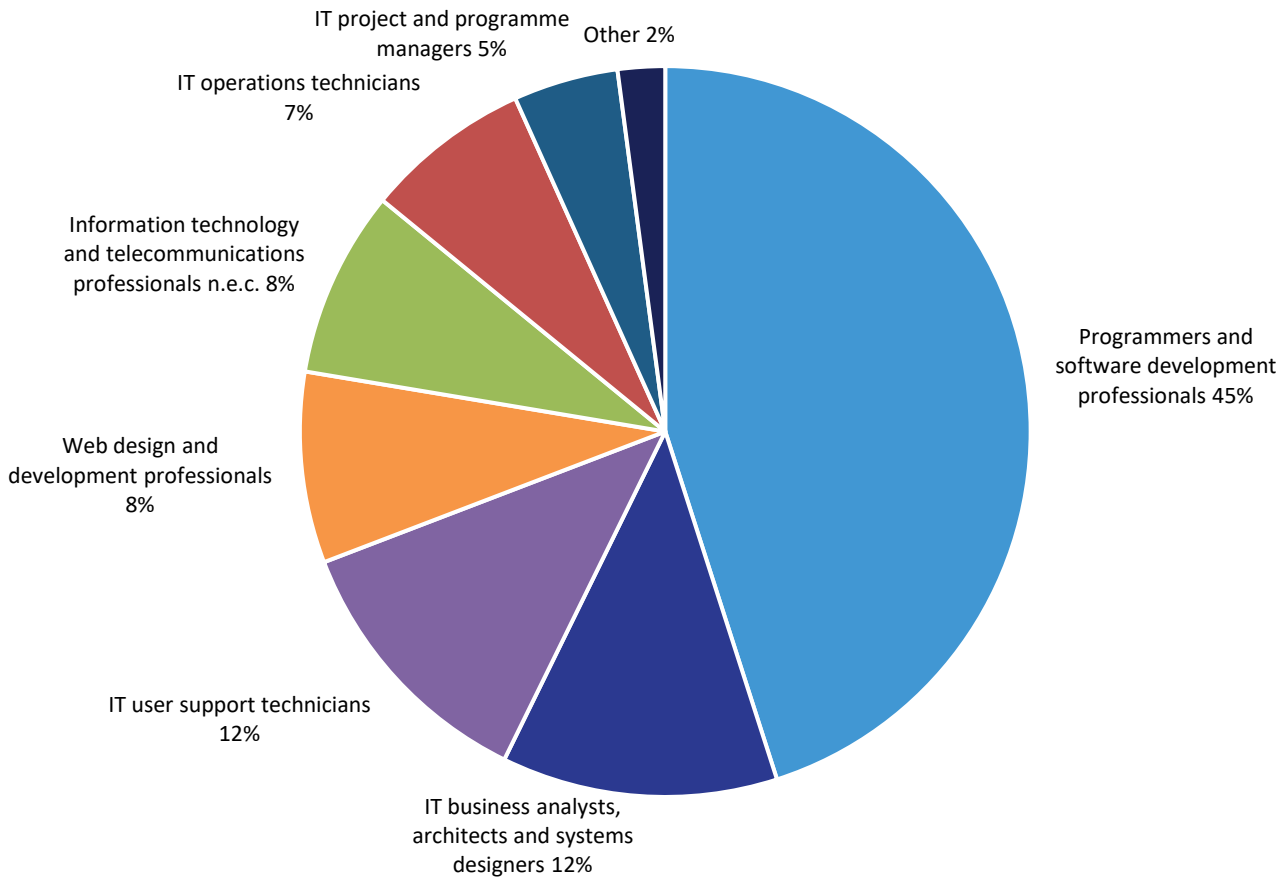
Job Market – Headline Findings

This section uses Burning Glass Technologies[iv], a web-scraping tool that examines online job advertisements, to assess the current situation and recent trends in the jobs market for IT workers[v], as well as skills requirements for IT workers across all sectors.

There were approximately 16,600 online job adverts for IT workers in Northern Ireland in 2021, equating to 11% of all online job postings for the year. Whilst IT job advertisements accounted for a lower overall proportion of total job advertisements than in 2020 (13%), this still represented a 27% increase in online job postings over the year to 2021 or 3,500 additional job postings. This is a reflection that 2021 witnessed a rebound in job postings after reopening following periods of lockdowns and pent-up demand which manifested itself in higher-than-normal demand for labour. However, the Northern Ireland market only accounted for 1.5% of all IT job postings in the UK, a lower proportion than in 2020 (1.9%).

Programmers and Software Development Professionals accounted for almost half (45%) of IT occupations in 2021 (Figure 4). IT Business Analysts and User Support Technicians were the second and third most common in terms of job postings. The top three occupations made up 69% of online IT job postings in 2021.

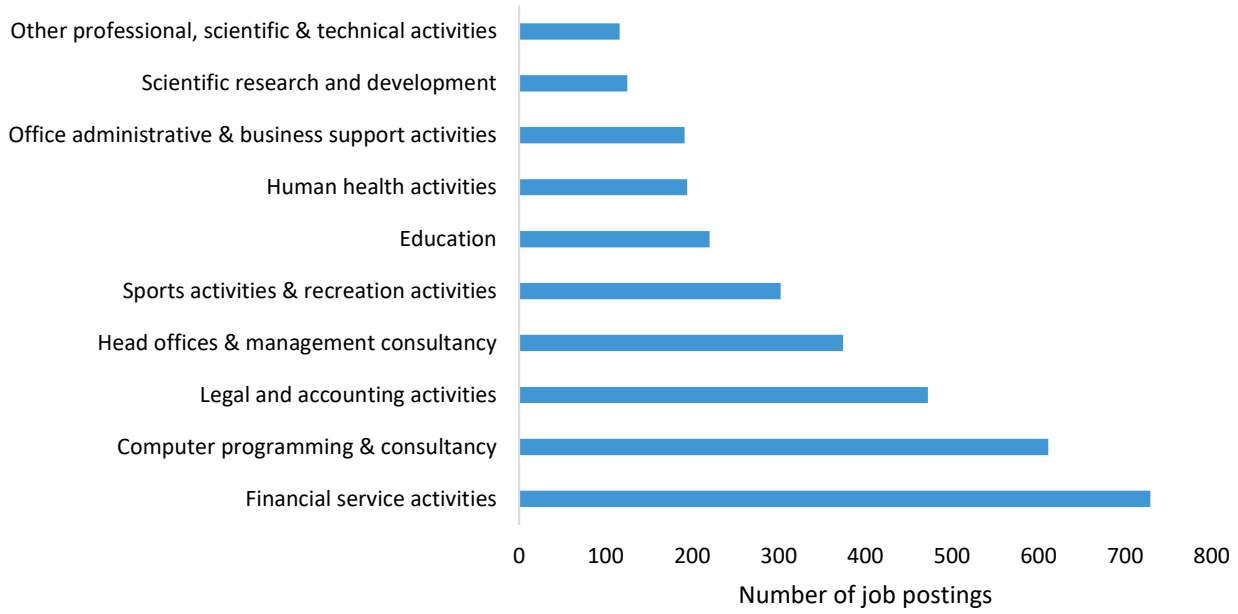
Figure 4: Job Postings by Occupation for IT Workers, 2021



Source: Labour Insight Jobs (Burning Glass Technologies)

Of the approximately 16,600 online job postings for IT workers in 2021 only 30% specified an industry. In total, there were 69 industries (at SIC 2 level) represented. Financial Services was the most specified (15%); followed by Computer Programming (12%); and Legal and Accounting Activities (10%). The top 10 sectors represented in the IT worker job postings were widely spread and varied as shown in Figure 5.

Figure 5: Online Job Postings for IT Workers by Sector where specified, 2021



Source: Labour Insight Jobs (Burning Glass Technologies)

An employer was specified in 36% of IT worker job postings in 2021, with Citigroup the most frequently represented, making up 7% of listed roles (c390 job advertisements). Version Limited (c290 job advertisements), Deloitte (c170 job advertisements) and CME Group (c170 job advertisements) were also active in job postings, accounting for an additional 17% of the total specified.

Job Market – Skills

The demand for IT workers has been on an upward trajectory and this is reflected in that many of the skills required for these roles also continued to increase from 2020 to 2021. Based on the top 25 most frequently mentioned skills in job advertisements Table 1 shows those which have been increasing in demand (more than 10% from 2020 to 2021), those that have remained steady (increase or decrease of more/less than 10%), those decreasing in demand (decrease of more than 10%) and those that are new to the list (top 25 in 2021 but not in 2020).

Strikingly, Table 1 illustrates that 21 out of the top 25 skills demanded for these roles have been increasing, with only one decreasing, although as previously noted there has been an additional 3,500 job postings in 2021 compared with 2020 and the increase in skills requested reflect this. Software as a Service and UNIX are new to the top 25 skills demanded in 2021.

Table 1: Skills in Demand for IT Workers, 2020 to 2021

Increasing (by % change)	Decreasing (by % change)	Neutral (by % change)	New
Software as a Service (SaaS) Hypertext Preprocessor (PHP) Microsoft Excel UNIX Agile Development Microsoft Office Software Engineering Microsoft Azure Scrum Docker Software Oracle Python .NET Git LINUX Java Software Development SQL Atlassian JIRA JavaScript	Active Server Pages (ASP)	SQL Server Microsoft C# C++	Software as a Service (SaaS) UNIX

Source: Labour Insight Jobs (Burning Glass Technologies)

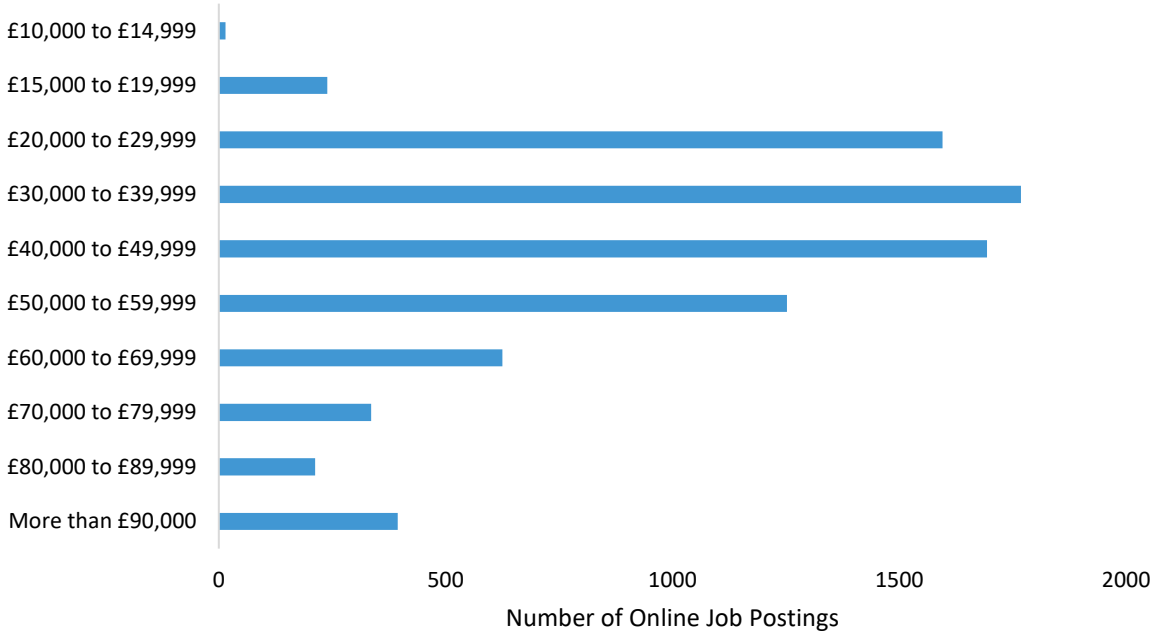
Although there were around 16,600 online IT worker job postings in Northern Ireland in 2021, only 4,300 (26%) of these stated a minimum educational requirement. Of those that done so, 80% required a degree level qualification. This is well above the average for job postings in all sectors in Northern Ireland where less than half (46%) of postings required a degree. There were approximately 5,200 online job postings for IT workers in 2021 stating the subject area required by the company. Those highest in demand were Computer Science; Engineering; Computer Software Engineering; Mathematics; and Computer Engineering.

There were approximately 6,300 postings in which a minimum level of experience was required; 60% of these had a requirement for at least three years' experience, with the other 40% asking for two years or less.

Job Market – Wage Premium for ICT Sector

This section examines salary information from online job adverts from Burning Glass Technologies. Almost half (49%) of job postings for IT workers in Northern Ireland during 2021 contained information on salary. The median real-time salary for IT workers was £40,000, well above the Northern Ireland average (£25,000 median for postings across all occupations in Northern Ireland during 2021). The salary distribution for IT workers is shown in Figure 6. It illustrates that 35% of reported salaries for IT workers were £50,000 or more; this compares with around 9% across all occupations in Northern Ireland during 2021. Only 1% of all online job postings in Northern Ireland had reported salaries greater than £90,000 but this increased to 5% for IT workers.

Figure 6: Salary Distribution for ICT Workers, 2021



Source: Labour Insight Jobs (Burning Glass Technologies)

The median salary of £40,000 in Northern Ireland for IT workers was higher than that of Wales, East Midlands, and the North East, and the same as Yorkshire and the Humber. London reported the highest salary at £62,500 and was the only region to report a median salary more than the UK median (£45,200).

NISRA's Annual Survey of Hours and Earnings (ASHE)[vi] provides official wage data on Northern Ireland's ICT sector for 2022. It estimates the median gross annual salary for all workers in the ICT sector to be £38,164, a 10% increase annually, and over 50% higher than the Northern Ireland average (£25,293). It should be noted that ASHE only provides information on employees who have been in their job for more than one year so provides less insight into the latest job market conditions.

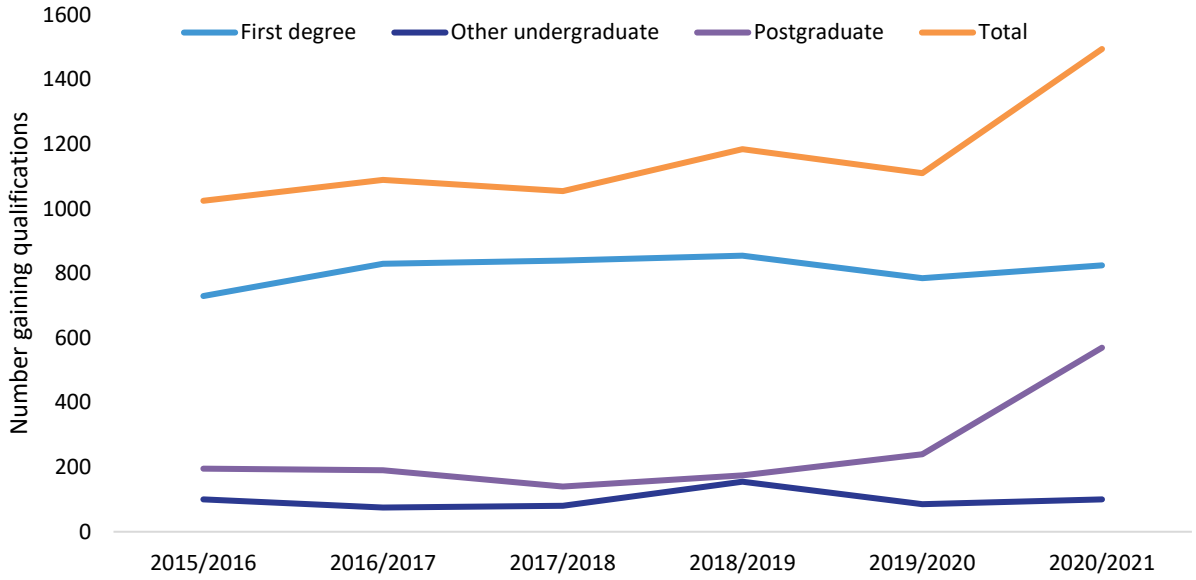
Labour Supply

UUEPC's Skills Barometer[vii] predicts 3.1% job growth each year for the ICT sector between 2020-2030 in Northern Ireland on average, where 69% of new workers will be required to be qualified to degree level or above, making ICT the most degree-hungry sector (compared to the average of 37% across all sectors). The sector will require an additional 1,600 new workers annually from education or migration to satisfy this expansion as well as replacing any workers that leave the sector. Over the shorter term, the quarterly sectoral forecast (Q2 2022) from Danske Bank[viii] predicts job growth of 2.5% in the ICT sector this year (1.2% overall) and 2.2% in 2023 (0.6% overall).

Computing is now the fourth most studied subject area in Northern Ireland Higher Education Institutions with almost 1,500 graduates in 2020/21 (Figure 7), an increase of 31% from 2018/19[ix]. This increase was largely driven by a sharp rise in the number of postgraduates which went from c175 to c570, an increase of 226%, probably due to the skills

initiatives set up by the Department in response to the COVID-19 pandemic[x]. The number of first degree graduates has remained constant at around 800 per year from 2016/17 to now.

Figure 7: Students gaining qualifications in Computing at NI Higher Education Institutions

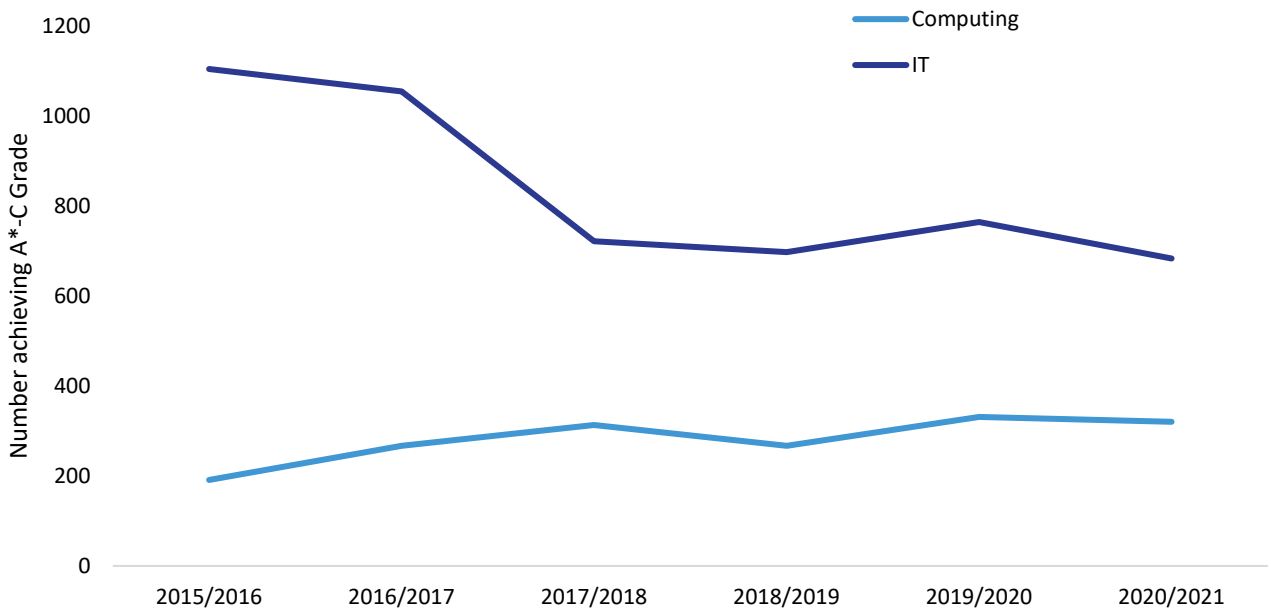


Source: Department for the Economy Northern Ireland

In the Further Education (FE) sector, there were c8,800 regulated enrolments in ICT in Northern Ireland in 2020/2021, substantially lower (41%) than in 2016/17 when there were c14,800. It is important to note the entire FE sector has seen a fall in enrolments (linked to fewer part-time enrolments, improved school exam results and a demographic dip in 16-19 year olds[xi]) and is now 32% lower than in 2016/17, and out of 15 FE subject categories, 14 of these have experienced a decline in numbers during this period.

In terms of qualifications of school leavers at GCSE and A Level, in the academic year 2020/21, c510 received a GCSE grade A*-C in Computing and c2,860 in ICT, with c320 achieving an A level grade A*-C in Computing and c680 in ICT[xii]. There has been a sharp fall in the numbers achieving an A Level (A*-C) in ICT, falling 38% from 2015/16 to 2020/21, whilst there was a 68% increase in those obtaining an A Level (A*-C) in Computing, albeit from a lower baseline, with Figure 8 showing growth in computing for two years from 2015/16 to 2017/18, and has since not changed greatly. These subjects can provide a pathway into related higher and further education courses which may in turn strengthen the Digital Spine[xiii].

Figure 8: Students achieving A*-C grades at A Level



Source: Department of Education NI Exams Database

Conclusion

The longer-term trend has seen substantial growth in the number of ICT businesses, economic output, and related employee jobs. However, the latest year of data has been more challenging with growth stagnating, and in some cases declining, compared with the past few years. There has been steady growth in the number of jobs in the ICT sector in the last 10 years and it has recovered following a temporary fall due to the pandemic.

There were 3,500 more online job postings for IT workers in 2021 compared with the previous year, a 27% increase (largely due to bounce back following pandemic lockdowns), with Programmers and Software Development Professionals accounting for almost half of the roles. NISRA figures show the median salary in the ICT sector to be over 50% higher than the country's average, however this only accounts for workers in a job for 12 months or more.

Those gaining higher education qualifications in Computing has been increasing and although job growth has slowed, it is important this continues going forward given the high requirement for new workers to have Degree and above level qualifications and even when growth in jobs is slow, there is always demand through the need to replace workers leaving the ICT sector.

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For further information or queries please contact analyticalservices@economy-ni.gov.uk

[i] Quarterly Employment Survey Historical Tables June 2022 (Nisra.gov.uk)
[ii] Inter Departmental Business Register June 2022 (Nisra.gov.uk)
[iii] Regional Gross Value Added (balanced) by Industry (Ons.gov.uk)
[iv] Burning Glass Labour Insight (Burning Glass) is a software package which scans job postings from more than 40,000 sources posted online (through recruiters, job websites or company sites) and pulls data together in a standard format describing the specific skills, education, experience, and work activities required, allowing users to interrogate the results. It should be noted that Burning Glass provides a valuable source of data on the jobs market but should be used as complementary to official data. The data from Burning Glass comes from job adverts and is therefore dependent on what employers put in those adverts. It is also worth noting that a job posting may not always indicate an actual vacancy as some postings can refer to posts yet to be created. Other limitations in the data include the actual level of detail in job adverts (which can vary for different postings) and the fact that most postings tend to be from larger companies, as smaller businesses tend not to use online adverts.
[v] Online job postings for ICT workers have been filtered by the following occupations: SOC 5245 (IT Engineers), SOC 213 (Information Technology and Telecommunications), SOC 1136 (Information technology and telecommunication directors) and SOC 313 (Information Technology Technicians).
[vi] Annual Survey of Hours and Earnings (Nisra.gov.uk)
[vii] NI Skills Barometer 2021 (Economy-ni.gov.uk)
[viii] Danske Bank Northern Ireland Quarterly Sectoral Forecast Q2 2022 (Danskebank.co.uk)
[ix] Department for the Economy Higher and Further Education Statistics (Economy-ni.gov.uk)
[x] Department for the Economy Economic Recovery Action Plan 2021 (Economy-ni.gov.uk)
[xi] Department for the Economy Further Education Sector Activity in Northern Ireland: 2015/16 to 2019/20 (Economy-ni.gov.uk)
[xii] Department of Education NI Exams Database (2022)
[xiii] Department for the Economy Skills Strategy for Northern Ireland (Economy-ni.gov.uk) - CCEA has developed a digital skills and curriculum framework. It draws on a Report produced by the House of Lords Select Committee on Digital Skills and provides a useful concept, which can be extended across all ages to profile the 'digital spine' that is required to meet the needs of Northern Ireland's social and economic development. It identifies three levels of digital skills: Digital Citizen, Digital Worker and Digital Maker. As the CCEA's remit extends only to level 3 qualifications, this Report demonstrates that there is a need for a robust educational pathway in digital qualifications, spanning early years to post-graduate provision.