# Research Bulletin 23/8 | Skills Demanded by the ICT Sector 2023

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## Summary

This Research Bulletin examines the growth of the ICT sector and the demand for IT workers more broadly within Northern Ireland and is the fourth such annual report to focus on this data. It considers the latest statistics on jobs, business registrations and economic output for the ICT sector. It also uses qualifications data as well as figures from Lightcast, a source of information on online job advertisements, to consider 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 new 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 for IT workers more broadly across the whole economy. It examines a range of official statistics from the Northern Ireland Statistics & Research Agency (NISRA), the Department for the Economy (DfE) and the Office for National Statistics (ONS), as well as commercial data from Lightcast, a web-scraping tool of online job advertisements.

ICT has a high degree of overlap with the Department for the Economy's 10X clusters and technologies; for example, in relation to Agri-Tech. The two clusters of Fintech / Financial Services and Software work with the following technologies / Unique Selling Points (USPs) – namely cybersecurity, artificial intelligence, data science & engineering, and cloud.

## ICT Sector Employee Jobs

There are currently over 25,000 employee jobs in the ICT sector[i] in Northern Ireland (Figure 1), growing by over 9,000 (61%) between the start of 2012 and Q2 2023. This is a much higher rate of job creation compared with the whole economy, which witnessed 18% growth in jobs over the same period.

Out of all jobs created since 2012 in Northern Ireland, approximately 8% were in the ICT sector. After a temporary slump at the beginning of 2020, the number of employee jobs in ICT increased by 25% (5,000) between Q1 2020 and Q2 2023 to 25,300, whilst only increasing by 5% across all sectors. This, shows a strong recovery after the impact of Covid-19 when there was a fall of more than 2,000 jobs in ICT (between Q4 2019 and Q1 2020).

**Figure 1: Jobs in the ICT Sector in Northern Ireland**
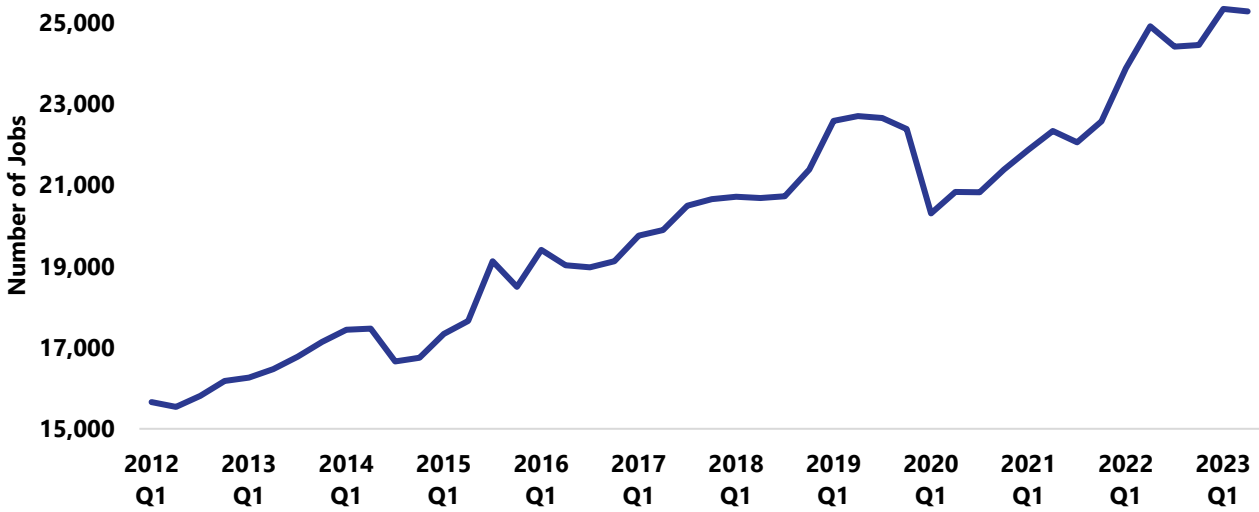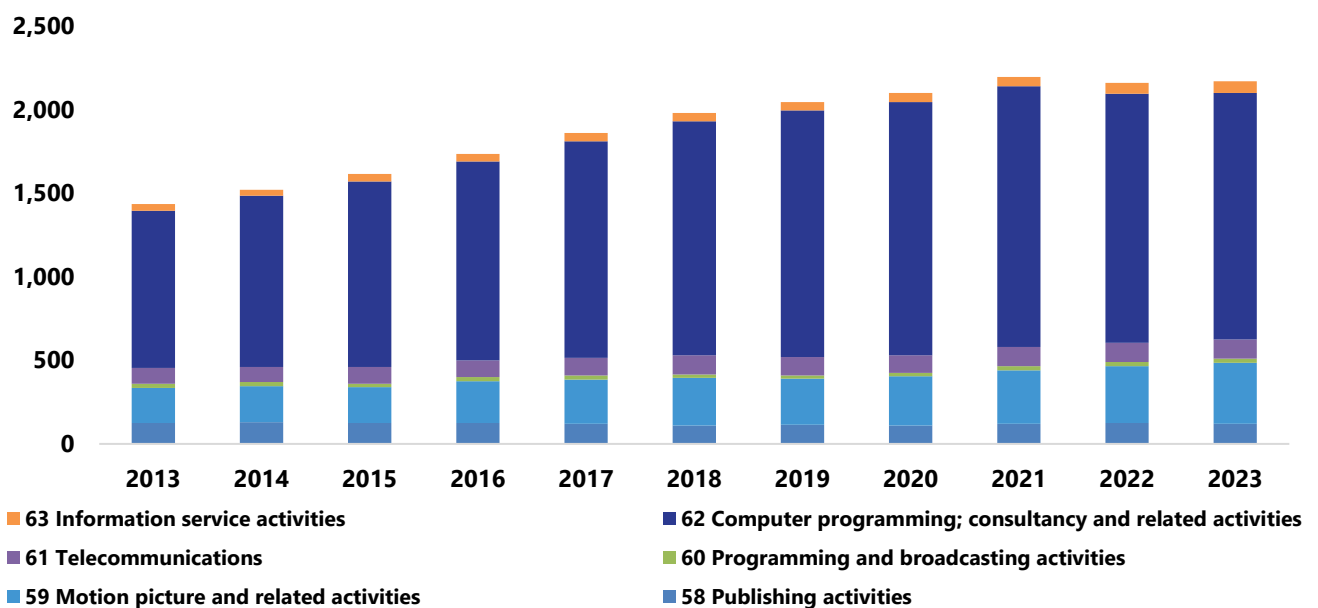


*Source: Quarterly Employment Survey, NISRA, Q2 2023*

Job growth in the ICT sector has been concentrated in Computer Programming, Consultancy and Related Activities. This sub-sector alone witnessed growth of 88%, equivalent to 7,400 additional jobs, between the start of 2012 and Q2 2023, whilst Publishing Activities decreased by 30% (500 jobs). There were an additional 500 jobs in Information Service activities in Q2 2023, which represented a 638% increase on the 80 jobs in this subcategory in 2012.

## ICT Businesses and Economic Output

The total number of ICT businesses has begun to level off since a peak of almost 2,200[ii] in 2021 (Figure 2). In 2023, there were 2,170 VAT and/or PAYE registered businesses in the ICT industry in Northern Ireland, a marginal increase (of 10) on the previous year.

**Figure 2: Number of ICT Sector Businesses by Sub-Sector in Northern Ireland**



63 Information service activities
62 Computer programming; consultancy and related activities
61 Telecommunications
60 Programming and broadcasting activities
59 Motion picture and related activities
58 Publishing activities

*Source: Inter Departmental Business Register, NISRA, 2023*

Economic output in the whole ICT Sector was worth £1.6 billion in 2021[iii], a 71% increase since 2010 and growing at a rate faster than that seen by the whole economy over the period (46%) (as measured by Regional Gross Value Added (GVA), per industry, in nominal terms).

In terms of growth in economic output, the ICT subsector of Computer Programming and Consultancy was 211% larger in 2021 than in 2010 and grew at a faster rate than the UK average, which increased by 75% over the same period, as shown in Figure 3. The pace of growth in the subsector has slowed since 2019 in both Northern Ireland and UK, however NI growth is still above the UK average.

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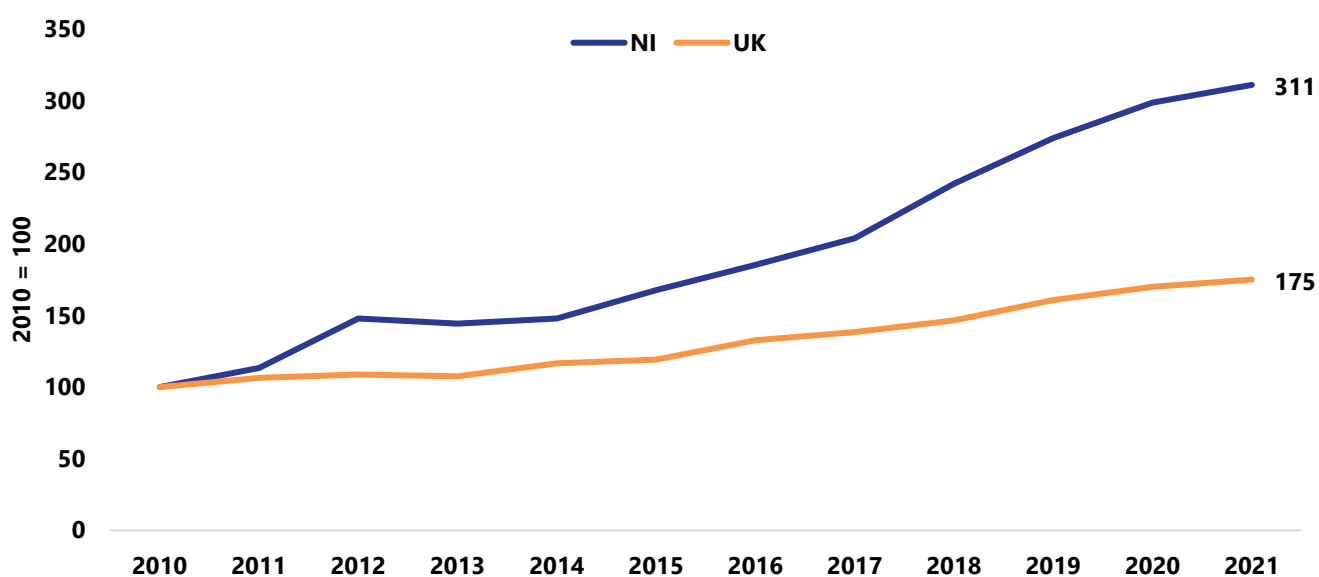


*Source: Regional GVA (balanced), ONS*

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, doubling from 1.0% to 2.1% of all output from 2010 to 2021. 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 2021.

## Job Market – Headline Findings

This section uses Lightcast[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 16,100 online job adverts for IT workers in Northern Ireland from October 2022 to September 2023, equating to 10% of all online job postings during this period. Whilst IT job advertisements accounted for the same overall proportion of total job advertisements for the same period in the previous year (10%), there was a 12% decrease in online job postings or 2,200 less job postings when comparing the two periods. The Northern Ireland market only accounted for 2% of all IT job postings in the UK. However, this is an increase

from the 1% for the same period the previous year.

Programmers and Software Development Professionals accounted for nearly half (46%) of IT occupations from October 2022 to September 2023. (Figure 4). IT Operations Technicians and IT Business Analysts were the next most common in terms of job postings. The top three occupations made up 64% of online IT job postings.

**Figure 4: Job Postings by Occupation for IT Workers, October 2022 to September 2023, NI**
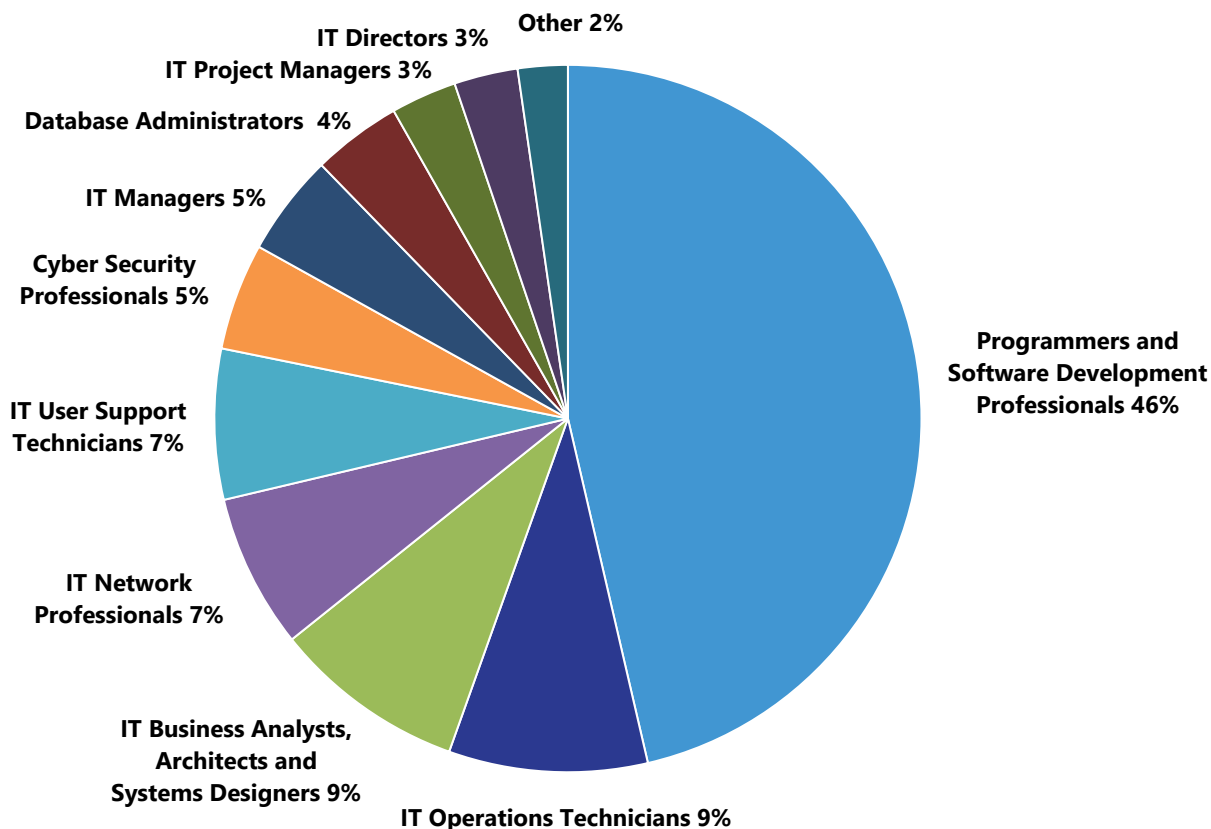


*Source: Lightcast*

Of the approximately 16,100 online job postings for IT workers from October 2022 to September 2023, 76% specified an industry. In total, there were 52 industries (at SIC 2 level) represented. Computer Programming, Financial Service Activities and Office Administrative Activities were among the most specified industries.

Citigroup, Kainos and Version1 were some of the most active employers in job postings in Northern Ireland. However, it is important to note that a large proportion of recruitment for IT job roles are via recruitment agencies.

## Job Market – Skills

The top three most frequently mentioned skills remain the same when comparing the two periods, though all experienced a 6% decrease in frequency. These are skills in Agile Methodology, Software Engineering, and Java (Programming Language). Skills in Microsoft Azure jumped from the ninth most frequently mentioned skill to the fourth, however, still saw a 3% decrease (approximately 700 mentions).

Microservices and Kubernetes are both new to the top 25 skills demanded from October 2022 to September 2023.

Only 2,500 (16%) of online IT job postings stated a minimum educational requirement. Of those that did so, 77% required a degree level qualification. This is well above the average for job postings in all sectors in Northern Ireland where less than half (44%) of postings required a degree.

There were approximately 3,400 postings in which a minimum level of experience was required; 41% of these had a requirement for 2 to 3 years' experience, with a further 27% asking for between 4 to 6 years minimum experience.

## Spotlight on IT Professionals from the 2021 Census

This section contains analysis of the 2021 Census to provide an overview of IT Professionals[vi] in Northern Ireland. A census usually takes place once every ten years and is the largest and most complex statistical exercise undertaken in Northern Ireland. Census statistics are a vital source of information, and are widely used by government, public bodies, academia, commercial businesses and others to develop policies, allocate resources and help deliver services.

The 2021 census had an overall return rate of 97.2%, thus meaning its coverage across households in Northern Ireland was high.[vii]

Overall, the 2021 Census recorded 17,800 workers as IT Professionals. The data showed that in 2021, most IT professionals were male (78%) and most worked full-time (95%). Over 80% were between the ages of 25 and 54 in 2021 with over one-third (34%) being between the ages of 25 to 34 alone.

**Figure 5: IT Professionals in Northern Ireland by Sex and Hours Worked in 2021**
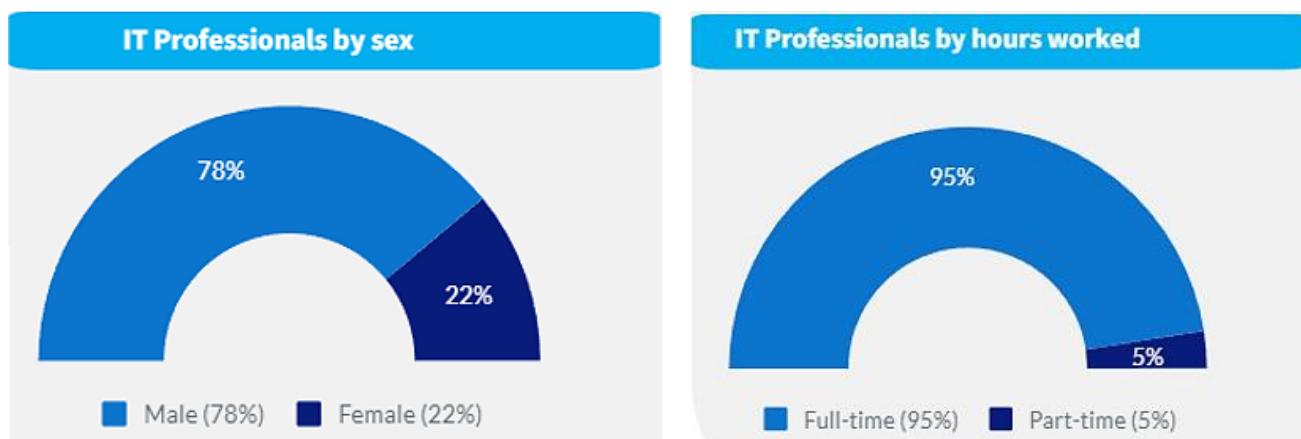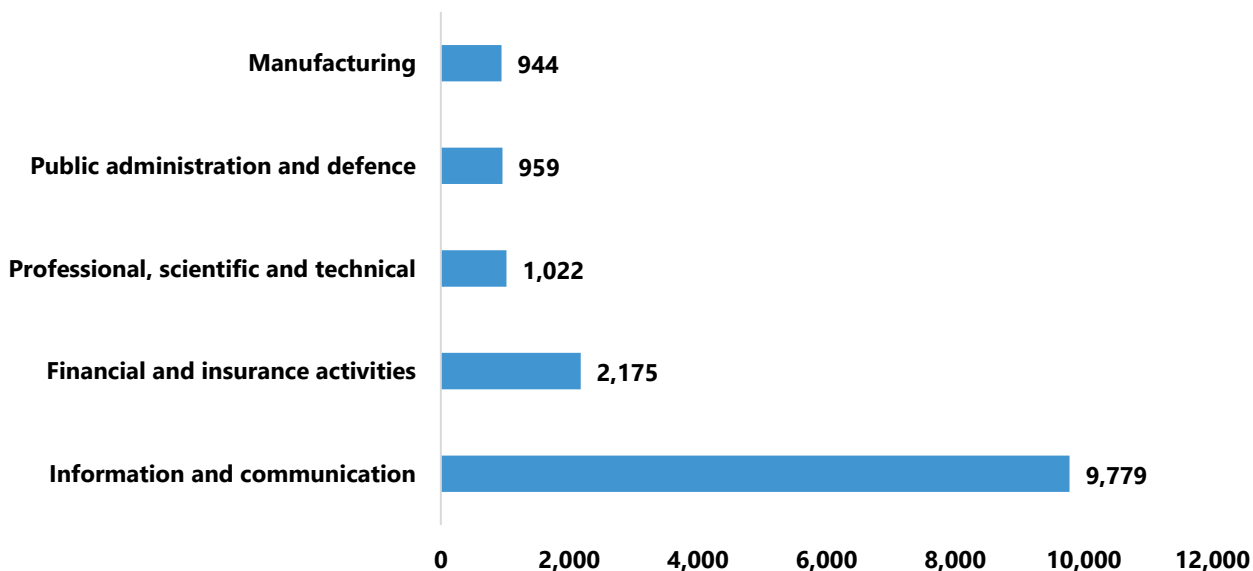


*Source: Census 2021*

**Figure 6: Number of IT Professionals in Northern Ireland, by Age, in 2021.**
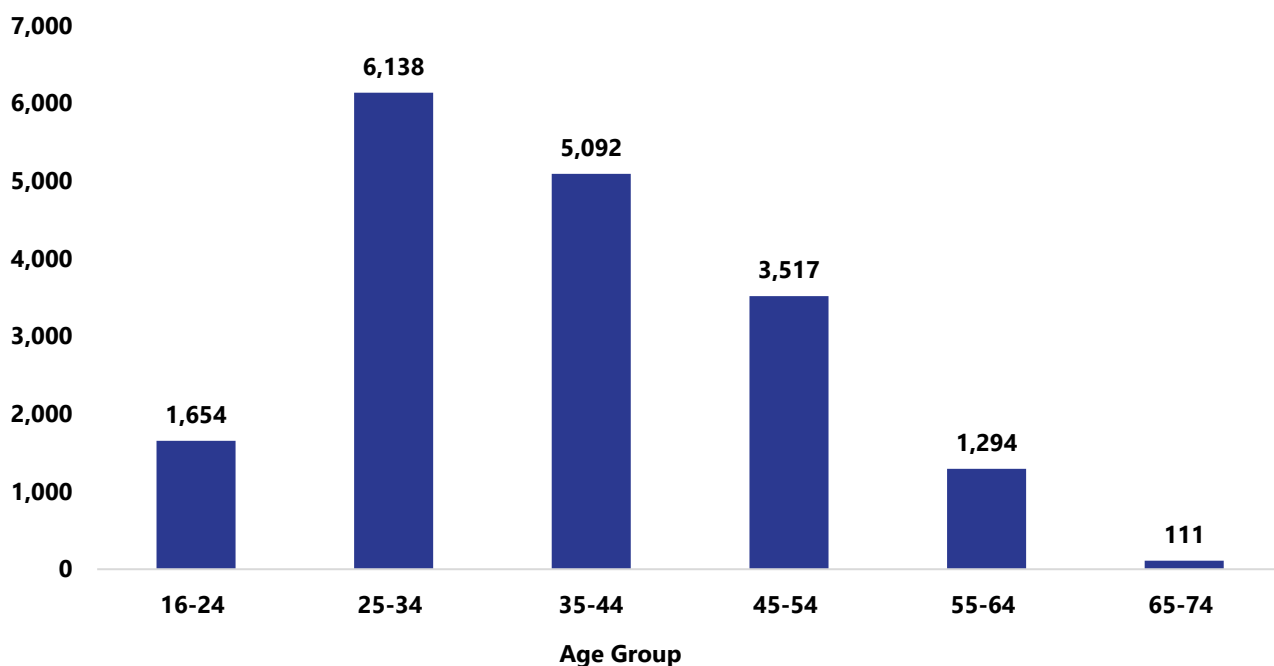


*Source: Census 2021*

According to Census 2021, the Information and Communication industry accounted for 57% of IT Professionals with just under 10,000 workers, with Financial and Insurance Activities the next biggest (13%, 2,000 workers).

**Figure 7: Number of IT Professionals in Northern Ireland, by Industry, in 2021**



*Source: Census 2021*

Figure 8 highlights the different levels of qualifications IT Professionals in Northern Ireland held in 2021. Over 15,000 IT Professionals had Level 4 and/or above qualifications, 84% of the workforce (of IT Professionals); 10% had Level 3 qualifications; and 5% had Level 2 and/or below qualifications. Just 1% of IT Professionals had an Apprenticeship qualification.

**Figure 8: IT Professionals in Northern Ireland, by Qualifications, in 2021**

1% 5%

10%

- Apprenticeship
- Level 2 and below
- Level 3
- Level 4 and above

84%
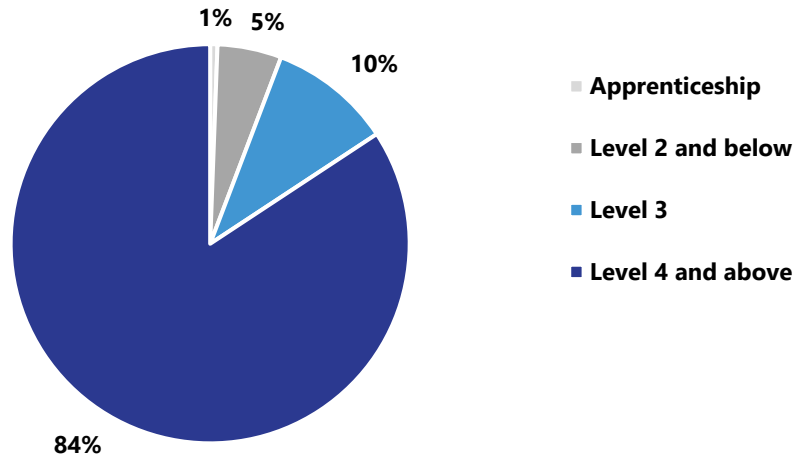
*Source: Census 2021*

## Labour Supply

Computing is now the fourth most studied subject area in Northern Ireland Higher Education Institutions with over 1,500 graduates in 2021-22 (Figure 9), an increase of 38% from 2019-20[viii]. This increase was largely driven by a sharp rise in the number of postgraduates which went from around 240 to around 610. The number of first degree graduates has remained constant at around 800 per year from 2016-17 to now.

**Figure 9: Students Gaining Qualifications in Computing at NI Higher Education Institutions**

First degree — Other undergraduate — Postgraduate — Total
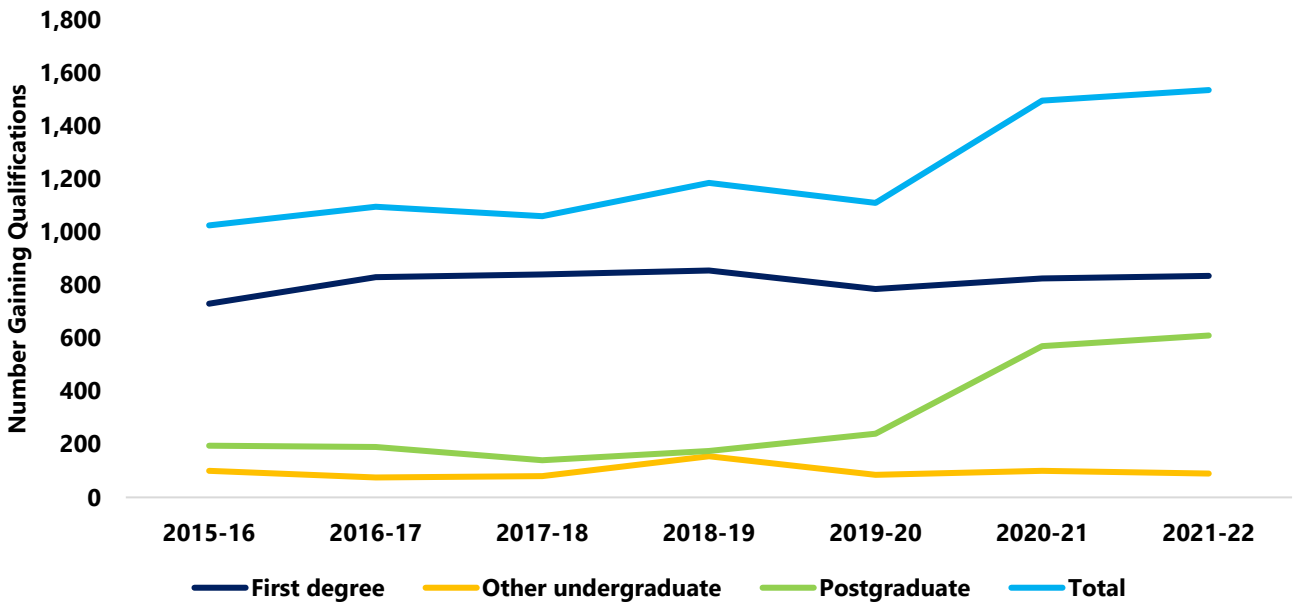
*Source: HESA*

In the Further Education (FE) sector, there were approximately 9,200 regulated enrolments in ICT in Northern Ireland in 2021-22, substantially lower (38%) than in 2016-17 when there were circa 14,800. It is important to note the

entire FE sector has seen a fall in enrolments (partly linked to fewer part-time enrolments, improved school exam results and a demographic dip in 16-19 year olds[ix]) and is now 29% lower than in 2016-17. 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 2021-22, approximately 580 received a GCSE grade A*-C in Computing and around 2,870 in ICT. Around 330 school leavers achieved an A level grade A*-C in Computing and around 600 in ICT.[x] There has been a fall in the numbers achieving an A Level (A*-C) in ICT, declining 46% from 2015-16 to 2021-22, whilst there was a 71% increase in those obtaining an A Level (A*-C) in Computing, albeit from a lower baseline (Figure 10). These subjects can provide a pathway into related higher and further education courses which may in turn strengthen the Digital Spine.[xi]

**Figure 10: Number of Students Achieving A*-C Grades at A Level**
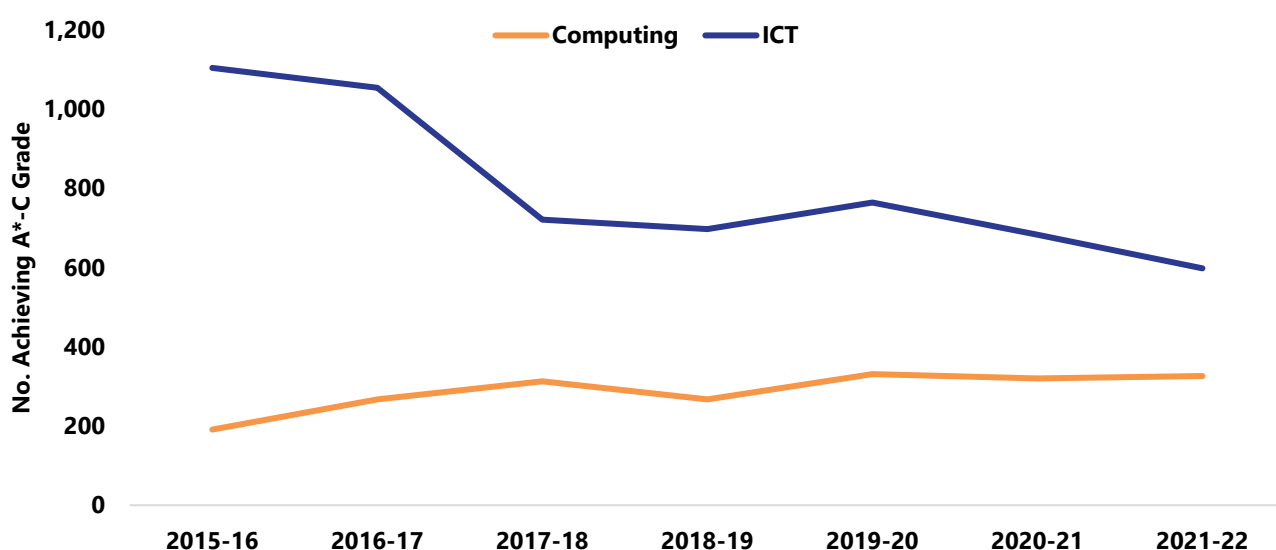


*Source: Department of Education NI Exams Database*

## Conclusion

The longer-term trend has seen substantial growth in the number of ICT businesses, economic output, and related employee jobs in Northern Ireland. However, over the shorter-term, there has been a slight slowdown with fewer IT worker job postings and number of ICT businesses levelling off.

Census data showed that in 2021, 78% of IT professionals were male and over 80% were between the ages of 25 and 54. It also showed that the vast majority (84%) of the IT workforce had Level 4 and above qualifications.

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. 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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[i] [Quarterly Employment Survey Historical Tables June 2023 (Nisra.gov.uk)](#)

[ii] [Inter Departmental Business Register June 2023 (Nisra.gov.uk)](#)

[iii] [Regional Gross Value Added (balanced) by Industry (Ons.gov.uk)](#)

[iv] Lightcast 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 Lightcast provides a valuable source of data on the jobs market but should be used as complementary to official data. The data from Lightcast 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 1137 (Information technology directors) and SOC 313 (Information Technology Technicians).

[vi] Census data based on occupation grouping SOC216: IT Professionals.

[vii] [Census 2021 Outputs and Dissemination Webinar - September 2023 (nisra.gov.uk)](#)
[Census 2021 operational report | Northern Ireland Statistics and Research Agency (nisra.gov.uk)](#)

[viii] Department for the Economy [Higher and Further Education Statistics (Economy-ni.gov.uk)](#)

[ix] Department for the Economy [Further Education Sector Activity in Northern Ireland: 2015/16 to 2019/20](#)

[x] Department of Education NI Exams Database (2023)

[xi] 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.