

# Research Bulletin 20/10 | Skills Demanded by the Digital IT Sector

Owen Duly, Analytical Services, Department for the Economy

December 2020

---

## Summary

This research article examines the demand for IT workers within Northern Ireland. It examines the skills that are most sought after for IT professionals, the level of qualification and experience needed to work in the ICT sector, as well as average salary in the sector. Predictions on future demand and supply of workers are drawn from the 2019 Skills Barometer, with an examination of the impact of COVID-19 on the demand for IT jobs also included.

The data suggests that demand for IT workers was more resilient during lockdown, with more stable demand levels than the broader economy. The number of workers in the Computer Programming and Consultancy sector in Q2 2020 were the highest quarterly number on record. Findings from the 2019 Skills Barometer forecast that demand for IT workers is estimated to continue to be strong and that many of these workers will need at least degree level qualifications.

---

## Introduction

This bulletin examines the demand for IT workers and what exactly the jobs market is demanding from such workers. It firstly considers official statistics for the Information and Communication (ICT) sector before examining the anticipated demand for IT workers using forecasts from the 2019 Skills Barometer. Furthermore, using results from Burning Glass Technologies, the bulletin examines the number of online job postings, the economic sectors demanding IT workers, the salary distribution, the skills in demand and the level of experience required. The impact of COVID-19 on the demand for IT jobs is also analysed, considering the changes in the number of online job postings for IT workers from April to October 2020 and comparing numbers of postings with the same period in 2017, 2018 and 2019.

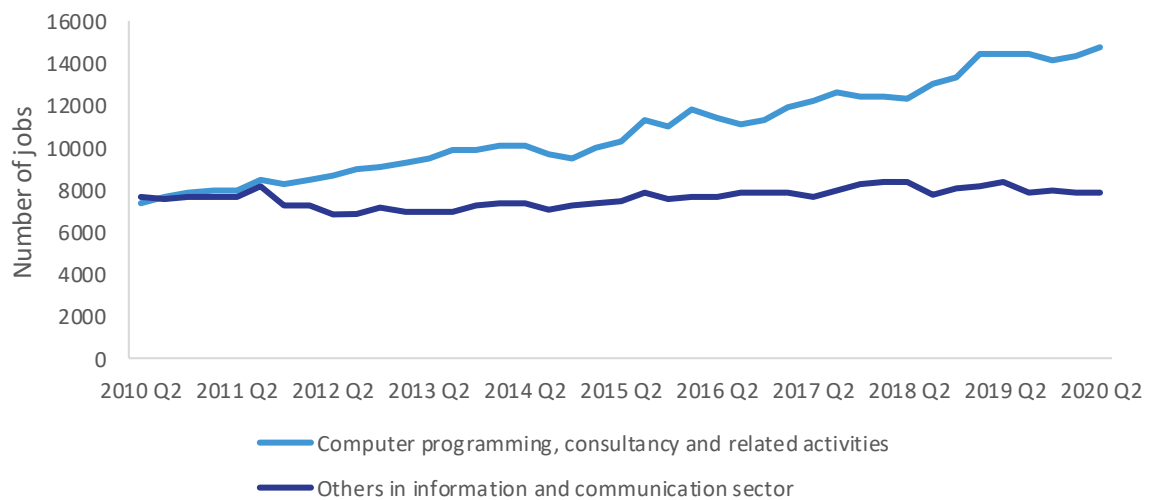
---

## Demand for IT Workers

According to bespoke data from NISRA's Labour Force Survey<sup>i</sup> there were around 30,000 IT<sup>ii</sup> workers in NI in 2019. Of this total, approximately 10,000 worked within the ICT sector, with the remaining 20,000 or so

working across a wide variety of economic sectors, with the highest numbers in manufacturing (c3,000), finance and insurance activities (c3,000) and professional, scientific and technical activities (c3,000). As of Q2 2020, the total number of jobs within the ICT sector were at the highest level on record at around 22,640, with two out of three within the Computer Programming and Consultancy subsector. The overall number of jobs in the whole sector grew by 2% over the quarter, with job numbers remaining static over the year to Q2 2020. Growth in jobs in the sector since 2010 is shown in Figure 1<sup>iii</sup>.

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

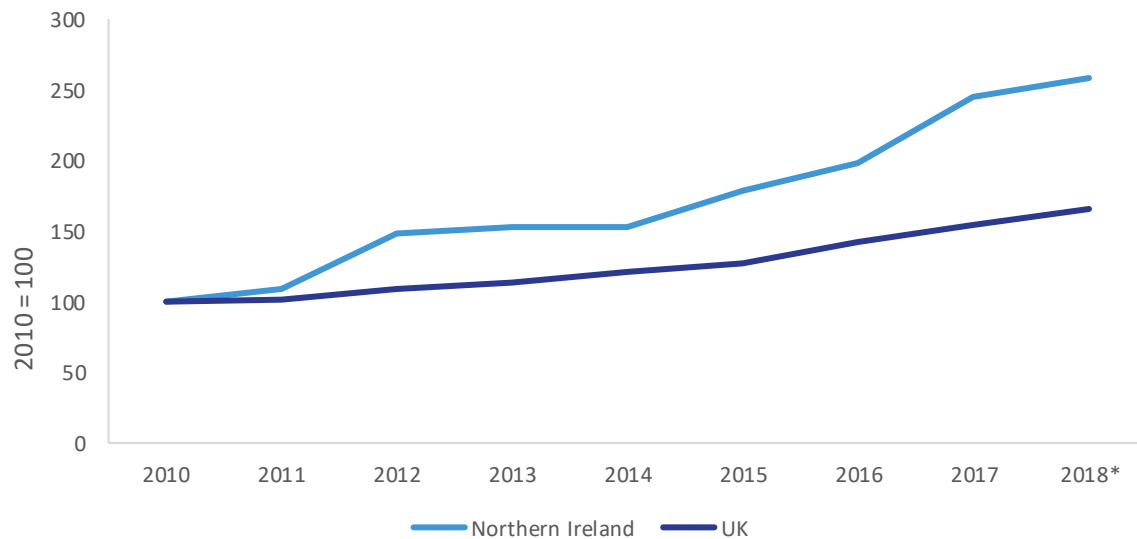


Source: Quarterly Employment Survey, NISRA, Q2 2020

The Computer Programming and Consultancy sub sector has been driving growth in the ICT sector, with jobs some 14% higher in Q4 2019 compared with Q4 2017. From Q1 to Q2 2020, which coincided with the start of the COVID-19 pandemic, the number of workers in Computer Programming and Consultancy increased by 3% despite overall ICT jobs decreasing by 0.1%. This was the second largest percentage increase and the largest absolute increase in jobs within the sector by quarter since 2016.

In terms of growth in economic output (as measured by Regional Gross Value Added (GVA) per industry<sup>iv</sup>) Northern Ireland's Computer Programming and Consultancy sector is growing at a faster rate than the UK average as shown by Figure 2.

**Figure 2: Economic output growth in Computer Programming and Consultancy, NI and UK (2010 = 100)**



Source: *Regional GVA (balanced), ONS*

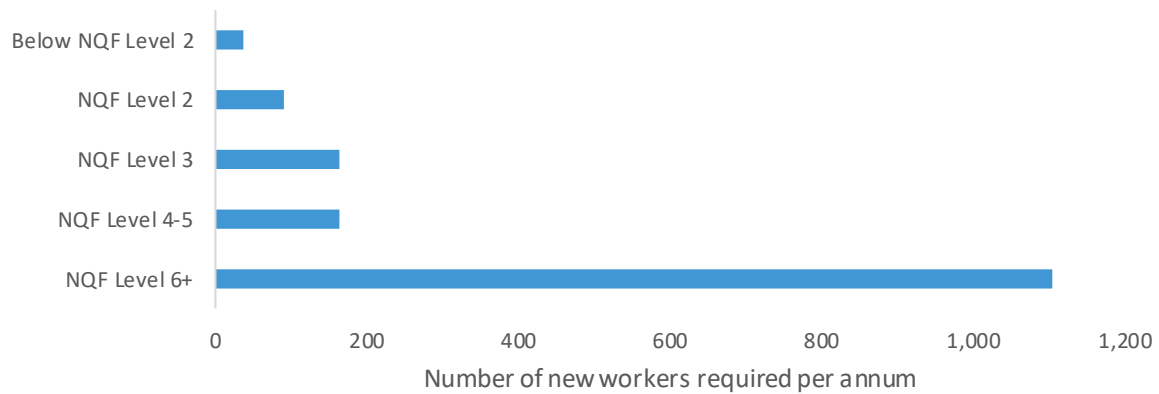
*\*Provisional figure*

Economic output in the Computer Programming and Consultancy sector in NI was 260% larger in 2018 than in 2010. This was a higher growth rate than seen in the UK as a whole, where economic output in this sector increased by 170% over the same period. However, Computer Programming and Consultancy still accounts for a larger proportion of economic output in the UK than in NI, with the sector accounting for 2.8% of all UK economic output compared to 1.9% of economic output in NI.

### **Anticipated Demand for IT Workers**

This section estimates anticipated demand for IT workers from education and migration using results from the 2019 Skills Barometer produced by the Ulster University Economic Policy Centre<sup>v</sup>; it should be noted that this was produced pre-COVID and provides a 10 year model of projected skills needs in the NI economy. It projects that under a high growth policy success scenario (aspirational scenario based on NI achieving its economic ambitions), the demand for IT workers (IT and Telecommunications professionals and IT technicians<sup>vi</sup>) from education and migration is expected to be high. Over 1,500 IT workers from education and migration will be required annually over the next decade, with just over 70% of these expected to need National Qualification Framework (NQF) Level 6 and above qualifications (equivalent to at least degree level). In contrast, only 8% of future demand for IT workers will be at NQF level 2 and below (equivalent to GCSE and below). Demand for IT workers from education and migration by qualification level is shown in Figure 3.

**Figure 3: Qualification Levels required for anticipated annual demand for IT workers from education and migration (2018-28)**



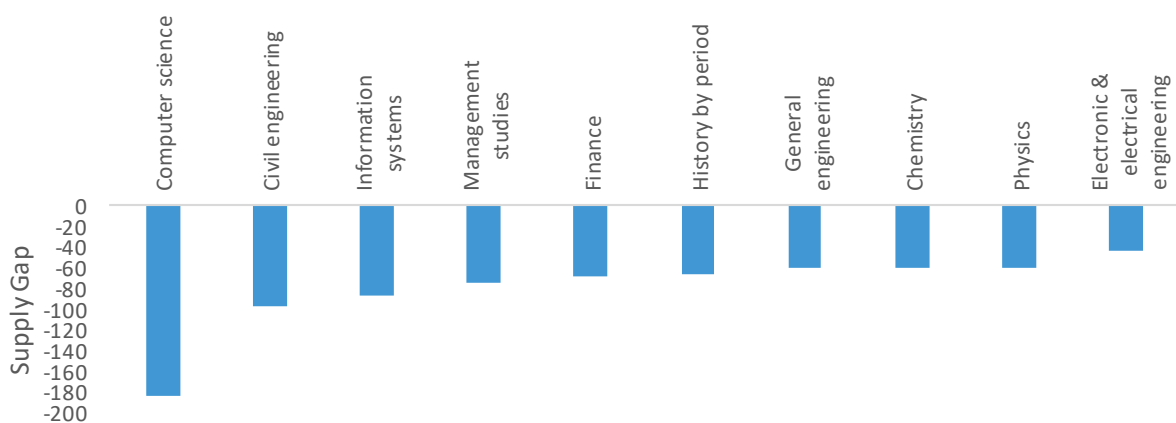
Source: 2019 Skills Barometer databank.

Note: IT workers defined as SOC 213 Information technology and telecommunications professionals and SOC 313 Information technology technicians.

Note: NQF Level 2 equates to 5 GCSEs Grade A\*-C (or equivalent); NQF Level 3 equates to A-Level (or equivalent); NQF Level 4-5 equates to Foundation Degree/HNC/HND (or equivalent); and NQF Level 6+ equates to degree and above (or equivalent).

Given the anticipated strong demand for IT workers with NQF Level 6+ qualifications, it is of no surprise that computer science is estimated to be the second highest demanded subject at degree level (only nursing is higher). The Skills Barometer estimates that there will not be enough students or immigrants with computer science degree level qualifications supplied to fill this demand, with a gap of approximately 200 every year between supply and demand – making it the most undersupplied subject at a detailed level. The subjects with the greatest anticipated shortages are shown in Figure 4.

**Figure 4: Supply Gap by subject (JACS 2 digit)**



Source: 2019 Skills Barometer, Ulster University Economic Policy Centre

Note: JACS (the Joint Academic Coding System) refers to a classification system for classifying academic subjects and modules. 2 digit refers to the principal subjects that fall under nine subject areas.

As well as Computer Science being undersupplied, most of those subjects that top the list of predicted shortages are mainly in STEM-related subjects.

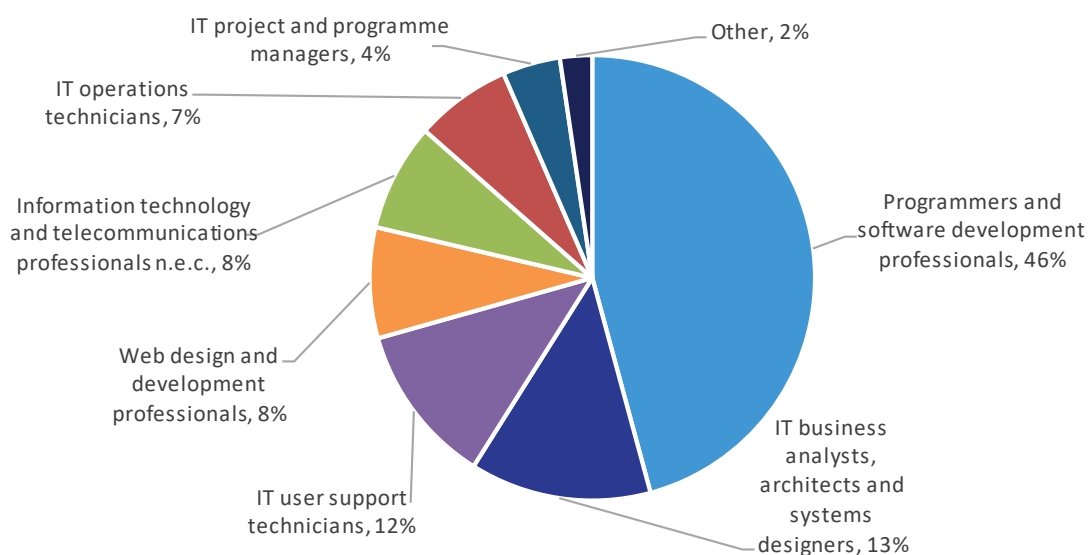
## Job Market – Headline Findings

This section examines what has been happening in the jobs market for IT workers and the skills demanded using Burning Glass Technologies<sup>vii</sup>, an innovative web-scraping tool of online job postings.

In 2019, there were approximately 13,100 job postings for IT workers<sup>ii</sup> in Northern Ireland; this accounted for 11% of job postings in 2019 and was similar to the proportion reported in 2018. However, the Northern Ireland market only accounted for 2% of all IT job postings in the UK. Roughly nine of every ten job postings in Northern Ireland for IT jobs were located in Belfast.

Figure 5 shows the job postings by IT occupation with almost half of IT job postings for programmers and software development professionals. IT business analysts and IT user support technicians come in second and third for job postings respectively, with the top three accounting for 71% of all IT job postings during 2019.

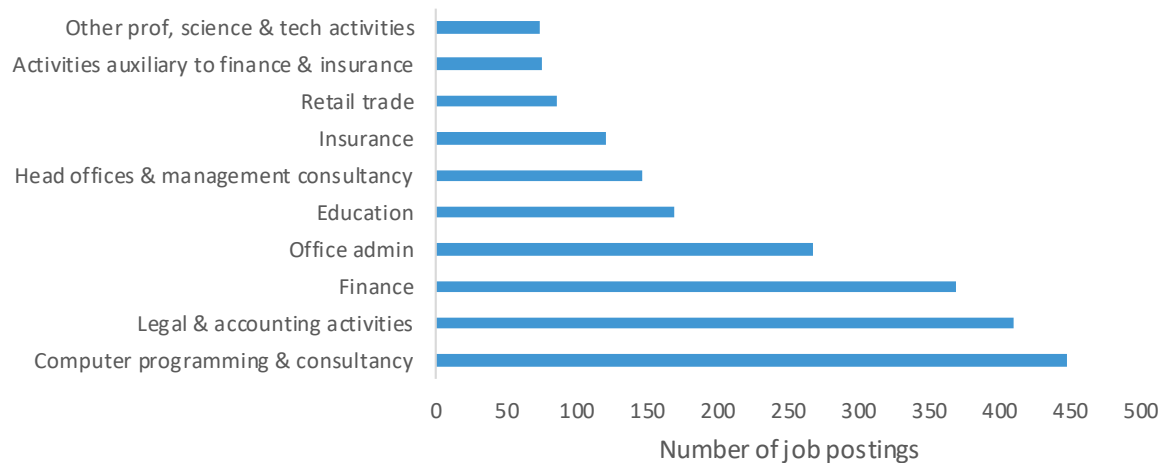
**Figure 5: Job Postings by Occupation**



Source: Labour Insight Jobs (Burning Glass Technologies)

Only 25% of IT job postings specified an economic sector. Of those where one was specified, computer Programming and Consultancy (14%); Legal and Accounting Activities (13%); and Financial Services (12%) topped the list. However, it should be noted that there was a relatively large spread of economic sectors represented. The top 10 sectors are shown in Figure 6.

**Figure 6: Online Job Postings by Economic Sector**



Source: *Labour Insight Jobs (Burning Glass Technologies)*

Of those IT job postings that specified an employer (28% of job postings), the most active in 2019 were Allstate, Citi, PWC, Deloitte and Exact IT Resources. Together, these firms accounted for around 23% of online job postings where an employer was identified.

### **Job Market – Skills**

The medium term recovery plan for Northern Ireland, 'Rebuilding a Stronger Economy' sets out a pathway to rebuild the Northern Irish economy in the aftermath of the coronavirus pandemic and to ensure economic growth and successful adaptation to a post-EU exit trading environment<sup>viii</sup>. This plan identifies four sectors in which Northern Ireland is already a global leader and which have further high growth potential: Life and Health Sciences; Advanced Manufacturing; Clean Energy; and Digital. Whilst IT workers will be required in all of these priority sectors to ensure growth can be supported, they will be fundamental to the 'Digital' sector. If Northern Ireland does not sufficiently supply or attract enough people for this sector, it could limit its possible growth. It is therefore imperative that the supply of people matches with the demands from businesses.

The demand for IT workers has increased but the skills demanded of those workers has changed, even from 2017 to 2019. Table 1 provides an indication of the skills that have been increasing in demand (more than 100 additional job postings with stated skill between 2017 and 2019), those that have remained steady (job postings with stated skill have increased up to 99 or reduced by less than 100), those decreasing in demand (over 100 fewer job postings with stated skill or no longer in top 25 in 2019) and those that are new to the list (top 25 in 2019 but not in 2017). It only considers the top 25 skills demanded in both 2017 and 2019.

**Table 1: Skills in demand for IT workers**

Increasing	Decreasing	Neutral	New
Software Development	SQL	Software Engineering	Git
Java	C++	.NET	Docker Software
JavaScript	Active Server Pages (ASP)	LINUX	Microsoft Azure
Microsoft C#	SQL Server	AngularJS	
Python	ASP.NET	jQuery	
Microsoft Excel	Oracle	Agile Development	
Microsoft Office	UNIX	PHP	
Scrum	HTML5		
	Extensible Markup Language (XML)		
	Systems Development Life Cycle (SDLC)		

Source: Labour Insight Jobs (Burning Glass Technologies)

The skills in highest demand across 2019 were Software Development, Java, SQL, JavaScript and Software Engineering. Several of the skills that were least demanded, including Oracle, UNIX and HTML5 have also decreased in demand from 2017 to 2019. The top programming languages demanded through job postings in 2019 included Java, SQL, JavaScript, Microsoft C#, .NET, LINUX and Python.

Only 3,600 job postings for IT workers in Northern Ireland during 2019 stated a minimum level of education needed. Of those that did, 80% required degree level qualifications and 2% required post-graduate degrees. This is much higher than across all Northern Ireland job postings where less than half (45%) of online job postings required degree level qualifications. There were 2,700 online job postings that stated the subject area required by the company. Those highest in demand were: Computer Science; Computer Software Engineering; Engineering; Business Administration and Management; and Computer Engineering.

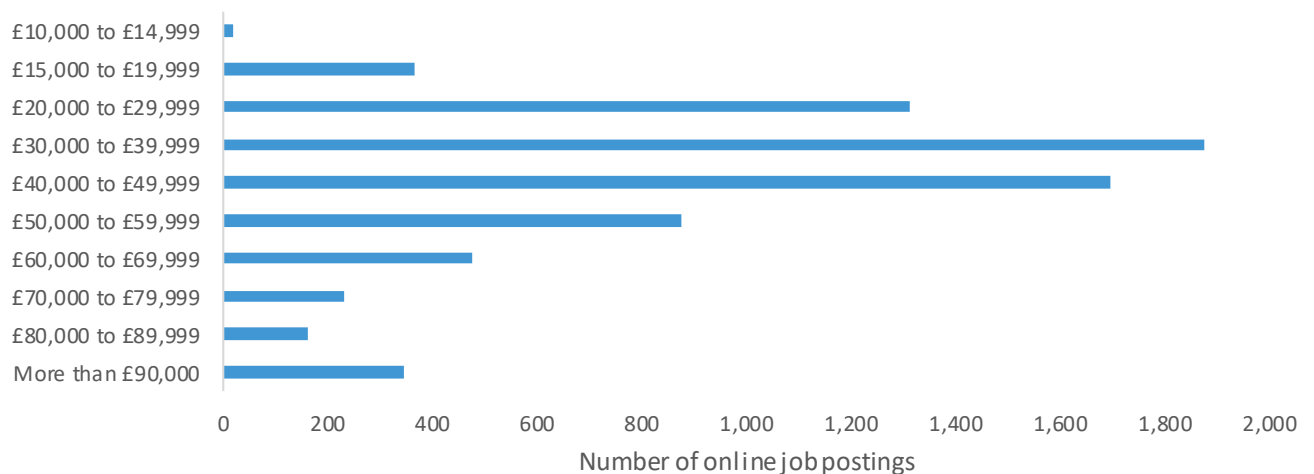
Of the almost 5,000 job postings for IT workers in Northern Ireland that stated a required level of experience during 2019, almost half (47%) asked for two years or less experience with the remainder (53%) requiring workers with at least three years' experience.

### **Job Market – Wage premium for ICT Sector**

NISRA's Annual Survey of Hours and Earnings (ASHE)<sup>ix</sup> provides official wage data on Northern Ireland's ICT sector for 2020. It estimates that the median gross annual salary for all workers in the ICT sector to be £33,125, over 40% higher than the Northern Ireland average. It should also 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.

This section examines salary information from online job adverts from Burning Glass Technologies. Almost three-fifths (56%) of job postings for IT workers<sup>ii</sup> in Northern Ireland during 2019 contained information on salary. Similar to the ASHE data, it indicated that 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 2019). The salary distribution for IT workers is shown in Figure 7.

**Figure 7: Salary distribution for IT workers, 2019**



Source: Labour Insight Jobs (Burning Glass Technologies)

The figure shows that 28% of reported salaries for IT workers were £50,000 or more; this compares with around 8% across all occupations in Northern Ireland during 2019. 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.

The median salary of £40,000 for IT workers was the joint second highest of the UK regions, alongside Scotland, the South East and the South West. London reported a higher salary than Northern Ireland at £57,500, which was the only region to report a median salary in excess of the UK median (£42,500).

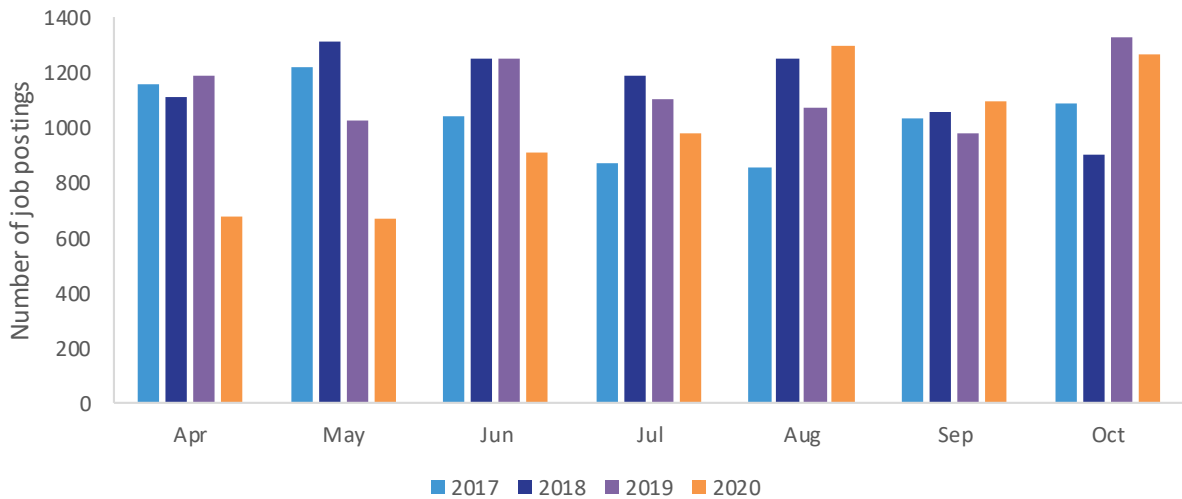
### Impact of COVID-19 on the demand for IT workers

As we have seen from NISRA's Quarterly Employment Survey, jobs in the ICT sector increased during the first phase of the coronavirus pandemic, with a 2% increase in the total number of jobs from Q1 to Q2 2020 and the highest number of ICT jobs on record in Q2 2020 (22,630 workers).

In order to further analyse the impact on jobs due to COVID-19, changes in the number of online job postings for IT workers<sup>ii</sup> from March to October 2020 have been examined. Figure 8 shows the total number of online job postings for IT workers during the spring lockdown and partial re-opening of the economy (April to October 2020) and how this compares with the number of postings over the same months from 2017 to 2019.



**Figure 8: Online job postings for IT workers April to October 2020 compared to same months 2017 - 2019**

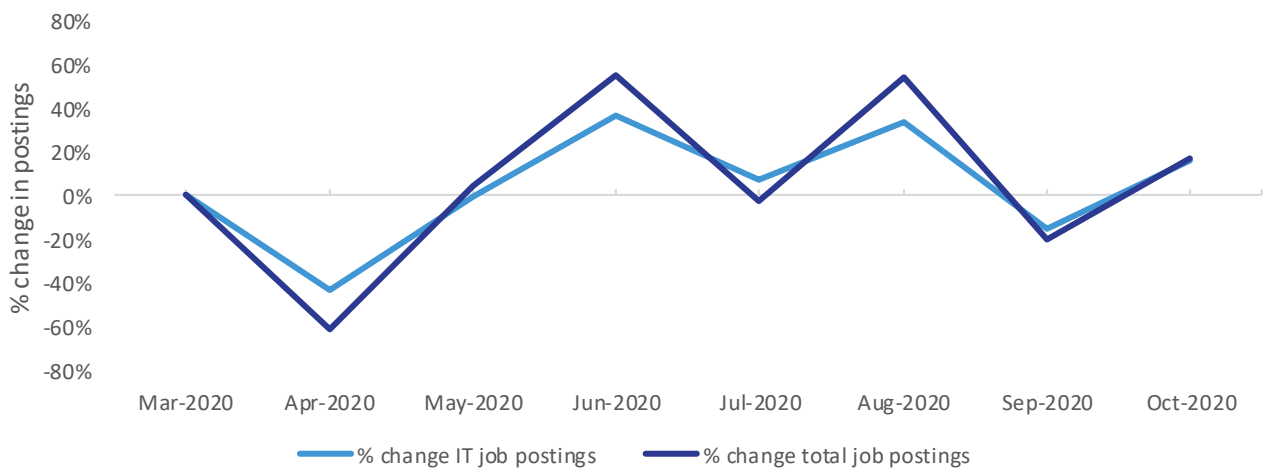


Source: Labour Insight Jobs (Burning Glass Technologies)

As can be seen, the number of online job postings were down substantially in April and May 2020 when compared to previous years; however postings have increased since May, with the monthly totals for August and September 2020 higher than the respective months in 2017 to 2019, with postings during October 2020 roughly in line with 2019 position. This suggests that the demand for jobs in the IT sector has recovered in these months after the economic shock of lockdown restrictions.

To calculate how demand for IT workers compares with the broader economy, the monthly change in online job postings for IT workers has been plotted next to the monthly change in all job postings across all occupations from March to October 2020, as shown by Figure 9.

**Figure 9: Monthly change in IT online job postings vs total online job postings, March – October 2020**



Source: Labour Insight Jobs (Burning Glass Technologies)

This suggests that IT online job postings experienced a smaller percentage decrease from March to April (-44%) when compared to total job postings (-62%). Whilst monthly changes in IT postings follow the same broad trend as total job postings, the magnitude of monthly changes are smaller, suggesting that demand for IT workers was more resilient to lockdown restrictions than the broader economy.

## Conclusion

Demand for IT workers in Northern Ireland has steadily increased since 2010, with the number of IT workers 7% higher in Q4 2019 than Q4 2017, and growth has continued (albeit at a slower pace) despite the COVID-19 pandemic, with Q2 2020 registering the highest number of workers on record. The economic output of the IT sector has grown at a faster rate in Northern Ireland than the in UK, increasing by 260% from 2010 to 2018, compared with a 170% increase in output in the UK over the period.

Future demand for IT workers is expected to be high, with an estimated 1,500 workers required annually up to 2028, with 70% of these workers requiring NQF Level 6 and above qualifications (equivalent to degree level). The Skills Barometer estimates that there will be a shortage of people qualified to fill these posts (either for university leavers or migration), with an annual estimated undersupply of 200.

Over 1 in 10 of job postings in Northern Ireland were for IT workers in 2019, with over 90% of postings based in Belfast. IT postings were available across a diverse range of economic sectors, the most popular of which were: Computer Programming and Consultancy; Legal and Accounting Activities; and Financial Services. The most common skills requested for IT workers were Software Development, Java, SQL, JavaScript and Software Engineering. The median real-time salary for IT workers in 2019 according to online job postings was £40,000, well above the Northern Ireland median of £25,000 across all job postings.

Online job postings for IT workers increased from August to October after experiencing a fall in postings in the immediate aftermath of the spring lockdown, with higher numbers of online job postings in August and September 2020 than the respective months in 2017 to 2019, and higher numbers of posting in October 2020 than October 2017 and 2018. This suggests that demand in this sector has recovered as the pandemic has continued. Demand for IT workers appears to move in the same direction as changes in demand in the broader economy, however the magnitude of change is smaller, suggesting demand in the ICT sector is more resilient to coronavirus restrictions.

## Owen Duly

For further information or queries please contact [analyticalservices@economy-ni.gov.uk](mailto:analyticalservices@economy-ni.gov.uk)

---

<sup>i</sup> [NISRA - Labour Force Survey](#)

<sup>ii</sup> Defined as 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).

<sup>iii</sup> [NISRA - Quarterly Employment Survey Historical Tables June 2020](#)

<sup>iv</sup> [ONS - Regional gross value added \(balanced\) by industry](#)

<sup>v</sup> [Northern Ireland Skills Barometer 2019 update](#)

<sup>vi</sup> Listed by the following SOC codes: IT and Telecommunications Professionals (SOC 213) and IT Technicians (SOC 313). As the Skills Barometer only produces modelling results to SOC 3 digit this is different to the analysis presented from the LFS in section entitled: Demand for IT Workers, which includes demand for 'IT Engineers' (SOC 5245) and 'IT and telecommunication directors' (SOC 1136).

<sup>vii</sup> Burning Glass Labour Insight ([Burning Glass Labor Insight](#)) 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.

<sup>viii</sup> [Rebuilding a stronger economy – the medium term recovery](#)

<sup>ix</sup> [NISRA - Annual Survey of Hours and Earnings](#)