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Closing the Skills Gap

Breaking Barriers between Career Explorers and Employers to Support 10X Economic Growth in Key Clusters (FinTech and Life & Health Sciences)

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Acronyms

ALC	Area Learning Communities
APEL	Accreditation of Prior Experiential Learning
CEIAG	Careers Education, Information, Advice and Guidance
CIAG	Career Information, Advice, and Guidance
CIPD	Chartered Institute of Personnel and Development
COIU	Careers and Occupational Information Unit
DfC	Department for Communities
DfE	Department for the Economy
DE	Department of Education
EA	Education Authority
ESS	Employer Skills Survey
FDI	Foreign Direct Investment
FE	Further Education
GVA	Gross Value Added
HE	Higher Education
HLA	Higher Level Apprenticeship
ILO	International Labour Organization
KS	Key Stage
LHS	Life & Health Sciences
LMI	Labour Market Intelligence
LMPs	Local Labour Market Partnerships
NEET	Not in Education, Employment or Training
NI	Northern Ireland
NISC	Northern Ireland Skills Council
NQF	National Qualifications Framework
OECD	Organisation for Economic Cooperation and Development
SAE	Small Advanced Economies
SDS	Skills Development Scotland
SME	Small & medium-sized enterprise
STEM	Science, Technology, Engineering and Mathematics
UUEPC	Ulster University Economic Policy Centre
VET	Vocational Education and Training

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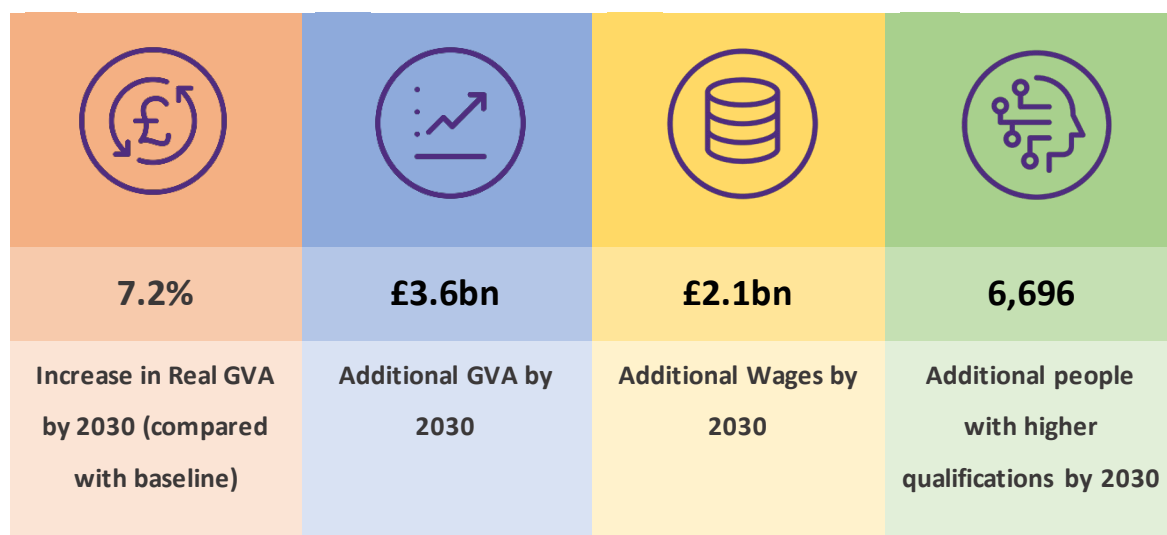
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1 Executive Summary

The Northern Ireland (NI) economy and society can experience a step-change by moving towards a more balanced skills system. The prize of a perfectly balanced skills system in NI is £3.6bn additional Gross Value Added (GVA) by 2030 and an increase in wages & people with higher qualifications.



Recognising that better skills matching would provide a significant boost to economic output, Government departments with a skills responsibility should allocate skills budget based on the direction of travel towards closing the productive capacity gap and providing skills balance.

In NI, jobs are concentrated in small and micro businesses, with only 2% of employers having more than 50 staff¹. Drawing on policy and practice from six small advanced economies and primary research with both supply and demand sides of the Northern Ireland skills system, there is a need for greater support for Small & Medium-sized Enterprises (SMEs) in growth sectors like FinTech and Life & Health Sciences (LHS) to connect with career explorers of all ages.

Career explorers struggle to make informed decisions and SMEs find it hard to recruit and retain talent. The Department for the Economy (DfE) should continue to develop the NI careers marketplace with SMEs in mind, to ensure that it is relevant for both sides of the market.

Employers in both sectors recognise the need to aggregate their demand with others – even competitors – to make their sector more visible. They are keen to build collaborative networks, initiate academies and apprenticeships but often don't know how to do this. Initiatives like The FinTech

¹ [Employer Skills Survey 2019: Northern Ireland Results; Department for Education \(2020\)](#);

Academy should be built upon, helping to bring employers, educators and local authorities together to provide promotional campaigns and employment opportunities in the sector.

DfE should consider how Careers Service can best support economic growth whilst maintaining impartial careers advice. DfE has reported² that by March 2024 it will develop a set of common quality standards for the delivery of careers guidance in all settings.

With the increasing digitisation of human resources and job roles specifications, there is an opportunity to better communicate jobs in terms of transversal skills and aptitude, rather than generic terms and qualifications. Skills mapping of job roles could support career explorers in managing their careers and identifying the roles that are best suited to their skills and aptitude.

There is a need for increased engagement between employers and education providers including schools, colleges and universities to ensure talent pools are equipped with the requisite skills for jobs and be better prepared for the world of work including solid career management and interview skills. The quality of candidates and careers connections needs to be improved in both sectors and sectoral representative bodies can play a key role to advocate for better and more informed career choices.

There is much evidence from both the OECD countries and the EU 27 that lifelong learning is prevalent, and that Northern Ireland lags behind in encouraging this once individuals have left the education system. What is harder to determine from the evidence is whether the main purpose of the policy on lifelong learning is for a societal good, an economic good or both. The small advanced economies examined use policy levers to effect greater uptake of lifelong learning by removing real or perceived barriers to training for companies and individuals.

The 10X Skills Strategy³ notes that that by March 2027 DfE will undertake a review and rationalisation exercise to minimise duplication and introduce a business pledge with respect to lifelong learning. Government should ensure that publicly funded lifelong skills training is coherent and marketed as a set of unique “products” which are relevant to individuals and SMEs, regardless of delivery partner.

Each of the recommendations outlined above are necessary to ensure that NI continues to move towards a skills system which is in greater balance, providing people with meaningful work in the 10X economy.

² DfE (2022), [10X Skills Strategy](#)

³ DfE (2022), [10X Skills Strategy](#)

2 Introduction

2.1 Background

Most of the 2032 workforce is in work now, however participation in adult learning in Northern Ireland is low, lagging behind the UK average (18.2% compared with 25.3% of the working age population), and furthermore the UK compares unfavourably with averages across the Organisation for Economic Cooperation and Development (OECD)⁴. To reach the full potential of 10X we will need to invest more in entry and in-work training to provide the absorptive capacity for people to innovate throughout their careers.

In NI, jobs are concentrated in small and micro businesses, with only 2% of employers having more than 50 staff⁵. Notwithstanding the current labour market challenges, with low unemployment and wage inflation, smaller employers struggle to access entry-level skills products (e.g., graduates, internships, placements, apprenticeships etc.) due to their limited capacity to explore and select the options. Moreover, government forecasts like the NI Skills Barometer indicate that economic growth will be constrained unless there is a reallocation of our labour market towards jobs that are in-demand e.g., priority clusters, and an upskilling of our people to qualifications at Level 3-5.

Meanwhile, *Transforming careers support for young people and adults in Northern Ireland*⁶ found that pupils, students, career changers and their influencers (schools, parents, Jobs & Benefits offices etc) can find it difficult to access appropriate career information. With regards to Careers Service, only 21% of parents agreed that it is supportive in enabling their child(ren) to make informed decisions about their next step and overall career plan.

When adjusted for population size and budget structure, significantly less public money is invested in career guidance in Northern Ireland than in Scotland or Wales. From the outset, there is recognition that, at these levels of resource, the DfE's Careers Service simply cannot deliver the level of personalised, one-to-one support that many thousands of young people, adults, and employers might want and expect⁷. The report also recommended "personalisation and better targeted support, with content recommendations for individual users, access to local and regional careers information and

⁴ <https://www.economy-ni.gov.uk/sites/default/files/publications/economy/Skills-Strategy-for-Northern-Ireland-Skills-for-a-10x-economy.pdf> Department for the Economy (2022) *10X Skills Strategy*

⁵ Department for Education (2020) *Employer Skills Survey 2019: Northern Ireland Results*

⁶ Hughes (2022), *Independent External Review of Careers Delivery in Northern Ireland*

⁷ Hughes (2022), *Independent External Review of Careers Delivery in Northern Ireland*

focus on the priority clusters identified as having the potential to drive the economy forward within the next decade”.

In NI there is a strategic mandate for skills development to advance the local economy – namely the 10X Skills Strategy - which identifies careers guidance as one of its key hallmarks of economic and social growth. It will only be as more businesses find the right people that economies like NI will flourish.

2.1.1 Demand-side (employers)

With 95% of private sector employers being SMEs this challenge is exacerbated as they can find it harder to access the government training offer and so don't use what is there. The research will identify the barriers to SMEs in finding the right people. It will also make recommendations as to how this could be overcome.

However, it is not simply a case of employers knowing the right training products. The skills, qualifications and labour market is like any other “market”: the meeting place of supply and demand. Whilst we will consider the barriers for the demand side (employer), there are also significant barriers for the supply side: our people.

2.1.2 Supply-side (career explorers)

This element of the research will investigate the costs to the NI economy of not providing a high level of careers advice and guidance. We will make recommendations on how to make Careers Information, Advice and Guidance more effective to allow the full potential of 10X to be realised. To achieve the full potential of 10X we are going to need enough people to work in the seven clusters.

To help our people make informed decisions will then depend on them taking the right subjects in post primary and tertiary education for them to have the right qualifications and skills to work in the sectors. Careers information will need to respond to the need for skilled labour in the seven clusters and be better at giving young people, their parents and schools the right careers information so that they are better informed when making career and subject choices.

The research will build an evidence base to give our career explorers (young people and career changers) a better experience of careers information and suggest alternative methods such as a structured and meaningful work placement for all post primary pupils. This research seeks to determine the risk to the 10X strategy from our people not having the best information to make informed decisions.

2.2 Research Aims

The research will reflect the systematic nature of the labour market by investigating both the demand (employers) and supply side (career explorers) and seeks to answer the question: *what will be the prize if NI gets careers guidance right?*

The research aims to:

- 1) establish the barriers and gaps between Life & Health Sciences & FinTech SME employers and career explorers
- 2) undertake a forensic mapping of career route-maps for Life & Health Sciences & FinTech sectors
- 3) develop a concept for a careers marketplace which could help career explorers better connect with Life & Health Sciences & FinTech employers
- 4) quantify the economic output of a perfectly balanced skills system (measured by GVA, wages and employment).

3 Review of Small Advanced Economies

3.1 Introduction

This international policy review seeks to determine best practice in skills policy development across the following selected Small Advanced Economies (SAEs):

- Denmark
- Estonia
- Sweden
- Finland
- Ireland
- Scotland

These SAEs are all included within the 10X Performance Management Framework⁸ that has been established to measure relative progress of the Northern Ireland economy against a range of globally recognised metrics.

The review will present an understanding of:

- how best practice SAEs give young people and career changers a better experience of careers information on strategically important clusters (or sectors).
- how best practice SAEs remove barriers for training participation (both for businesses and individuals).

It will focus on two clusters: FinTech and Life & Health Sciences.

Comprehensive desk-based research on the relationship between innovation and human capital policy; the future labour needs for the 10X economy; the possible sources of that labour and the importance of Careers education, Advice, Information and Guidance and the upskilling of the current workforce is presented in the Appendix, along with information on the Life & Health Sciences and FinTech clusters in Northern Ireland.

⁸ [Department for the Economy \(2023\). 10X Performance Management Framework](#)

3.2 Denmark

3.2.1 *The Education System*

The education system in Denmark is typical of many advanced economies in Europe with a tiered structure based on age from primary school to doctorate level, and with multiple pathways at each structured level. Kindergarten, primary and lower-level secondary education occurs before the age of 16, when choices are made by individuals to follow a general/ academic pathway or to take a more vocational pathway. Entry into higher education is also by multiple pathways from the general route or the vocational and adult education pathways. All can lead on to Master and Doctorate levels. There are four forms of informal learning recognised in Denmark, including “In Service Training”. This is important in the context of Lifelong Learning which has a high participation in Denmark (Cedefop, 2023).

3.2.2 *Careers Information, Advice and Guidance (CIAG)*

There are six main elements to the CIAG system in Denmark.

1. Guidance – this is a universal service for everyone under 25 years old and operates mainly in the school system with CIAG delivered collaboratively between teachers and guidance counsellors.
2. Study and Career Guidance Denmark – established in 2017, this organisation has eight offices around Denmark and is there to provide young people and adults guidance on careers and the courses of study that lead to that career. Delivery is face-to-face and in small group sessions and the organisation uniquely links together the education system, the social partners and industry.
3. e-Guidance – this is a facility for all citizens accessed through several channels including live chat, telephone, email, webinars and social media. It provides education and employment guidance for all. It also has a facility for parents and motivated young people to access together to seek information on career opportunities and the education pathways to realise that career. Since 2018, it has become the main source of information for adults wishing to undertake lifelong learning.
4. Education and Jobs Teachers – these are teachers in the primary and lower secondary school system who advise school pupils on their choices for upper secondary and higher education choices and on VET options.
5. Jobs Centres – operated by the Public Employment Services there are 91 employment centres across Denmark. They serve all adults over 18 and unemployed adults with advice on job

searching and education programmes. They also link with employers on job vacancies and a CV bank service with potential employees.

6. Course Comparative Website – this is a national portal on all higher education and science courses. The database makes a comparison of all VET and higher education courses on the quality of the education experience and relevance in relation to jobs in the labour market.

3.2.3 Upskilling the Workforce and Lifelong Learning

Lifelong Learning is a feature of life in Denmark and the government guarantees all adults the right to access education and training courses throughout their lives. This is used to provide both work related skills training and self-interest courses. According to Cedefop (2022)⁹ 20% of all 25-64 year olds had had a learning experience in the past four weeks. With 22.4% of adults engaged in lifelong learning in 2022, down from 31% in 2015. This is higher than the EU27 average of 10.8%.



How do best practice SAEs give young people and career changers a better experience of careers information on strategically important clusters (or sectors)?

The Danish Agency for Science and Higher Education offers careers guidance and counselling to students and graduates in the Life Sciences Sector. It also has a talent programme that helps graduates and young professionals gain access to job opportunities in the sector.

The Danish Health Authority offers guidance and information for people who are interested in pursuing careers in the Life Health Sciences.

Greater Copenhagen Region has a careers portal for specific sectors that it specialises in including Life Sciences. The platform lists jobs at companies in the Greater Copenhagen region especially suited for international candidates.

The Danish Business Authority has a programme called Digital Hub Denmark which supports start-ups and entrepreneurs in the FinTech Sector. The programme offers mentorship, networking opportunities and access to funding.

⁹ <https://www.cedefop.europa.eu/en/countries/denmark>



How do best practice SAEs remove barriers for training participation (both for businesses and individuals)?

In work, training is prevalent in Denmark with government funding companies to release workers to train and re-skill and upskill. An allowance is made for the costs of training and a subsidy is also provided to offset the costs to the company. Unemployed adults can also avail of this training offer where they receive their social benefit, a bonus and the cost of the training covered. The emphasis on in service training is to keep Danish employers competitive and productive by having skilled workers who can adapt easily to issues like automation. Training providers include the VET schools and Business schools and can amount to 1,000 DKK (c.£120) per person per course.

Given the dominance of SMEs in the Danish economy the in-service training offer was seen to be effective, with one VET college training around a third of the workforce in its locality (Karlsen, personal communication). Funding arrangements for in-company training changed nationally in 2017-18. Prior to that date the training was organised and delivered by the Danish VET system and under the new arrangements the funding for training was passed to the employer and employee unions to organise and arrange training delivery for companies. An official in the Danish VET system contacted for this research observed that the new arrangements are not thought to be as effective as the previous situation.

3.3 Estonia

3.3.1 *The Education System*

The education is multi-tiered with kindergarten, primary and lower secondary education taking place up to 16 years of age. At the Upper Secondary level there are four main pathways – one general, two VET and one adult education route. At the tertiary education level there is the option of undertaking a bachelor's degree, a combined bachelor's and master's degree, a VET degree, a Professional Integrated Programme and an adult VET "bridging" course into the other degrees. Doctorate degrees from the most advanced higher education level and informal education includes In-work training and Adult Education. Interestingly, one of the three aims of the Education Strategy is "Learning options are responsive to the development need of society and the labour market" (Education Strategy 2021-2035 ref). The reference to meeting labour market needs as well as societal needs is quite unusual even in developed economies and is perhaps, a recognition, that wealth creation is necessary for the benefit of the whole of society.

3.3.2 *Careers Information, Advice and Guidance (CIAG)*

CIAG is divided between two main providers in Estonia. Careers education is undertaken in the education system under the Department for Education and Research, and careers counselling and careers information is the responsibility of the Department of Social Affairs. The aim of the overall system is to allow all citizens to identify their capacities, competences and interests and to make meaningful decisions on their education and work pathways.

Careers education has a long history in Estonia and aims to let individuals discover and develop their capacities. Delivery is through schools and youth work. Career management skills are taught from primary level throughout the whole education system. The focus is on "soft skills" such as self-management, problem solving and workplace knowledge in conjunction with their parents.

Careers Counselling and Careers Information is the responsibility of the Department of Social Affairs, and its aim is to have an inclusive labour market, high employment rates and a good match between labour supply and demand. To this end they will offer funding up to degree level for workers with a lack of or outdated skills, or workers threatened with job loss through re-skilling. Support is available to obtain qualifications.

3.3.3 Lifelong learning and Skills Training

Nearly 17% of 25-64 year olds report having a learning experience in the previous four weeks (Cedefop)¹⁰ and Lifelong Learning levels have risen to 18% from 11.9% in 2015, the EU average is 10.8%. There are five main tools provided for use in Lifelong Learning. They are:

1. “edu.ee” – an overview of learning opportunities and LMI to support the individual’s career development
2. “Minukarjar.ee” – tools for self-analysis and career design
3. Statistics Estonia – economic, demographic and social data including salary and employment data
4. Occupational Barometer – overview of short-term demand in the labour market
5. “OSKA” – long term prognosis of the need of labour and skills



How do best practice SAEs give young people and career changers a better experience of careers information on strategically important clusters (or sectors)?

The Estonian Academy of Sciences offers a range of programmes and initiatives to support research and innovation which includes funding opportunities for research projects and scholarships.

The Estonian Investment Ministry of Economic Affairs and Communications has established a ‘Startup Estonia’ initiative to support the growth and development of services and resources, including mentorship, funding, and networking opportunities.



How do best practice SAEs remove barriers for training participation (both for businesses and individuals)?

Enterprise Estonia has a training programme designed to support SMEs in areas such as management, marketing, sales and innovation. Employers can apply for a training grant from the Unemployment Insurance Fund.

¹⁰ <https://www.cedefop.europa.eu/en/countries/estonia>

3.4 Sweden

3.4.1 *The Education System*

In common with other European countries, Sweden has a multi-tiered and multi-pathway education system. Kindergarten, primary and Lower Secondary education occurs before the age of 16 and then choices are made as to proceed. There are two main pathways at the Upper Secondary level, a higher education preparation route and a vocational route. There are two minor routes, one, a bridging course, for those who have not yet achieved sufficient educational achievement, and a specific pathway for adult learners.

Higher education has four pathways, the bachelor's degree, and integrated bachelor's and master's degree, a higher level professional qualification and a Higher level VET path. There are four informal education programmes:

- skills training for the employed
- apprenticeships and work placements after IVET
- training for the unemployed and
- training provided by "folk schools"

3.4.2 *Careers Information, Advice and Guidance (CIAG)*

CIAG in Sweden is regulated by law. Pupils at school must receive some careers guidance before making career/ subject choices. Guidance is also provided in universities, municipalities and at a central level. Careers information is delivered on three separate platforms, one for students, parents and teachers, one for higher education options and one relating to job roles and labour market information. The responsibility for CIAG is with two Departments; Education and Research & Employment. The school system is administered by an arms-length body, The National Education Agency, but schools are managed by each separate municipality. There are around 2,000 careers counsellors in the school system delivering CIAG on an individual and group basis but there are no compulsory lessons on careers. There are 50 higher level education institutions, and they have 700 careers counsellors who provide advice centrally, in faculties and through careers centres.

The Public Employment Service provides careers advice to unemployed individuals through 340 specialist staff by a guidance platform, tele-services, and face to face interviews.

3.4.3 Lifelong Learning and Skills Training

Lifelong learning in Sweden is the highest in the EU 27 at 34% of the population participating. 28.6% of 25-64 year olds have had a learning in the past 4 weeks¹¹ and it is forecasted that the Swedish economy will create 2.7 million new jobs between 2020 and 2030. Sweden is shifting towards a high skill economy, but still offers opportunities for those with lower qualifications. A lack of VET teachers, ICT specialists and an overall skills mismatch between labour needs and graduate qualifications remains a challenge to the Swedish economy.



How do best practice SAEs give young people and career changers a better experience of careers information on strategically important clusters (or sectors)?

The Swedish Innovation Agency (Vinnova) offers several programmes designed for young professionals and startups, such as the Innovative Startups programme and the SME instrument programme.

The Swedish Life Sciences Industry Association (SwedenBIO) is a non-profit organisation that represents the industry, and offers various programmes aimed at promoting the growth and development of the sector, including network events and funding opportunities.

Stockholm FinTech Hub is an industry-led organisation that provides information on career opportunities in the sector, as well as access to events and networking opportunities. Whilst the Swedish FinTech sector has some very innovative companies, e.g. Klarna, it also has a traditional banking system reliant on older technologies. The maintenance needs of this older technology and the need to migrate this older technology onto new systems has created a need for rare skills in computer languages such as Cobol; this is quite unique in the countries examined.



How do best practice SAEs remove barriers for training participation (both for businesses and individuals)?

The Swedish Higher Vocational Education system provides over 100 education programmes co-designed between employers and education providers, ensuring that the course contents are relevant to the business need. All are at the post-secondary level and qualify graduates for employment in their chosen vocational area.

¹¹ <https://www.cedefop.europa.eu/en/countries/sweden>

To remove barriers to participation most courses are free of charge and other funding is available. Accreditation of Prior Learning (APEL) is also used for those without formal qualifications to gain entry. Foreign qualifications are recognised for residents of Denmark, Finland, Iceland and Norway. The Public Employment System offers an online tool to allow individuals to self-evaluate the level of their professional skills.

SweFinTech, the trade association for the 500 companies in the FinTech sector, works to ensure that the Swedish education system meets the industry demands for technical competence, with 93% of their member companies requiring new recruits.

Life Sciences Sweden member companies recognise both the need to attract new talent from the education system but also to ensure that they offer further education to their current workforce.

3.5 Finland

3.5.1 The Education System

Finland is accredited as having one of the best education systems in Europe. In common with other European countries, Kindergarten, primary and lower secondary education is completed at 16 years old and young people are then given two choices: a general education pathway into higher education or an Initial VET path into work or higher education. Higher education has four main routes, the bachelor's degree, an applied sciences degree, further VET or Specialist VET. Masters' and Applied Masters' degrees can then lead on to Doctorate level. There are two forms of informal learning, adult liberal learning and in-company training.

3.5.2 Careers Information, Advice and Guidance (CIAG)

The focus of CIAG in Finland is on advice for Lifelong Learning and so it is designed for every citizen in Finland. Responsibility for CIAG is split between two Ministries (Education and Economy & Employment) and they formed a National Lifelong Learning Guidance Forum to develop a new strategy and delivery plan. Delivery of CIAG is shared between the education sector, the public employment service and through 70 One Stop Shops located throughout Finland. The overall aim of the Lifelong Learning Guidance is to equip Finnish citizens with the skills to self-manage their career choices and lifelong learning ambitions and to provide them with the information to make informed decisions and judgements.

3.5.3 Lifelong Learning and Skills Training

Given the focus of the Finnish Government to Lifelong Learning, 27.3% of 25-64 year olds reported a learning experience in the past four weeks¹².



How do best practice SAEs give young people and career changers a better experience of careers information on strategically important clusters (or sectors)?

The Finnish Life Sciences Ecosystem (FLSE) is a network of companies, universities, research organisations and other stakeholders in Life & Health Sciences that offers various programmes to support the growth and development of the sector, including educational programmes and mentoring opportunities for new workers.

¹² <https://www.cedefop.europa.eu/en/countries/finland>

The Finnish FinTech Ecosystem (FFE) has an identical model to FLSE, albeit for the FinTech sector.



How do best practice SAEs remove barriers for training participation (both for businesses and individuals)?

Already a country with one of the highest levels of lifelong learning in the OECD, with one in two Finnish workers undertaking work-based learning every year, Finland introduced a Continuous Learning Reform programme in 2020. Following a study by the OECD, the move to Continuous Learning away from Lifelong Learning was to reflect better the needs of the economy and the Finnish labour market and to try and make Finnish citizens more motivated and interested in their own learning. Recognition is given to the need to develop individuals' competences throughout the different stages of people's lives. The 27 policy interventions introduced to reduce and remove barriers to training included APEL, re-skilling, continuous professional development, a move away from long formal qualifications to shorter micro-credentials, professional specialisms, using apprenticeship training as a mechanism to re-skill and upskill, allowing those on social benefits to undertake longer periods of training. There are also policy measures aimed at greater inclusion of under-represented groups in the Finnish economy, such as entrepreneurs in SMEs, self-employed, those with basic low-level skills and immigrant workers.

Since its introduction, the Continuous Learning Reform programme has made progress in areas such as the Targeted Education programme which sees a move away from long, formal qualifications to shorter, more flexible, micro-credentials. Another success is the development of a digital portal for career guidance that will contain skills forecasts, learning outcome information and detail the education pathways for job roles for individuals to help with their decision making. Completion of the platform is due by 2025. Areas where the reforms are slower includes in-work training where work environment behaviours are slower to change, and the time employees have to train is limited. The social benefit system has also been slow to change and this impacts on learning experiences for the unemployed (Ikkela – personal communication). The reform programme was part funded by the Restoration and Resilience Fund for the EU (€76m) and the Targeted Education programme (€150m) over four years.

In the FinTech sector the Finance Academy (Finnanssiakatemia) provides training for the financial services technology market.

Private sector companies like TietoEVY are well recognised for their promotion of in-work learning. TietoEVY is a provider of digital services and software employing 24,000 people worldwide. Globally the company experiences skills shortages in attracting and retaining skilled labour. A move to recruit

less experienced staff and new graduates led to the establishment of more intensive and structured in-company training. One of the main methods of the in-company training is continuous learning by the 70/20/10 model. Whereby 70 percent of the training is by work-based learning and problem solving (learning by experience), 20 percent is interaction with work colleagues and sharing of experiences (social learning) and 10 percent is through formal learning. Learning by experience is through new work projects, perhaps in another country; social learning is through learning communities established amongst all employees and through a twice yearly “Keep Learning Week”; formal learning is focused on learning a specific set of skills for a project or obtaining a qualification.

TietoEVY has a management system, “MyGrowth”, to track employees’ development needs and results. Every quarter, it provides feedback on their development and encourages discussions on their development plans with line managers. TietoEVY purchases a lot of licence-based training content from providers such as Pluralsight, LinkedIn Learning and Udemy. They also work with providers such as Microsoft in larger re-skilling and upskilling activities (e.g. Azure training). Management and leadership training is delivered through the “Leadership Essentials” programme on a global basis and is a hybrid involving in-company management tasks and external training.

Relevant to both FinTech and Life & Health Sciences sectors, the Finland Entrepreneurship Federation (Suomen Yrittajat) promotes and supports start-up and scale-up companies through their Entrepreneurship Academy training.

3.6 Ireland

3.6.1 *The Education System*

Nursery, primary and lower secondary education occur before 15 years of age in Ireland. Ireland is unique in that it offers an optional transition year for 15-16 year olds allowing them time to take a year's leave from their studies. Upper Secondary level is in general education subjects leading to a Leaving Certificate. Apprenticeships, Traineeships and Post Leaving certificate courses are also available at the Upper Secondary Level. Undergraduate, Master's and Doctorate level courses are on offer in higher education establishments (Universities and Institutes of Technology), currently there are no higher level VET courses. There are five forms of "Second Education" and training, Youth Training, VET for the unemployed, Back to Education programme, Literacy training and Upskilling and re-skilling for the workforce.

3.6.2 *Careers Information, Advice and Guidance (CIAG)*

CIAG in Ireland is a mixture of provision by government and the private sector. Post-primary guidance in the VET system is under the direction of the Adult Education Guidance Initiative and the public employment service is responsible for CIAG for the unemployed. There is no CIAG in primary school, but teachers are encouraged to use play therapy, coaching and skills training to encourage young children to think and learn about the future. In the post primary setting the Junior and Leaving Certificate students are encouraged to learn self-management skills to be able to manage their own careers. CIAG is integrated into a whole school approach. CIAG is available in the further education sector and in higher education it is targeted at final year students and recent graduates. The focus of the public employment services is very much on getting the unemployed back into work and so is not primarily CIAG.

3.6.3 *Lifelong Learning and Skills Training*

In-company skills training is strong in Ireland, with Skillnet¹³ being the main government agency responsible for delivery of skills training for companies. Skillnet was established in the 1999 and is under the authority of the Department for Further, Higher Education, Research, Innovation and Science. They have a budget of €70 million and have assisted 22,000 companies with support for upskilling. Their main support is for upskilling, business mentoring, management development,

¹³ Skillnet (2023) [Think Talent](#)

programme design (skills for the future), talent planning and industry insights (digital transformation, climate change, global growth, leadership development).

Delivery is through 73 sectoral and geographical networks of companies, and skills training is on a joint investment basis. By 2025 Skillnet plans to have invested over €100 million and increased its support to 30,000 companies.



How do best practice SAEs give young people and career changers a better experience of careers information on strategically important clusters (or sectors)?

FinTech Career Connect is a talent platform that connects job seekers with FinTech companies in Ireland. The platform offers job listings, career advice and networking opportunities.

FinTech Ireland is an industry-led organisation that promotes Ireland as a hub for FinTech innovation. The organisation connects companies with talent, investors and other stakeholders in the industry.

Irish MedTech Association is a trade association that represents the medical technology industry in Ireland and offers advocacy for the industry.



How do best practice SAEs remove barriers for training participation (both for businesses and individuals)?

Skillnet's sole purpose is to upskill the Irish workforce. Since its establishment in 1999, it has sought to meet industry by being enterprise focused, it purposely avoids duplication with existing providers and seeks out collaboration with other like-minded organisations (e.g. local Chamber of Commerce). Working through 73 sectoral and geographical partnership networks, it has reduced and removed barriers to training by:

- Facilitating and organising specific training to meet company demand, making it easy for companies to participate
- Co-funds training on a 50:50 basis with the companies
- Industry and academia co-design training content
- Skillnet is flexible about the type of training it will fund. Any programme that can make a positive impact on the workforce is considered; it is qualification agnostic and will fund micro-credentials to PhDs if it makes a positive impact
- It has an agile response philosophy and will work with education providers to quickly design and deliver the training

The International Financial Services (IFS) Skillnet was established in 2009 and trains approximately 2,000 individuals per year. The IFS Skillnet covers all aspects of financial services from retail banking, investment banking, insurance, asset management, aircraft leasing etc. There are 350 member companies with a third of the financial services personnel located outside Dublin and training is delivered nationwide.

The IFS Skillnet has a Steering Group consisting of all the financial services trade associations and member companies. Since 2009 there have been over 10,000 participants on 1,000 courses. Courses can be as short as a half day training or up to Master's level. Most courses are now taught on-line and there is a trend in using micro-credentialing or breaking traditional courses into smaller units e.g., Financial Technology Compliance is a Diploma level course broken down into six-week units. Dublin City University, Technical University of Dublin and the PAT Business School are some of the training providers with courses such as 'Financial Intelligence and Technology'.

3.7 Scotland

3.7.1 *The Education System*

The education system in Scotland is based on two distinctive phases of the curriculum, the Basic General Education phase and the Senior Phase. The Broad General Education phase begins in primary school and lasts until S3 (third year in secondary, equivalent of Year 10 in Northern Ireland). The purpose of the Broad General Education is to give learners the knowledge, skills and attributes to achieve their full potential.

With a breadth and depth approach, literacy numeracy and cognitive skills are developed through eight curriculum areas – expressive arts, health & wellbeing, languages, mathematics, religious and moral studies, social sciences, and technology. Cross-curricular skills are developed through activities such as project-based learning. The Senior Phase occurs between the S4-S6 levels with the Higher Leaving qualifications at S6 (equivalent of Year 13/14).

The school leaving age is 16 years, like Northern Ireland and unlike England where it is 18 years. There is a large selection (79) of subjects that schools can choose to offer in the senior phase both academic e.g., classical studies, and some with a more vocational nature e.g. practical metalworking. Tertiary education is delivered through further education colleges or university.

3.7.2 Careers Information, Advice and Guidance

Careers guidance in Scotland is delivered by Skills Development Scotland (SDS)¹⁴, an arm's length body reporting to the Scottish Government. A series of skills and economic strategies shape SDS's work, ensuring that services and partnerships effectively contribute to the economic growth ambitions. Across Scotland, they support individuals to build their career management, work-based and employability skills, throughout their career journey, from school, into further learning opportunities and employment. SDS use skills intelligence to help inform the decisions of people across Scotland, at all stages of their careers, so that they are well-placed to take up the opportunities arising within the economy.

Skills Development Scotland offers a range of career guidance services to its key target audiences including developing Career Management Skills, SDS Centres, Customer Contact Centre, 16+ Data Hub, an education team to assist careers teachers and My World of Work, which is an award-winning online Careers Information, Advice and Guidance system. There is also Developing Young Workforce (DYW) and employer engagement - working with Scotland's regional DYW groups to connect businesses with education.

Marketplace¹⁵ is an online tool connecting schools and colleges with businesses. Schools and colleges use this to bring industry to life for young people and all activities are underpinned by a School Employer Partnership Framework. The aim is giving young people information and experiential learning experiences of the world of work from those who are in it, recognising that teachers are unfamiliar with work outside the education system. The system is being upgraded and will allow young people to take more control of their learning, whereas in the past the teacher had to register and organise the careers session.

The motivation for the development of the Marketplace lies in the report published by The Commission for Developing Scotland's Youth in 2014¹⁶. Chaired by Sir Ian Wood, the report highlighted the disconnect between the education system and the world of work. Whereby less than 30% of all Scottish businesses had any contact with the school system; only 27% businesses offered work placements and only 13% businesses employed "Modern Apprentices". It made quite innovative suggestions on how this disconnect could be improved including, allocating a senior resource in each

¹⁴ [SDS](#)

¹⁵ [SDS Marketplace](#)

¹⁶ Wood (2014) [Education working for all: developing Scotland's young workforce](#)

school to develop partnerships with business and encourage businesses to link with schools to provide work and career advice and provide a range of activities that would expose young people to enterprise and the world of work. It also recommended a standard and quality for all work placement opportunities and proposed that careers education should begin at primary school.



How do best practice SAEs give young people and career changers a better experience of careers information on strategically important clusters (or sectors)?

Skills Development Scotland has dedicated pages on its website for careers in FinTech and Life Sciences and these include information on job roles, training and development opportunities and job prospects in these industries.

Scottish Financial Services Gateway is an online resource for careers in Financial Services. It provides information on job roles, training and development opportunities, and career pathways.

Similarly, Life Sciences Scotland provides information on career opportunities in the sector, as well as access to events and networking opportunities. The Data Lab provides career opportunities information in data sciences, as well as access to training and development opportunities.



How do best practice SAEs remove barriers for training participation (both for businesses and individuals)?

FinTech Scotland highlights options for in-work skills training for companies and individuals on its website but it does not get involved in providing or organising training for its members. It refers to the 19 universities that offer subjects relating to the financial services sector. It also features the 26 further education colleges that offer suitable courses. On work-based learning opportunities, the site describes the Scottish apprenticeship system of Foundation, Modern and Graduate Apprenticeships. These training options are available for both companies and individuals.

In-company training is facilitated through Skills Development Scotland, whereby a Skills for Growth Employer Engagement Executive will meet with a company to understand its needs. They will then arrange for an assessment of the company and produce a detailed Action Plan. The company will then prioritise the actions, and SDS supports the company to find a training provider and any possible funding.

Life Sciences Scotland does not provide any training offer for its members. Companies in the Life & Health Sciences sector can use the Skills Development Scotland/ Skills for Growth process described above.

Overview of Six Small Advanced Economies

Country	Methods used to remove barriers to training	Characteristics of Careers Systems
Denmark	In work training prevalent. Government funding (1000 DKK = c.£120) for individuals. Delivery by employer and employee unions.	Careers education in education system, primary to tertiary. Sector specific information hubs. Emphasis on individual needs not economic.
Estonia	Training programmes in specific topics (Marketing, sales, management) available for SMEs.	Careers education – Department of Education and Research. Careers Counselling and Information – Department for Social Affairs. Emphasis on career management skills. Sector Specific information hubs and mentoring.
Sweden	Co-design of training programmes by the Higher VET system. Recognition of foreign qualifications. Sector bodies lobby government for relevant curriculum.	Careers education governed by law and taught in all schools. FE and HE separate system. Public employment service has 340 careers counsellors for unemployed/economically inactive. Three platforms of information for pupils, parents, and teachers.
Finland	Continuous Learning Reforms introduced, emphasis on economic rather than individual/ societal benefits of training. Policy measures such as APEL, CPD, re-skilling, professional specialisms, use of	Careers education responsibility of two Departments joined under National Lifelong Learning Forum. Delivery through 70 One Stop Shops across Finland. Sector specific information hubs provide sector information and mentoring for new

	apprenticeship training for re-skilling and upskilling.	workers. Emphasis on career management skills.
Ireland	Specific government organisation dedicated to in-work training. Facilitates and organises training for sectors. Co-funds training provision. Co-design with companies and educators. Flexibility on qualifications. Agile response to industry needs.	Careers education and Careers Information, Advice and Guidance provided by both government and private sector. No careers in primary school system. Intervention at Junior and Leaving Certificate levels. Also available in FE/HE and PRS systems. Sector specific information hubs. Emphasis on career management skills.
Scotland	Skills Development Scotland “Skills for Growth” advisors. Face-to-face interaction with business. Company training assessment undertaken. Outcome is business improvement plan. Company prioritises. Support and help to source training provider and potential funds.	My World of Work, Digital World websites. ‘Marketplace’ facility to encourage employer engagement in schools for career visits, visits by schools to businesses, work experience, and Foundation Apprenticeships. Emphasis on career management skills.

Table 1: Comparison of removing barriers in careers systems across small advanced economies

3.8 Summary

The Skills Barometer 2021 shows that both the High Growth and Baseline Growth scenarios under the 10X Economy will require more people to fill an increasing amount of new job roles.

Based on current UK Government policy on immigration it is likely that there will be an increasing reliance on the education system to produce the numbers of individuals with the right skills to fill these job roles. In addition to the need for more people there will be a demand for more science or technically based skills. Overall, there is a need for more people in technology related jobs to fulfil 10X priority sectors e.g., FinTech (computing) and Life & Health Sciences (science based). To realise the full potential of the 10X economy, more young people will need to study Science, Technology, Engineering and Maths (STEM) or related subjects throughout their educational pathway.

There is a need to provide good careers guidance to positively impact on subject choice and so career/job choice for those in the education system and careers explorers. Experience of careers guidance in other countries shows that the CIAG system must match the circumstances in each country and international best practice shows need for professionally trained and resourced staff in Career guidance. When it works well:

- Services and relevant stakeholders will be well-coordinated and provide seamless lifelong support within a context of stable and appropriate funding.
- All who require career development support will have a right to access it and will be able to do so.
- Quality of services will be assured through professionalised services with qualified practitioners, quality tools, timely and granular labour market information, clear standards and processes of continual improvement informed by evidence on service effectiveness from monitoring and evaluation (that also draws from user feedback).
- Technology, in its different forms, will be used to increase access, provide innovative services and better cater to the different needs of beneficiaries.

In all the six countries examined for this Review, there is a high degree of commonality in the purpose, target audiences and service features in each country.

They were:

- Based on relevant policy or legislation
- All age based with a focus on lifelong learning, but started career guidance at a younger age

- They were available across the whole country
- Increasingly they were a technology-based service
- They operate both in the school system and outside it, in Further Education or Vocational Education and Training, Higher Education and in the public employment services for the unemployed
- Many teach career management skills at an early stage for young people with the aim to make them more self-reliant and equipped for lifelong learning
- They use a place-based approach with Careers Hubs and strong connections with local labour markets and more e.g., e-portals

Perhaps surprisingly and, apart from Scotland, the evidence gathered to date shows that the countries examined make little use of employer engagement techniques in their Career Advice, Information and Guidance systems. This is contrary to the “best practice” espoused in documents such as the ‘Investing in Career Education’ by the ILO.

Countries such as Denmark commented on the need for separation between the careers information system and industry, to provide independence of the CIAG system. Karlsen (personal communications) confirms this and commented that engagement with employers, business and the education system in Denmark was on an ad hoc basis.

CIAG systems in the countries examined placed more emphasis on meeting the needs of the individual rather than having a role in meeting the needs of the economy, albeit for the future. There is also a strong ethos of the need to offer impartial advice to meet individuals needs rather than be influenced by the economic need for skilled labour in specific sectors.

It is perhaps more understandable that when used in the Public Employment Services that CIAG might be more focused on the short term to get individuals back into the labour market, or at least closer to the labour market. The longer-term needs for the economy may take a less prominent role as the public employment services seek to reduce overall unemployment.

This lack of engagement with employers in the Nordic SAEs may result in lost opportunities for CIAG systems as involvement with the private sector helps to produce up-to-date Labour Market Information and actions that can influence young people, for example, structured work placements.

In Northern Ireland, Careers Education is the responsibility of the Department of Education and Careers Information, Advice and Guidance is the responsibility of the Department for the Economy, provided by the Careers Service within DfE. At school level, careers education, including

school/employer engagement activities and work placements, is led by Careers Teachers as an addition to their teaching duties.

DfE's Careers Service delivers its work on an all-age basis. In addition to working in schools with Careers teachers, it also works with the Department for Communities offering a service to the unemployed/ economically inactive and with the adult population seeking information about careers. In their joint work on a 14-19 Strategy, the Department of Education and the Department for the Economy, 'Developing a More Strategic Approach to 14-19 Education and Training: An Action Plan to Transform 14-19 Education and Training Provision'¹⁷ highlight their plans to develop a new work experience model for young people and to develop a toolkit to enhance school employer engagement.

In a major innovation, the Careers Service has established a Careers Occupational Information Unit (COIU) which creates, with industry support, up-to-date, relevant information on careers and jobs in industry sectors including Life & Health Sciences (2022) as well as FinTech and Financial Service (2023). Work by DfE Careers Service is in very close alignment with best international practice on involving employers and should be commended.

3.8.1 Lifelong Learning and Skills Training

There is much evidence from both the OECD countries and the EU 27 that lifelong learning is prevalent, and that Northern Ireland lags behind in encouraging this once individuals have left the education system. What is harder to determine from the evidence is whether the main purpose of the policy on lifelong learning is for a societal good, an economic good or both.

Certainly, in Denmark both objectives prevail, and this may account for the high level of participation here and in Finland. In Finland there has been a change in emphasis of government policy, with a deliberate move to refer to Continuous Learning as opposed to Lifelong Learning. The reform of the policy reflects the emphasis on the economic value of training rather than the societal value and this followed a review of the Finnish system by the OECD. In Scotland and Ireland there is also a focus on the economic aspects and benefits of upskilling and re-skilling.

In Scotland, Skills Development Scotland uses "Skills for Growth" consultants to work one-to-one with business owners to produce a business plan to improve their business through re-skilling, upskilling

¹⁷ DfE (2022) [Developing A More Strategic Approach to 14-19 Education and Training: An Action Plan to Transform 14-19 Education and Training](#).

and talent acquisition. There is a website, “Our Skillsforce”¹⁸, information webinars and an interactive triage system for employers. The outcome of these interventions is a business improvement plan. The company then uses this as a means of engaging with training providers to organise training that the company funds.

In Ireland, there is a more active approach with the Skills Net organisation being the main facilitator and co-funder of in-company training. There are sectoral experts in each region across Ireland who develop networks of similar businesses and together they facilitate the training programmes and co-fund them with the businesses. Skills Net is more proactive in engaging with individual businesses and then bringing them together in a network based on their business sector and location, and as such it is able to get traction with its training programmes. The Skills Net model is worth further consideration if Northern Ireland has the ambition to have a vibrant and active in-company training offer to meet the needs of the 10X economy.

3.8.2 Need for employer engagement and connections

All of the literature reviewed on the FinTech sector highlights the need of effective Careers Information, Advice and Guidance. This is not surprising as the sector itself is relatively new and so many of the job roles in the sector may not be widely known by parents, young people and careers advisors. Many of the data-related job roles did not exist around ten years ago. The proximity of the sector to the “Tech” sector may also play a part in this where many similar new job roles are not fully understood such as Dev Ops, UX, Full Stack Developer.

Clearly it is the responsibility of the businesses and employers, or their representative bodies, to overcome this lack of awareness, knowledge and understanding. Kalifa (2022) understood this by saying that “more is needed to support students to understand the opportunities (careers)...” and he says that FinTech leaders need more interaction with students throughout their educational pathway.

The challenge remains: employers, policymakers, education establishments, employment services all know there has to be greater employer engagement, but the question is how best to do this.

¹⁸ <https://www.ourskillsforce.co.uk>

Case Study

FinTech Scotland

FinTech Scotland¹ is the representative body for the FinTech ecosystem in Scotland. It has 200 member companies and represents 15 universities, 16 Tech Spaces and several Investor organisations all involved in the development of the FinTech sector in Scotland.

Not surprisingly, 'Talent & Skills' are one of the key themes for FinTech Scotland and they link closely with Skills Development Scotland and encourage businesses to engage using the SDS existing services. For example, SDS host "Marketplace", an online tool that allows businesses to connect with schools to pass on knowledge to school pupils through talks, workshops and workplace visits. Marketplace also offers employers the opportunity to give young people a structured work experience and the opportunity for them to earn the Certificate of Work Readiness, which is recognised by industry and includes a reference for the young person's CV.

Finally, Marketplace helps employers to become involved with Scotland's Foundation Apprenticeships. These are programmes that allow school age pupils to learn about the world of work through taking vocational subjects alongside academic subjects to equip them with the skills to enter the labour market as a Modern Apprentice or to progress in the education system.

Skills Development Scotland also promotes the Digital World¹⁹ online resource to inform everyone in the general public (pupils, careers advisors, parents, careers explorers) about job roles involving digital technologies, including FinTech. The online tool allows the "explorer" to see a variety of job roles in a sector that uses digital technology. Each has a short job description, details on the average salary, and a forecast of whether the jobs are likely to expand or contract in the future. It also states the number of current jobs in the Scottish labour market, details the various education pathways that can take you to the specific job role, including qualifications and links to employer organisations that can help with more information.

¹⁹ <https://www.digitalworld.net/solution-architect>

In Northern Ireland we have the opportunity to take the learnings from some of these initiatives from Scotland and adapt them to the situation here e.g., the Entitlement Framework allows schools to offer 21 subject areas, of which seven must be General (Maths, English etc), seven must be vocational and the remaining seven at the choice of the schools. The aim being to give the pupil the subject areas that allows them to maximise their potential. Schools are supposed to use labour market information like the Skills Barometer in determining which subjects to offer pupils, but how many do? How many offer businesses the opportunity to visit schools, in a sustained and structured way, to enhance the labour market information with real life experiences of work?

Careers education in four countries (Estonia, Finland, Ireland, and Scotland) place emphasis on teaching “careers management skills” whereby individuals are taught how to find, assess, and evaluate information about specific job roles in all sectors of the economy. In this way individuals become self-reliant to find and explore job roles that appeal to them and to search for information on the best educational pathway to prepare for their chosen job roles. Taught at an early age (Estonia, Ireland) these career management skills will likely last a person throughout their lives and equip them to make use of careers information should they chose to change job, face the threat of losing a job or become unemployed.

Whilst not specifically referred to in the ‘Developing a More Strategic Approach to 14-19 Education and Training: An Action Plan to transform 14-19 Education and training Provision’, there may be an opportunity to examine the role career management skills tuition could play as part of the wider review of the curriculum.

4 Productive Capacity Gap Analysis

4.1 Introduction

The skills gap issue in Northern Ireland outlined above is most profoundly highlighted in the Skills Barometer 2021²⁰. With the Northern Ireland skills environment shifting to a higher skilled output, the UUEPC notes that the growth in higher skilled individuals remains lower than required. In fact they estimate that by 2030 there will be an undersupply of c.5,000 people per annum with NQF Level 3 and above and an oversupply of c.800 per annum of with NQF Level 2 and below.

It is clear from the Skills Barometer that while we will go some way to improving current skills requirement over the next 10 years, there is still some way to go to achieve a skills balance. When the skills system doesn't produce skills that match the needs of the economy, a Productive Capacity Gap results.

To understand the scale of this gap, we have created a Productive Capacity Model which shows an economy that has achieved skills balance. This model quantifies the potential 'prize' in terms of GVA, wages and employment that could be achieved from having an economy and labour market perfectly in skills balance.

To reiterate, the purpose of the *Productive Capacity Model* is to:

Quantify the economic output of a perfectly balanced skills system (measured by GVA, wages and employment). This will also consider the opportunity costs of not having a perfectly balanced skills system and investigate the costs to the NI economy of not providing a high level of careers advice and guidance.

This modelling exercise should be considered a 'stylised scenario' of an unlikely economic output, to make a point. The value in this modelling exercise is that it provides context and insight into the potential 'upside' from improving the skills system in Northern Ireland.

²⁰ Ulster University Economic Policy Centre (2022); [Northern Ireland Skills Barometer 2021 Overview Report](#);

4.2 Methodology

The figure below shows a high-level schematic of the Productive Capacity Model. As can be seen from Figure 1, there are three key elements of the model

- the Skills Barometer
- unfilled vacancies due to skills shortages
- the current ‘under-utilised’ stock who are ‘overqualified’ in terms of qualifications or skills for their current position

The model also considers the impact of being able to fill vacancies that would have otherwise been ‘unfilled’ due to the inability to find the correctly qualified candidate. The remainder of this subsection will take each of these elements in turn explaining any assumptions, analysis conducted and any data sources used.

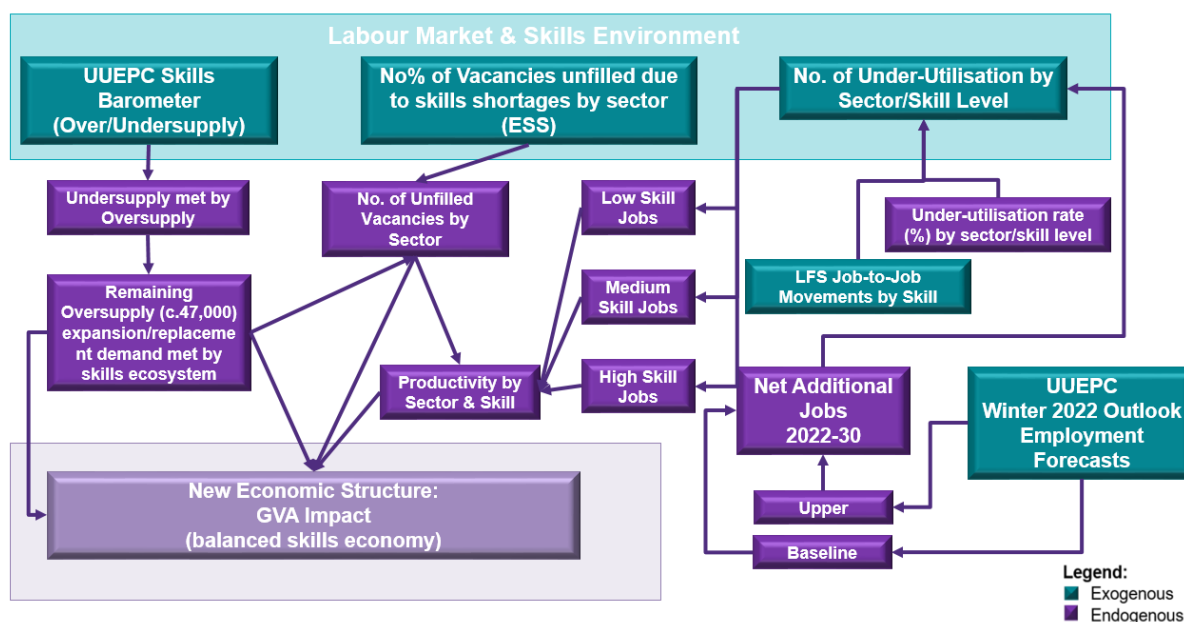


Figure 1: Productive Capacity Model Schematic (Source: Grant Thornton, 2023)

4.2.1 Ulster University Economic Policy Centre (UUEPC) Winter 2022 Outlook

The UUEPC Winter 2022 Outlook²¹ provides the baseline for employment change by sector over the next decade. UUEPC's baseline employment change forecasts are used which forecast that the Northern Ireland economy will add an additional 49,400 jobs, bringing the total employment of Northern Ireland to a record level of c.953,000.

4.2.2 Under-Utilisation

In order to calculate the level of 'under-utilisation' within the Northern Ireland economy, Grant Thornton used the UUEPC total employment forecast to 2030. According to their forecast 49,400 jobs will be added to the economy by 2030. However, it is likely some of these jobs will be filled by individuals who are over-qualified or over-skilled for their role.

To identify this contingent Grant Thornton used CIPD's 'Over-skilled and Underused' report²² which provides an estimate of the proportion of people who are 'overqualified' for their job (27%). This proportion was then applied to the total employment outlook in order to calculate the number of people in the people who would be considered 'under-utilised' by being 'overqualified' or 'overskilled' for their current role.

From this, a matrix of 'under-utilisation' by sector and skill level was developed using data from the 2011 Census – the most recently available data on skills by sector. This is then applied to the UUEPC net additional jobs, producing the number of 'under-utilised' people by sector and skill level.

A proportionate rate of job-to-job movements based on skill level is applied. This data is from the UK Labour Force Survey (as it is not available at an NI level). This data provides the number of job-to-job movements based upon the individual's skill level destination. Applying these proportions allows us to outline the potential movements of the 'overqualified' individuals across the skill landscape. It shows that, typically, around c.48% of all job-to-job movements involves an individual moving to a 'high skilled job'.

The Labour Force Survey also facilitates an assessment of the number of people moving down the skills profile in terms of job (e.g., for semi-retirement or health/family reasons). Combining these movements, we are able to redistribute the level of 'Under-utilisation'. To calculate the impact of the

²¹ Ulster University Economic Policy Centre (2022); [UUEPC Outlook Winter 2022: Global Challenges, Local Consequences](#)

²² Over-skilled and Underused: Investigating the Untapped Potential of UK Skills; CIPD (2018); https://www.cipd.co.uk/Images/over-skilled-and-underused-investigating-the-untapped-potential-of-uk-skills_tcm18-48001.pdf

movement of this redistribution on economic output, a productivity matrix by skill and sector was developed. Combining this matrix to the redistributed 'Under-utilisation' level, we calculate the 'additional' GVA impact.

4.2.3 Unfilled Vacancies

Given skills forecasting deals with the skills required for filled jobs, unfilled vacancies are an element of the skills story that can be overlooked. The model developed for this analysis incorporates an 'unfilled vacancy' assumption in which we assume that in a perfectly skill balanced economy there are no unfilled vacancies. Effectively, this element of the model aims to quantify the level of 'latent' demand within the economy and its potential for being served through a balanced skills supply. To calculate this, we use data from the Employer Skills Survey (ESS)²³ for Northern Ireland²⁴ published by the UK Department for Education. This survey outlines current challenges facing employers in terms of vacancies and skill levels.

As part of the ESS, data is available for the proportion of vacancies that are skill shortages vacancies by sector. Using this data, we apply these proportions to the net expected jobs forecast by the UUEPC, with this providing the number of vacancies that wouldn't be filled due to skills shortages by sector. Taking this data, we then apply our productivity matrix to calculate the additional GVA that would be generated under a perfectly skilled balanced economy, where these unfilled vacancies become filled.

While the model is able to demonstrate the additional economic benefit of filling previously 'unfilled vacancies' it is limited in identifying the vacancies that *aren't* advertised due to employers' expectations of not being able to fill these roles. This is a limitation of the model but does not have an obvious solution given data limitations. However, under the perfectly balanced skills economy we would suggest that these vacancies *if* advertised would be filled and as a result provide an additional economic benefit to the Northern Ireland economy.

4.2.4 Over/Under Supply

The final element of the model focuses on the redistribution of the potential future over/undersupply by skill level. As noted above, the UUEPC Skills Barometer expects there to be a c.5,000 per annum

²³ The variable used relates to the 2019 Employer Skills Survey on Vacancy Situation highlighting Hard to Fill and Skills Shortage Vacancies

²⁴ Employer Skills Survey 2019: Northern Ireland Results; Department for Education (2020); <https://www.gov.uk/government/publications/employer-skills-survey-2019-northern-ireland-results>

undersupply of Level 3 and above skills, while it forecasts an oversupply of c.800 per annum of those with Level 2 skills and below over the next 10 years.

The first step of this is we assume that the oversupply of those with Level 2 and below move up the skills profile and go some way to satisfy some of the undersupply - upskilling has been a feature of skills policy for some time. However, while this may effectively move the oversupply to a balance between demand and supply, this doesn't satisfy the full need for those with Level 3 and above. As such, in order to bring the undersupply into balance i.e., where supply equals demand, we assumed an element of those that are economically inactive with a Level 4 qualification and above move back into employment.

However, we recognise that only 9.0% of economically inactive in Northern Ireland have a Level 4 or 5 qualification and that an element of this cohort will have retired²⁵. In addition, it is likely some of this cohort will have left the labour force as a result of severe life limiting health issues or having wider caring responsibilities²⁶. However, this is a relatively lower proportion compared to the cohort who have retired.

As well as the relatively lower stock of 'higher qualified' individuals who are economically inactive, the skills profile for those who are economically inactive is highly weighted to the lower skills. For example, according to the UUEPC Labour Market Intelligence Tool, around 59% of the current economic inactivity stock has NQF Level 2 qualifications and below. As such, while we assume some of this undersupply is satisfied by 'higher qualified' economic inactivity movement, not all demand will be. It is assumed that the remainder will be met by increased high skilled migration. We recognise this as a 'tricky' assumption given the UK's current migration policy, but we see this as a necessary 'balancing factor' in the model to ensure 'skills balance' is delivered in Northern Ireland.

Once all the over/under supplies have been redistributed, bringing the overall supply levels to effective balance, we apply our productivity matrix. In applying the productivity matrix to the newly balanced skills economy we are able to quantify the additional GVA generated from bringing both the over/undersupply into perfect skills balance i.e., where demand equals supply.

²⁵ According to the 2011 Census c.58% of those who economically inactive and have a Level 4 Qualification are retired

²⁶ Only 10.8% of those economically inactive with a Level 4 Qualification have long-term health issues, with a further 12.6% having caring responsibilities

4.3 Discussion

The Productive Gap Capacity Model suggests that the NI economy could generate an additional £3.6bn in GVA and £2.1bn in additional wages over the next 10 years if a skills balance was achieved. Figure 2 below shows the difference in the path of the economy as a result.

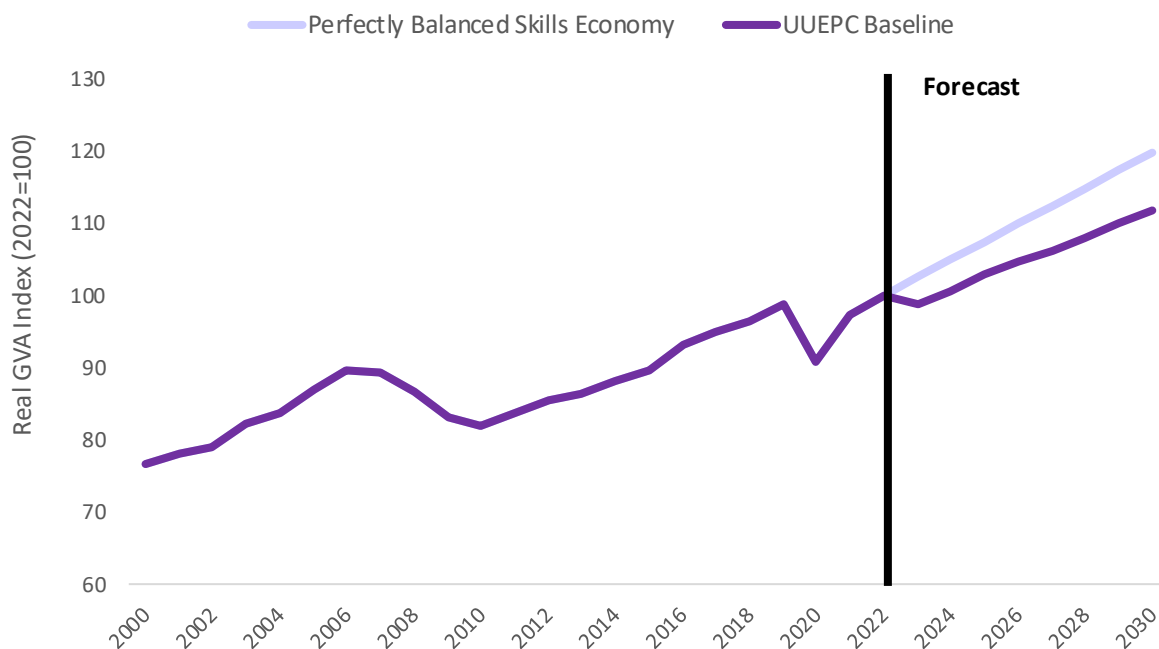


Figure 2: Perfectly Balanced Skills Economy vs. UUEPC Baseline Index (2022=100), Northern Ireland, 2000-2030 (Source: Grant Thornton (2023), UUEPC Winter 2022 Outlook & OBR March 2022 Economic and Fiscal Outlook)

			
7.2%	£3.6bn	£2.1bn	6,696
Increase in Real GVA by 2030 (compared with baseline)	Additional GVA by 2030	Additional Wages by 2030	Additional people with higher qualifications by 2030

Figure 3: Perfectly Balanced Skills Economy Key Findings (Source: Grant Thornton, UUEPC Winter 2022 Outlook & OBR March 2022 Economic and Fiscal Outlook)

The modelling shows that a perfectly balanced skills economy will provide a significant boost to economic performance. Achieving a perfect balance between skills and economic need can be regarded as an extreme, stylised scenario that is, in reality, almost impossible to achieve. However, modelling such a scenario does provide an important context to demonstrate the significant upside that could be gained if the economy was in better skills balance. Having the correct interventions in place to ensure better skills matching would provide a significant boost to economic output.

It is important to note that the model accounts for the additional economic activity that could be achieved but does not account for the savings made on search costs that businesses currently face in addressing skills challenges. These would reduce, adding a further economic benefit and add a significant economic boost in terms of additional GVA. The barriers and challenges businesses face are considered in the sections that follow.

5 Data Collation

5.1 Introduction

Informed by the themes outlined in the review of international policy and practice outlined above, primary and secondary research was undertaken to determine the state of career connections in FinTech and Life & Health Sciences in Northern Ireland.

5.2 Methodology

5.2.1 Primary Research

A qualitative approach was taken using a combination of independently facilitated workshops and interviews on the demand-side with SMEs from FinTech and Life & Health Sciences sectors, separately. In addition, representatives from Schools, Colleges, Universities and Government Agencies on the supply-side were consulted via a separate workshop.

A series of semi-structured interviews was conducted with senior directors, managers and HR professionals from both FinTech and Life & Health Sciences SMEs in NI. All workshop participants and interviewees were asked the same set of questions across a range of areas for research validity and consistency. All research activities were conducted with all workshop delegates and interviewees, with responses anonymised to ensure data protection and confidentiality, in line with GDPR requirements.

Three half-day workshops were held in Catalyst and Ormeau Baths (Belfast) for demand-side SMEs in FinTech and Life & Health Sciences plus one workshop from the supply-side in Catalyst (Derry-Londonderry).

A total of N=45 persons were invited to engage in the qualitative research process. The response rate was 44% of those who participated in the primary research collection phase (workshops & interviews).

A thematic analysis was conducted from the demand and supply-side with insights derived from the key workshops. In addition, further analyses of the findings from interviews were aggregated across both FinTech and Life & Health Sciences sectors, respectively.

5.2.2 Secondary Research

Career pathways for the sectors were collated using data contained in bulletins from the COIU. The bulletins focus on the technical roles associated with the sector rather than the breadth of roles in sector SME. Therefore, a job role map of a FinTech SME was prepared to determine the variety of all job roles and the pathways travelled by current staff to arrive in those roles.

5.3 Primary Research

5.3.1 Supply-side

The research evidenced the supply challenges for career explorers and advisors in relation to FinTech and Life & Health Sciences, including progression pathways; recruitment and retention; barriers and pain points and skills and training opportunities.

5.3.1.1 Supply Drivers

There is a skills shortage for SME employers in both FinTech and Life & Health Sciences sectors including both Graduate and Experienced hires. Often placement students are given provisional job offers upon completion of their “year-out” so as not to lose them later in a competitive marketplace.

Whilst FinTech in NI is dominated by the major players including Allstate, FinTrU, First Derivatives, et al, there are several roles available within SMEs for Data Analysts, DevOps and Software Development. Graduate programmes offer ‘Level 1’ positions from across a range of disciplines including Physics, Business, IT and Finance.

Interestingly, in recent years a range of ‘Conversion Courses’ have been offered by the main universities - Ulster University (UU) and Queen’s University Belfast (QUB) in subjects including MSc Computer Science, MSc Software Engineering and MSc Cybersecurity which in itself has seen 80 graduates in the past year alone (2022) due to the growing cluster within the Institute of Electronics Communications & Information Technology (ECIT) at Queen’s University Belfast (QUB).

In addition, a range of ‘Skill Up’ programmes have been provided by QUB via funding from DfE, with approximately 6-7 post-graduate certificate programmes in a range of data, digital, management and leadership subjects. In Life & Health Sciences, a Level 7 Master’s is offered in Pharmacy Analysis (Biotech) at UU.

Overall, in QUB there are approximately 500-600 graduates in FinTech and 200-300 graduates per annum in Life & Health Sciences.

5.3.1.2 Progression Pathways

The need for better career progression pathways in the FinTech and Life & Health Sciences sectors is evident across the sample. Currently, students and potential employees face several challenges in accessing information on career pathways, including a lack of understanding of the roles and job descriptions in these sectors as they are mostly technical roles. Initiatives such as developing websites and resources for Advanced Manufacturing & Engineering and Creative Industries help navigate career choices, options and 'Jobs for me' programmes, which help students explore their career interests and potential pathways in these industries. Learning from these and other initiatives can be applied to FinTech/Life & Health Sciences SMEs across NI.

QUB, UU and the Open University (OU) have all participated in annual Graduate Recruitment Fairs in the Summer, Spring and Autumn. For the next event (Summer 2023), circa 60 companies are currently registered from FinTech (15%) and Life & Health Sciences (5%). QUB also offer a range of engagement activities with students including project-based works and employer-driven solutions, including:

- Interactive sessions with students
- Guest Lecturers
- Pop-up Talks
- Employability programmes are co-delivered with SMEs for CV/Interview preparations
- Work shadowing week FinTech and Life & Health Sciences (N=19 SMEs)

Assured Skills is a pre-employment programme supported by DfE in tandem with Foreign Direct Investment (FDI) and SMEs. The emphasis is on new job creation with additional support from Invest NI. All participants must be 18+ years upon joining an academy and the funding for skills training is normally conducted over an intense 6-8 week period. There is a guaranteed job interview for each participant completing the programme and c. 80-85% success rate in achieve full-time employment.

The academies are non-academic and focussed on industry skills. At present six FE colleges provide the training with 17 academies completed in 2022/23 and 3 in progress. For Fintech, previous participating employers included FinTrU, Alchemy, First Derivatives, EOS, PwC, Deloitte and KPMG. All course related content is agreed with employers as to how skills needs will be transferred in practice within each academy. Other academies have taken place for manufacturing and welding SMEs including the Manufacturing & Engineering Growth & Advancement (MEGA) cluster in Mid-Ulster.

Career progression is more rapid having completed an Assured Skills Academy, with many candidates moving-up salary scales within circa 2-3 years. Employers are satisfied with the learning model and good skills levels are supplied by local colleges in a short, sharp and intensive upskilling manner.

Assured Skills reduces barriers, with a low qualification entry point, ranging from no formal qualification to 2:2 degree. This increases the diversity of candidates and broadens the appeal for work ready or entry stage individuals. In addition, the Assured Skills Academies were found to increase inclusion, with 5.8% of participants classified as having a disability (learning, sensory, physical) or a neurodiversity in 2021/22. In 2021-22 the gender balance was two thirds male, one third female although there were some specific variances by industry. This means the talent pool for SMEs is extended, alongside traditional recruitment for direct and experienced hires, as a result of increasing numbers of cohorts completing academies, in Fintech, Life & Health Sciences and other sectors in NI.

Assured Skills delivered 27 academies in 2020-2021 and 48 in 2021-2022. The table below shows the number of academies delivered which are categorised as 'Finance', 'Business' or 'IT' as well as the number of participants for each sector. A small number of SMEs have participated in academies, but the majority of firms had more than 250 employees. Assured Skills did not run any academies which would fall under the 'Life & Health Sciences' sector in the 2020-2022 period.

For those categorised as 'Finance', these academies include modules such as; Know Your Customer (KYC), the Investment Operations Certificate (IOC), Finance Compliance, Regulation and Conduct, for those categorised as 'Business', these include; CIMA Fundamentals in Financial Accounting, Foundation Course in Business Analysis, Agile and Professional Scrum Master, and for academies classified as 'IT', training includes; R Programming & Cyber Security.

	No 2020-21	Participants 2020-21	No 2021-22	Participants 2021-22
Finance Academies	8	167	8	138
Business Academies	5	95	9	137
IT Academies	10	205	15	294
Life & Health Sciences	-	-	-	-
Total	23	467		

Table 2: Assured Skills Academies 2020-2022, DfE (2023)

5.3.1.3 Recruitment & Retention

The workshop also identified several recruitment and retention issues in the FinTech and Life & Health Sciences sectors. One of the significant challenges is the limited availability of talent pools. It is recommended to extend the talent pool by inviting people who dropped out of school or college, providing them with better career information and awareness of Higher Level Apprenticeship (HLA) opportunities. The opportunities present for those aged 18 to 24 get thinned out thereafter.

Additionally, the lack of motivation, confidence, and health concerns upon turning 25 has led to increase in unemployment. Thus, creating apprenticeships and traineeships programmes and personalising the career advice according to each students' personal interests is crucial for recruitment and retention of talent pools for both sectors. In Life & Health Sciences, a range of experts exist within recruitment agencies including ENSO, MCS, Van Rath, Hays & Hayward Hawk.

5.3.1.4 Barriers & Pain Points

One of the significant barriers and pain points for career explorers regarding the FinTech and Life & Health Sciences sectors is the lack of understanding of the roles and job descriptions. Explorers find it challenging to get a description of what the companies do in layperson terms, making such companies undesirable. Additionally, many explorers are not aware of HLA opportunities, and the industry perception of apprenticeships needs to change. The need for more interactive methods of engagement e.g. interactive maps, apps and sharing Facebook links with parents was highlighted.

Holding career conventions for multiple schools in one place is recommended to reduce the logistics costs involved and to increase participation of students and teachers alike. Furthermore, having peer influences of students working in the sector speaking at local schools would be beneficial in growing awareness and understanding. There is a perception by FinTech and Life & Health Science SMEs that talent in NI is going to London, Dublin and elsewhere, where greater opportunities are believed to exist.

SMEs reported that there is a growing need to better match education and employment via the 'professionalisation' of pathways for careers advisors, teachers and officers. In particular, at schools level it was deemed critically important that careers advice is offered in collaboration with industry. That way SMEs can engage directly with schools (primary/secondary) or work in tandem via a marketplace or portal to keep teachers, students and careers personnel all updated and informed with internships, placements and graduate opportunities across both FinTech and Life & Health Sciences. This also helps educate, influence and develop a future pipeline of talent for wider economic benefits.

5.3.1.5 Training & Opportunities

To address the skills gap in the FinTech and Life & Health Sciences sectors, the Department for Communities (DfC) has developed a website to ‘upskill’ at your own pace. In addition, there are also the Assured Skills academies and Skill Up initiatives offered by DfE.

Skills Focus is an in-work upskilling initiative, whereby DfE supported 75% of costs and 25% by Employers. However, during Covid-19 DfE fully funded 100% of programme costs. FinTech SMEs have availed of the initiative as it is geared towards those with <250 employees in a ‘learn-as-you-earn’ model. Courses range from Level 2 to Level 7 and there were approximately 2,300 enrolments in 2020-21 and 3,128 in 2021-22. The table below shows the number of enrolments for qualifications categorised as ‘Financial Businesses and Professional Services’ and ‘Life & Health Sciences’.

Skills Focus Enrolments	2020-21	2021-22
Financial Business and Professional Services	603	719
Life & Health Sciences	275	410

Table 3: Skills Focus Enrolments, DfE (2023)

InnovateUs is geared towards <50 Employees with its skills priorities on Product/Process/Service developments including testing and ideating new ideas from SMEs. The programme is aimed at de-risking the innovation process for SMEs. The programme involves assigning a mentor from a local FE College to work for up to 60 hours with an SME, on 3 projects maximum. The programme is not timebound, per se and circa 500-550 projects are facilitated per annum across NI. The programme is available to any FinTech or Life & Health Sciences SME who meet the programme criterion.

Projects which have been classified as ‘Financial Businesses and Professional Services’ cover those, such as ILM Leadership and Management, Digital Marketing, Accounting Technician, CMI Strategic Management and Leadership and Professional Recognition Award. For those categorised as ‘Health and Life Sciences’, this includes qualifications such as OCN L5 Health and Social Care and Childcare Learning and Development.

In 2020-21, 551 projects were completed under the *InnovateUs* programme and 509 in 2021-22. The table below shows the number of projects categorised as ‘Financial Businesses and Professional Services’ and ‘Life & Health Sciences’.

InnovateUs Projects	2020-21	2021-22
Financial Business and Professional Services	20	49
Life & Health Sciences	10	1

Table 4: InnovateUs Projects, DfE (2023)

There is a need to make FinTech and Life & Health Sciences careers more accessible to all career explorers, regardless of whether their background is STEM or not, by breaking down the technical aspects of these industries into more understandable and simpler terms.

Graduate and experienced hires are sought after with Building Information Modelling (BIM) skillsets. In addition, the transferability of core skills are increasingly being offered on supply-side for:

- Mobility Solving
- Logic Flow
- Analysis
- Programming

Finally, companies need to provide better job descriptions and details of what they do and the sector they fall into should be well explained in their websites. Staff profiles are a good way of communicating and engaging new talent pools in this way, so as a student, young person or career mover/changer can clearly understand roles within SMEs.

5.3.2 Demand

The research evidenced the demand-side challenges and explored opportunities for career entry and progression; recruitment and retention; skills and training opportunities.

5.3.2.1 Career Drivers

Career drivers are influenced by three key trends. Firstly, talent acquisition, which is the addition of new skills or knowledge into the workplace. Universities provide formal graduate routes, providing the necessary underpinning theoretical knowledge and skills for careers in FinTech and Life & Health Sciences. The market is very much candidate-driven with higher salary demands, especially for more experienced hires.

Secondly, FDI in the region within FinTech and Life & Health Sciences sectors also has an impact, as larger corporates and multinationals are effectively competing for the same talent pool within NI, to

acquire the necessary skillsets from candidates to fulfil key or new job roles. Although there is no specific degree requirement into either sector, graduates in Computer Science or Software Engineering are in higher demand.

Thirdly, degrees in Finance, Business and Law (at 2:2 levels) are being increasingly accepted as entry requirements into both sectors to fill various roles.

There are emerging trends in Life & Health Sciences for clinical trials. A huge market has opened-up for conducting trials via digital platforms. SMEs have availed of Small Business Research Initiative (SBRI) challenges which involve R&D funding for improving patient communications, using artificial intelligence and enhancing data interoperability.

Artificial Intelligence (AI) and Machine Learning (ML) skillsets are being increasingly sought by SMEs in the Life & Health Sciences sector, as there is a push to remove paperwork and other barriers to progress healthcare. SMEs are also exploring industry adaptations and engineering more innovative solutions, with the right skills being given prominence over qualifications or credentials.

The FinTech industry needs to attract more staff than are currently employed. To fulfil this demand, there needs to be a focus on key factors that influence career choices, such as providing apprenticeships, starting in-house academies (in SMEs or collaborative clusters), and targeting people from non-traditional backgrounds. Graduates with Finance and Law degrees can lack soft skills and business acumen, especially after Covid-19.

Schools can encourage students to take up FinTech via career fairs and career talks and by promoting alternatives to traditional professions. Both industries need to demographically diversify attracting people beyond those aged 20-30's by offering new opportunities for employees coming from different routes, possessing varying skillsets e.g., returning parents to work and career changers.

5.3.2.2 Recruitment

A growing problem in the recruitment process is the lack of interview skills, poor interview preparation and poor quality of CVs, making it difficult for potential candidates to secure jobs. There is a shortage of skills in certain areas such as Artificial Intelligence, Regulatory, Risk and Data Science aspects of FinTech and Life & Health Sciences. Ongoing upskilling is necessary to stay relevant, and investing in STEM subjects in schools is important to address the skill shortage by early intervention, rather than relying on latter labour market interventions.

The high cost of recruitment could pose a challenge but targeting placement students with the possibility of continuation after graduation and promoting hands-on experience in different departments within FinTech and Life & Health Sciences SMEs can be effective. Difficulties were reported by SMEs in finding suitable employment for university graduates in Life & Health Sciences, with retention of staff remaining an ongoing challenge. Offering flexible working options, such as Flexible Hours, Working From Home (WFH) and Hybrid working, can help retain employees.

Employers in both industries have neither heard of nor used 'JobApplyNI'. Niche and competitive roles in FinTech often take longer to fill. Commercial and work sponsorships are a good way to attract talent, but they are expensive and require time and effort. A cost-effective alternative is to upskill and train junior employees to free up the time of senior staff. Recruiting highly experienced employees is more costly and runs the risk of failure if not implemented properly.

Both industries need to build collaborative networks, initiate academies and apprenticeships, generate word of mouth and encourage family & friend referrals. There is currently no recruitment agency that specialises in FinTech recruitment, albeit specialist recruiters exist in agencies for Life & Health Sciences roles and for some FinTech financial and technology roles.

The most common methods of recruitment for job roles are via LinkedIn, Indeed and Recruitment Agencies. Albeit informal referral internal networks via friends and families of employees is the most successful method of attracting candidates, with employees incentivised with referral fees. This is common practice in both sectors.

Other pathways include direct-to-website job applications, attending events and conferences e.g., Digital DNA and Big Data. In addition, Careers and Graduate Fairs are attended by SME employers in schools, colleges and universities. Apprenticeships are useful career promoters for entry-level hires albeit not sought after when more experienced hires are required by employers.

Building company branding activities via Sync NI, Belfast Chamber, IoD and Outdoor Billboard campaigns are all beneficial levers for attracting and recruiting potential candidates. Furthermore, event sponsorships e.g., Spar 10K, Belfast Telegraph Awards help build SME brands, as a means to attracting and recruiting from the available talent pool across NI.

5.3.2.3 Factors in attracting and retaining talent

Attracting and retaining talent is crucial in both sectors. A well-defined recruitment process can help attract talent that is in high demand and with the right skills and experience, such as Java Developers,

AWS/Cloud specialists, API and mobile development experts and Cyber Security engineers with expertise (normally 4+ years' experience required for senior roles).

Candidates are drawn to organisations that offer a wealth of opportunities to grow and develop their skills. Thus, staff development and training is encouraged with Scrum, Agile and Prince 2 methodologies increasingly preferred industry certifications in both sectors, for roles requiring technical or project management skills. There are training programmes such as Bloomberg Essentials, CISI and IOC that are used to develop technical industry skills, particularly in the FinTech sector.

A better recruitment strategy is based on a combination of personal contacts, sub-contractors, online platforms and freelancers. In terms of talent attraction, freelancers offer greater flexibility over permanent employees.

Moreover, organisations that have been in the industry for 10+ years and have a thorough understanding of the IT industry are more attractive to candidates. Offering competitive salaries, benefits packages and career progression opportunities are all crucial. In today's candidate-driven market, SMEs offering well-paid salaries and opportunities for career advancement are more likely to retain their top talent. Furthermore, health, pension, and compensatory benefits packages including share option schemes are offered to encourage retention.

Providing training and development opportunities is also essential. A culture of learning is highly valued by candidates but start-ups face difficulties creating a culture of high-performance teams to rapidly grow or scale-up. SMEs that provide in-house learning and development (L&D), capacity-building programmes, technical and soft skills training are more likely to attract and retain top talent. Moreover, 'Focus Fridays', where employees can dedicate time to personal development and learning, is also an attractive feature for candidates in both sectors. External management training programmes are useful for leadership and management personnel, as part of executive education offerings.

Retention of quality talent remains a challenge for both sectors, with employees having a high bargaining power on salaries due to the high demand for talent. The key to retain talent is better pay, enhanced work culture and benefits in comparison to bigger companies. Additionally, offering work visa sponsorship to attract talent within two years of graduation is important for retaining talent (especially for international students becoming employees). There is a need to set clear KPIs, offer training opportunities, and conduct regular appraisals leading to promotions and salary increments, as part of retention strategies for SMEs in both FinTech and Life & Health Sciences.

To retain employees, there needs to be a focus on upskilling and mentoring programmes. Two-way mentoring, reverse/informal mentoring and cross-disciplinary functional teams help retain employees. It is also less costly and more effective in the long-term to upskill and train junior employees to free up the time of senior staff than to recruit. Job rotation to develop skills of existing employees can also be implemented, as a more cost-effective solution.

In 2023 The FinTech Corridor²⁷ established the FinTech Academy to address the talent challenges faced by employers across Ireland. The Academy seeks to connect employers with students who have completed FinTech courses, participated in FinTech-focused student events, engaged on industry-related student projects, and attended career fairs and festivals. Career explorers can also access apprenticeships, internships and placements with the help of The FinTech Academy.

5.3.2.4 Skills Training

To tackle the shortage of skills and funding after Brexit, there is an opportunity for growth by subcontracting tasks such as Artificial Intelligence, Regulatory knowledge, and Data scientists. Continuing upskilling via training is essential, particularly in digital healthcare such as for self-diagnosis and digitalisation of medical notes.

SMEs in Life & Health Sciences need to conduct annual training reviews and have training plans up to date as per ISO 13485 Quality Management system. Labour market interventions from DfE e.g., Assured Skills, Skill Up and Apprenticeships and other providers i.e., FE Colleges, Universities, etc can help provide training to upskill or reskill talent by offering job interviews and employment opportunities. Utilising Invest NI training grants can help in formulating effective training plans for SMEs in both FinTech and Life & Health Sciences sectors.

Cybersecurity training is only held online as they are not funded by Invest NI, which affects the quality of the training. Additionally, skills in Cloud, DevOps and AI are highly sought after but difficult to find. The FinTech sector has to reach out to EU countries to find these skills. Further, courses with placement years have better candidates with soft skills which is more attractive to SME employers. Overall, the FinTech sector needs to find a balance between bringing in FDI firms and supporting the interests of indigenous SMEs.

²⁷ [The FinTech Corridor](#) is a collaboration between FinTech employers and educators across Ireland & Belfast City Council

5.3.2.5 Barriers to careers in FinTech and Life & Health Sciences

Both FinTech and Life & Health Sciences sectors in Northern Ireland faces several challenges in recruitment, retention and training of skilled professionals. Retention issues such as the lack of a clear career progression scale of roles compared to other organisations; breadth of career ladder; ability to progress; and increased demand to complete versus higher salaries in Dublin and London pose significant challenges. There is also risk of loss of talent to Singapore, San Francisco and major EU cities due to the changing remote working culture. Interestingly, Singapore is seen as a high performing economy with multiple skills frameworks in place to meet supply and demand including Financial Services²⁸ and Life & Health Sciences²⁹. Whilst in Germany, the apprenticeship model is widely used by both FinTech and Life & Health Sciences firms. Referred to as ‘dual studies’ or ‘dual education/apprenticeship system’, it is a highly regulated and well-regarded system whereby young people learn through a mix of ‘on-the-job’ training as well as in the classroom³⁰.

There are difficulties in recruitment for niche sub-sectors within FinTech and Life & Health Sciences, mid-tier management level due to higher salary bands and increased competition with the corporates and multinationals that have poached or head-hunted talent from SMEs in both sectors.

To address recruitment challenges, organisations need to consider solutions such as investing in upskilling or re-skilling staff. More collaboration between SMEs in both sectors to share Assured Skills programmes will be needed to address sectoral skills gaps. Moreover, Northern Ireland needs to work on developing expertise in certain areas e.g., PEGA engineers, which is currently lacking.

To address retention challenges, SMEs need to focus on solutions such as conducting mid and year-end staff surveys, act on training issues via internal communication, provide flexible hybrid/remote work options, offer competitive holiday leave, offering socialisation opportunities, provide staff awards and one-off cost of living allowances.

Implementing continuous learning opportunities and bonus structures for all roles/levels could increase retention. Furthermore, Northern Ireland needs to address the issue of gender imbalance in the industry by promoting flexible options for returners. Reliance on private training vendors in technical training is an issue of concern.

²⁸ [Skills Framework for Financial Services](#), Skills Future (accessed 3/5/23)

²⁹ [Skills Framework for Healthcare](#), Skills Future (accessed 3/5/23)

³⁰ [Dual apprenticeship system in Germany](#), Expatrio (accessed 3/5/23)

There is an ever-increasing need for better and higher quality careers advice, as there is a lack of understanding of the breadth of roles in FinTech (e.g., RegTech, InsurTech) and in Life & Health Sciences (Pharma, MedTech, Biotech). Solutions to these challenges include investing in better broadband and transport connectivity and promoting more SMEs in a 10X economy.

Additionally, there is a need for schools, colleges and universities to provide more updated IT resources e.g., Industry Software, Programming Languages. There should be more focus on developing expertise in areas such as gender imbalance and providing clear communication from sectoral bodies in FinTech and Life & Health Sciences to those giving career advice. The IoD and QUB offer executive and mini-MBA education programmes which provide training opportunities for those seeking career progression to management and director level positions within SMEs.

There are several challenges including recruitment and retention of employees due to factors such as visa restrictions and travel limitations. Additionally, start-ups have barriers to training, as they are less aware of government-funded training initiatives or sector specific programmes.

For SMEs in both sectors, there is an increasing skills gap emerging between the academic and commercial skills required by firms. There is a need for Life & Health Science firms to collaborate with universities on modules to expand the commercialisation aspects by teaching students in terms of what is needed to drive innovation, growth and higher productivity and performance. SMEs can do this via upskilling or reskilling but feel it would better prepare students to couple the technical or scientific skills acquired in addition to the commercial and regulatory skills that are equally demanded.

To address these challenges, it is vital to develop connections and networks to aid in recruiting and retaining employees as well as access to training and funding opportunities via Invest NI. Additionally, external advisors with business backgrounds provide guidance and mentorship for start-ups to grow their company and support the 10X economy.

There is a branding and messaging problem around both the FinTech and Life & Health Sciences sectors, which can make it difficult to explain their purpose, place and attractiveness to career explorers and their influencers. A challenge exists to communicate these complex and multi-layered well.

Schools are still using outdated software not training students fast enough to adopt to emerging technologies across both FinTech and Life & Health Sciences. Further, in colleges and universities this can be the case also albeit to a lesser degree as engagement between employers and academia means the latest software/technology is utilised for skills transfer.

5.4 Secondary Research

5.4.1 Findings & Analysis

5.4.1.1 FinTech and Life & Health Science Career information in NI

The COIU published a Life & Health Sciences sector bulletin in September 2022 and FinTech bulletin in April 2023. They contain rich information showcasing courses, roles, people and possible pathways into the sector – see figures below. They also provide links to relevant websites and Careers Service contacts to pick-up on any further queries.

Whilst the COIU information is rich in nature, the information is locked into a PDF. There are hyperlinks to websites and YouTube videos, however the information could be augmented by creating ‘snackable’ content for social media and shared on platforms that will reach career explorers, with calls to action. The information mostly relates to the technical job roles in the sectors and whilst it alludes to non-technical roles, it does not include career profiles on the support roles that could be taken up by a wider range of career explorers.

The Careers A-Z³¹ support platform currently utilised by DfE Careers Service appears dated and does not have the functionality that a user might expect – in the case of FinTech, the term financial technology is not listed as a career, and links for university courses direct users to the UCAS homepage.

Neither AFBI nor HIRANI provide a platform for Life & Health Science careers in NI. FinTech NI make significant mention of talent and skills on its website and publications but does not appear to currently be active in this space. Representative bodies for both sectors need to act to ensure that their employers are engaging with career explorers. In the case of Life & Health Science, there is a need for a sectoral body to be created as it appears that neither ABPI nor HIRANI have a mandate to act in this way.

³¹ [DfE \(2023\), Career A-Z](#)

Life Science Sector Qualification Pathways - FE Colleges

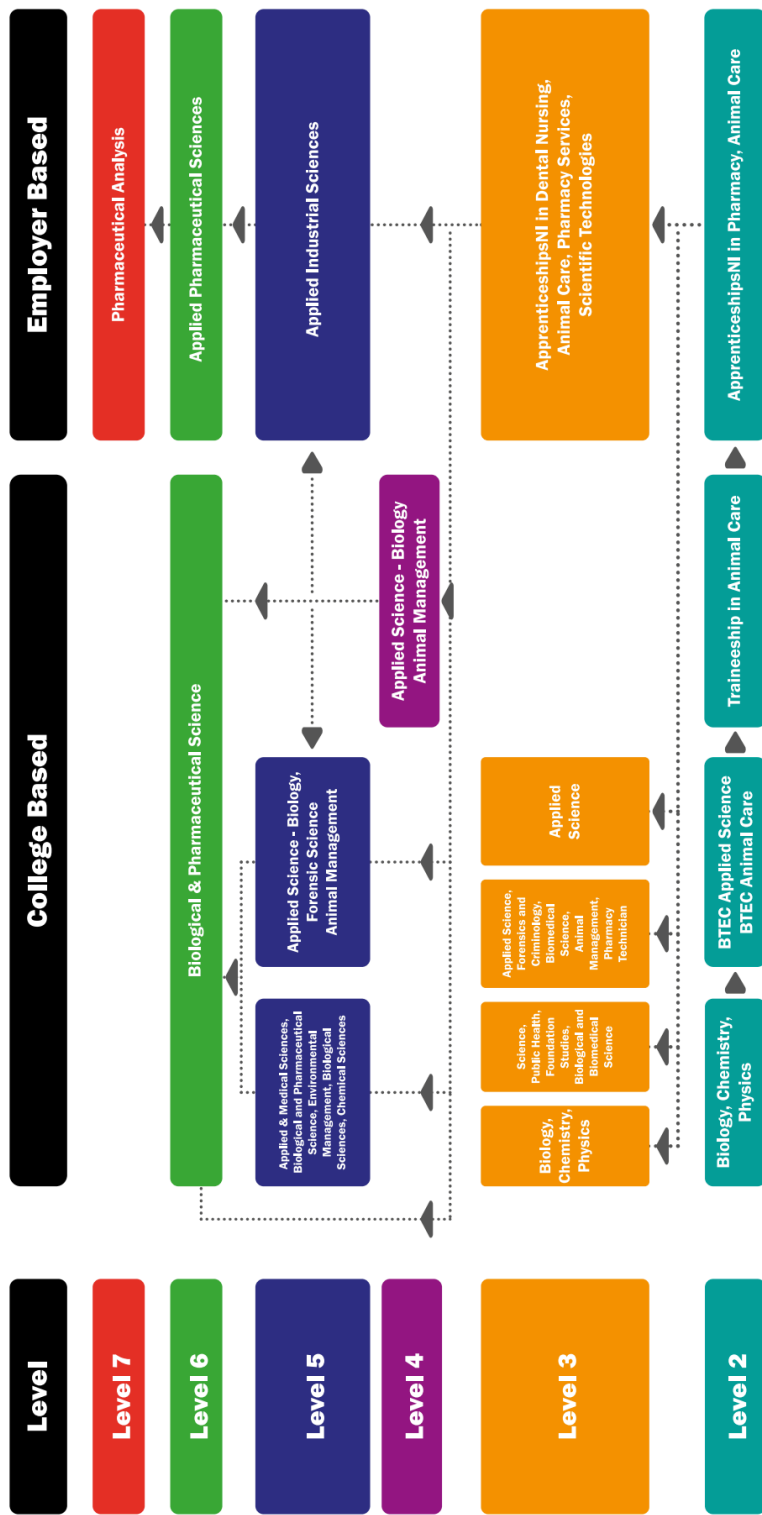


Figure 4: Life & Health Sciences Pathways, DfE COIU (2022)

5.4.1.2 Assessment of roles and pathways in FinTech SME

The high-level analysis of a FinTech SME demonstrates that 64% of roles are technical in nature e.g., software, data, DevOps, analysts etc. It is noteworthy that all staff have at least a Level 6 (Bachelors) qualification and the staff have had an average number of 3 previous roles with other employers.

Of the 37 technical roles, 15 are filled by those who did not study software or IT at Level 6. Instead, they completed degrees in unrelated subject areas or undertook a Level 7 conversion MSc in Software Development.



Figure 5: Distribution of job roles by function

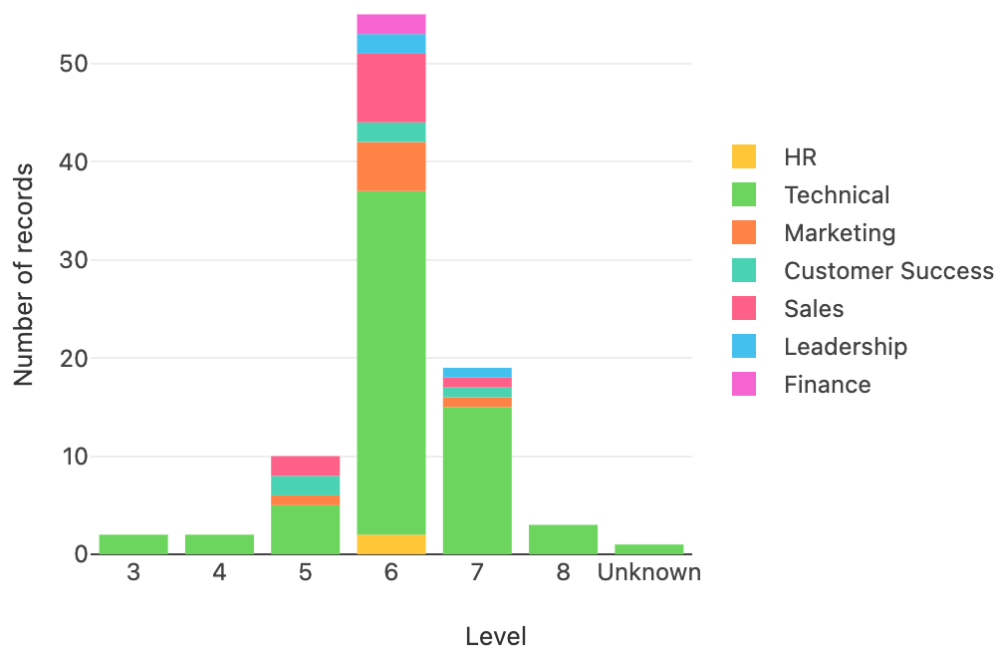


Figure 6: Distribution of qualifications by level and function

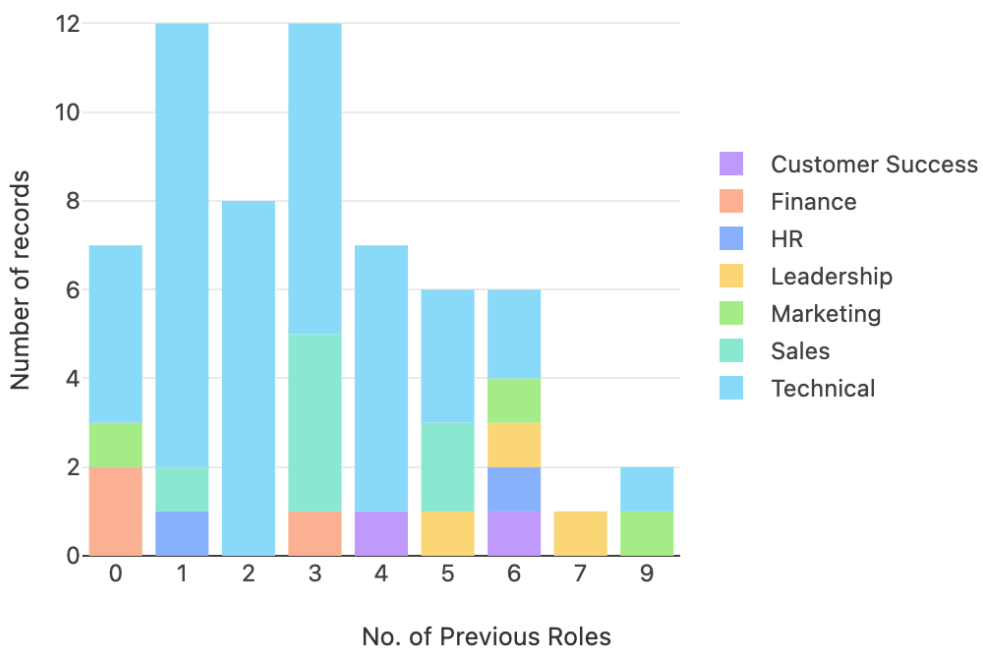


Figure 7: Distribution of no. previous roles by function

6 Conclusions & Recommendations

6.1 The prize of a perfectly balanced skills system

The prize of a perfectly balanced skills system in NI is £3.6bn additional GVA by 2030 and an increase in wages & people with higher qualifications.



The Productive Capacity Model shows that a perfectly balanced skills economy will provide a significant boost to economic performance. Whilst this is an extreme scenario which is unlikely to be fully achieved, the model does provide an important context to demonstrate the significant upside that could be gained if the economy was in better skills balance. Having better skills matching would provide a significant boost to economic output and reduce the current costs borne by SMEs in exploring the options or the productivity costs of not finding the right people.

6.1.1 Recommendation

Recognising that having better skills matching would provide a significant boost to economic output, Government departments with a skills responsibility should allocate skills budget based on the direction of travel towards the “prize” of closing the productive capacity gap and providing skills balance.

6.2 Career explorers struggle to make informed decisions

In the past, growth in the economy has relied on the outputs of the education system and immigration to fill vacant roles. Since the UK's exit from the EU, employers will need to be cognisant of the change in UK Immigration policy and procedures should they wish to use this talent pipeline. To achieve the full potential of the 10X economy there is a need for more people to study STEM or related subjects throughout their educational pathway, as evidenced by the Skills for a 10X Economy³².

Career explorers choosing the right subjects becomes vital if the opportunities of the 10X Economy are to be realised and captured. This places a greater onus on careers information, advice and guidance to give career explorers and their influencers the right information for them to make real informed choices for their career.

Career explorers in schools are hindered due to the inability of schools and employers to stay connected with industry advancements, in terms of technology, curriculum and careers information. There is a need for a stronger connection between education and industry, as highlighted in the action plan of the 14-19 Strategy.

Experience of careers guidance in other countries shows that the CIAG system must match the circumstances in each country and international best practice shows need for professionally trained and resourced staff in Career guidance. When it works well there should be:

- Services and relevant stakeholders will be well-coordinated and provide seamless lifelong support within a context of stable and appropriate funding
- All who require career development support will have a right to access it and will be able to do so
- Quality of services will be assured through professionalised services with qualified practitioners, quality tools, timely and granular labour market information, clear standards and processes of continual improvement informed by evidence on service effectiveness from monitoring and evaluation that also draws from user feedback
- Technology, in its different forms, will be used to increase access, provide innovative services and better cater to the different needs of beneficiaries

³² DfE (2022), [10X Skills Strategy](#)

In all the six international countries examined for this Review, there is a high degree of commonality in the purpose, target audiences and service features in each country.

They are:

- Based on relevant policy or legislation
- All age based with a focus on lifelong learning, but started career guidance at a younger age
- They were available across the whole country
- Increasingly a technology-based service
- They operate both in the school system and outside it, in Further Education or Vocational Education and Training, Higher Education and in the public employment services for the unemployed
- Many teach career management skills at an early stage for young people, with the aim to make them more self-reliant and equipped for lifelong learning
- They use a place-based approach with Careers Hubs and strong connections with local labour markets and more e.g. e-portals

Scotland is an exemplar in terms of its CIAG system with a high level of employer engagement and a comprehensive range of interventions such as “My World of Work”, Marketplace and Digital World. Northern Ireland could learn much from this close neighbour.

Career explorers (of all ages) face several challenges in accessing information regarding FinTech and Life & Health Sciences career pathways, including understanding of the industries, people profiles and job roles. There is a branding and messaging problem around both sectors, which can make it difficult for explorers, parents, teachers and influencers to simply define both sectors, classify sub-sectors within each industry and advise on the diversity of jobs on offer (including the breadth and complexity for technical and non-technical roles).

6.2.1 Recommendations

Regardless of the media (social media, email, online platform and chat) which is used, sectoral bodies and Government should design career information around the primary user: the career explorer. The focus should be on the individual, who they are in terms of aptitude, qualifications, interests and skills. Career explorers should be inspired by those who are already in the sector, shown the skills and qualifications needed and provided with the pathway to get there.

The information should be hosted in an online marketplace with timely and relevant marketing to inform careers explorers about potential next steps in their journey. The tool could be used by careers

advisors to give impartial advice, or independently by career explorers to help them develop career management skills and make informed decisions.

The 14-19 Strategy project to coordinate structured work experience should be a facet of this platform, ensuring that it gives career explorers clearer access to work experience, the chance to develop in-work skills and explore job roles in-person.

6.2.2 Further consideration

DfE should consider how Careers Service can best support economic growth whilst maintaining impartial careers advice. Whilst there was no indication of careers outcome measurement in the research countries, there may be merit in exploring a success framework for CIAG, like Gatsby Benchmarks³³ in England. DfE reported³⁴ that by March 2024 it will develop a set of common quality standards for the delivery of careers guidance in all settings.

With the increasing digitisation of human resources and job roles specifications, there is an opportunity to better communicate jobs in terms of transversal skills and aptitude, rather than generic terms and qualifications. Skills mapping of job roles could support career explorers in identifying the roles that are best suited to their skills and aptitude. Further research into this with employers would be worthwhile.

³³ [Gatsby Foundation, \(2023\)](#)

³⁴ DfE (2022), [10X Skills Strategy](#)

6.3 SMEs struggle to recruit and connect with career explorers

Both FinTech and Life & Health Sciences sectors in Northern Ireland face several challenges in recruitment, retention and training of skilled professionals. This is exacerbated for newer employers as they are less well known in the labour market.

There is a need for increased engagement between employers and education providers including schools, colleges and universities to ensure talent pools are equipped with the requisite skills for jobs and be better prepared for the world of work including solid career management and interview skills. The quality of candidates and careers connections needs to be improved in both sectors and sectoral representative bodies can play a key role to advocate for better and more informed career choices.

The most common methods of recruitment for job roles are online platforms e.g. Indeed, however informal referral via friends and families of employees can often be a successful method of attracting candidates.

Employers in both industries recognise the need to aggregate their demand with others – even competitors – to make their sector more visible. They are keen to build collaborative networks, initiate academies and apprenticeships but often don't know how to do this. Initiatives like The FinTech Academy are helping to bring employers, educators and local authorities together to provide promotional campaigns and employment opportunities in the sector.

6.3.1 Recommendations

The review of Small Advanced Economies demonstrates that there is an increased use of technology to support the connection between career explorers and SMEs. Such technologies are designed to draw in high-level labour market information whilst enabling users to self-manage their connection with the platform. We note that a project identified in the 14-19 Strategy has started recently (led by DfE) which will see Department of Education and DfE work together to develop a careers platform for Northern Ireland.

From the findings presented above and a review of similar platforms, any careers platform should cater for the following user types:

- **Supply:** career explorers
- **Demand:** employers and representative bodies
- **Influencers:** Parents, teachers, Careers Service, Job and Benefit Offices (JBO), youth workers, employability organisations etc.

- **Learning Providers:** private training, FE and HE
- **Administrators:** Government departments, Arms Length Bodies (ALB) & Labour Market Partnerships (LMP)

Below is a schematic of such a platform

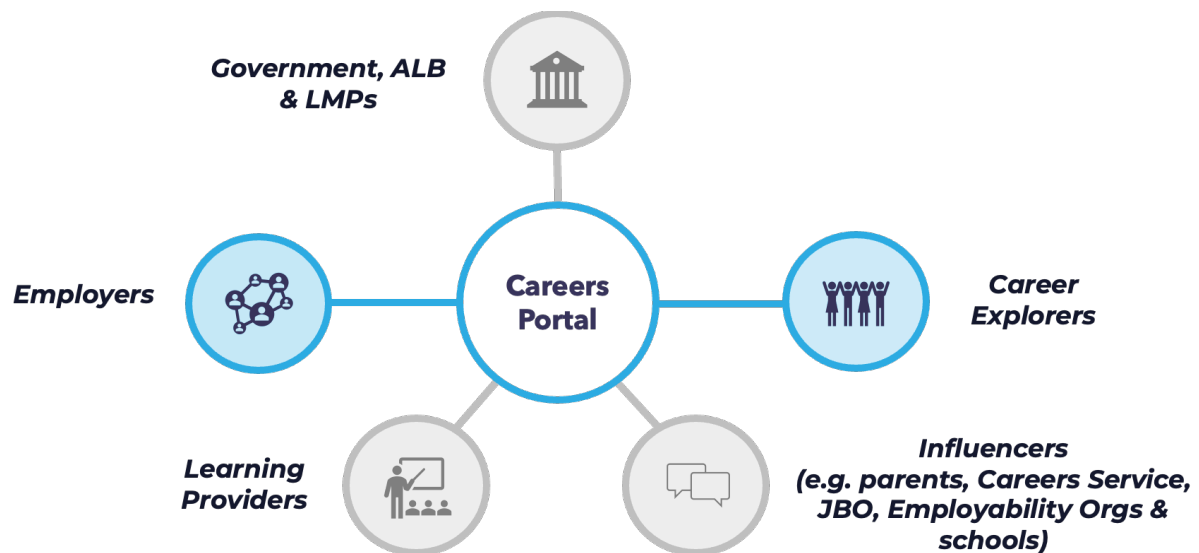


Figure 8: Careers Portal Schematic

However, the main users will be career explorers and employers, and should include the following features:

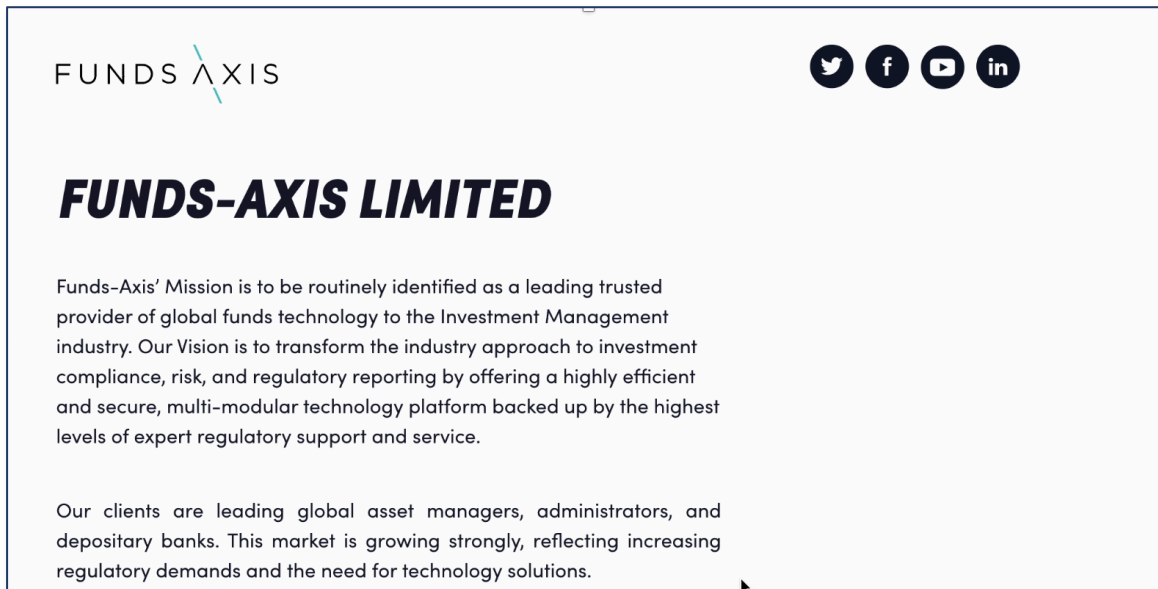
Career explorers

- provide personal information
- complete their qualification and skills profile, alongside aptitude testing
- explore career pathways which are relevant to them based on their qualification and skills
- find inspirational videos and blog of role models
- Register for events (physical and online)
- Apply for skills programmes e.g., work experience and apprenticeships
- Receive update emails and other communication

Employers

- Self-managed employer profile (succinct overview, images and video, sector, job profiles, location(s), people profile, required qualifications and skills)

- Access information about school career interactions (mentoring, mock interviews, careers talks and fairs)
- Posting opportunities e.g. work experience and apprenticeships
- Opportunity to provide blogs, videos and case studies for email and social media marketing which is managed by the administrator e.g., Government or an arms-length agency

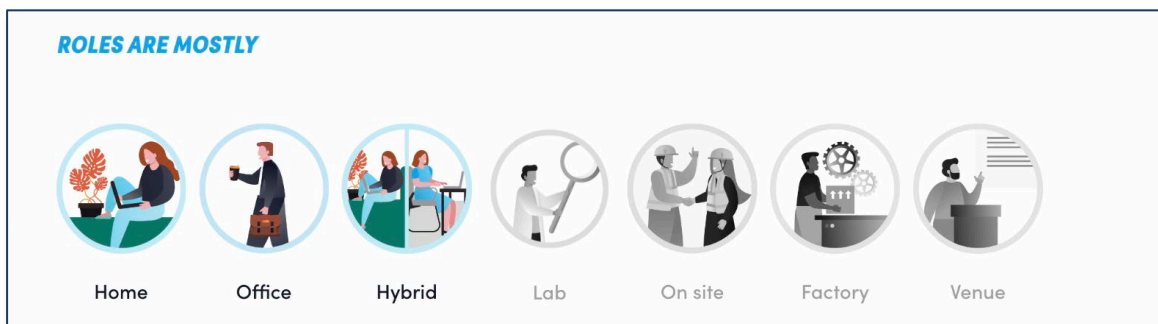


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ROLES ARE MOSTLY

Home Office Hybrid Lab On site Factory Venue

Figure 9a: Extracts from sample employer profile³⁵

³⁵ © Workplus. Permission granted by Funds Axis

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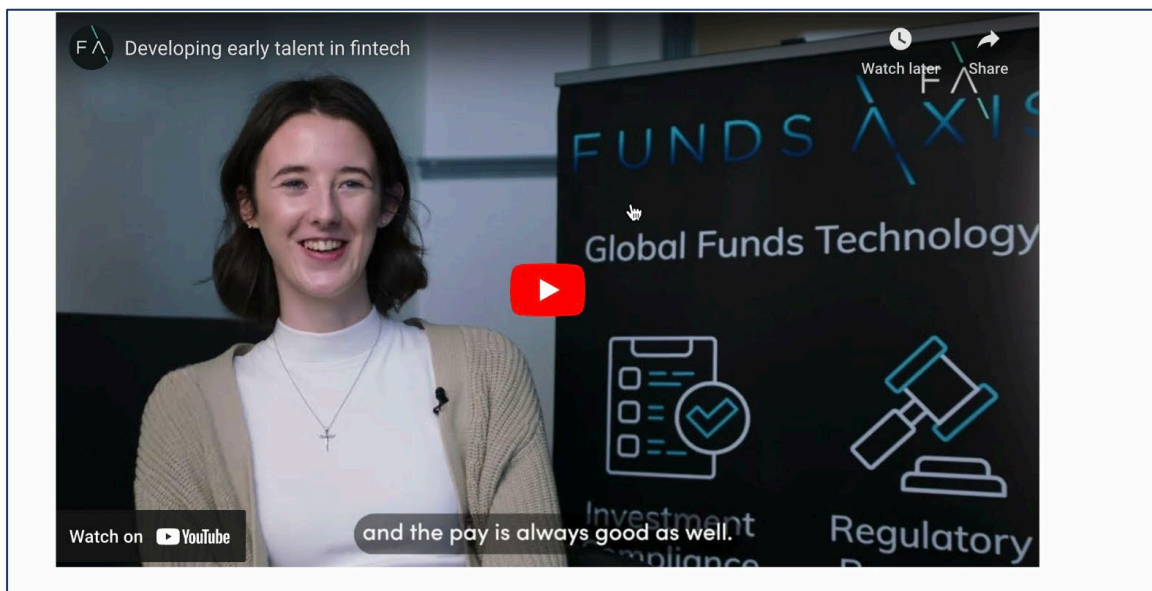


Figure 9b: Extracts from sample employer profile (cont'd)³⁶

³⁶ © Workplus. Permission granted by Funds Axis

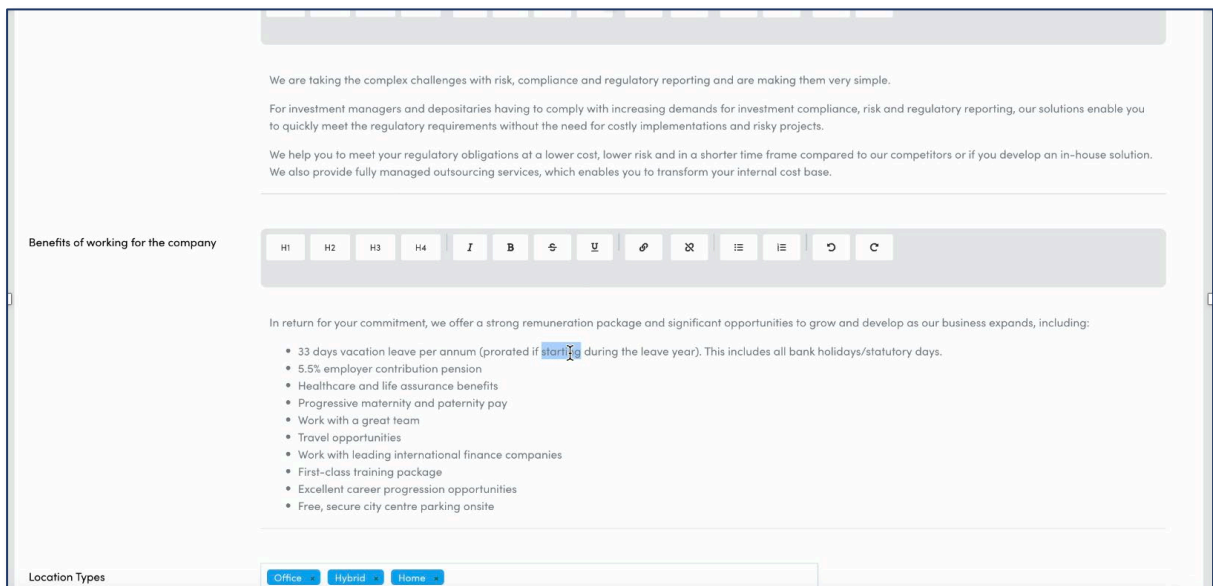
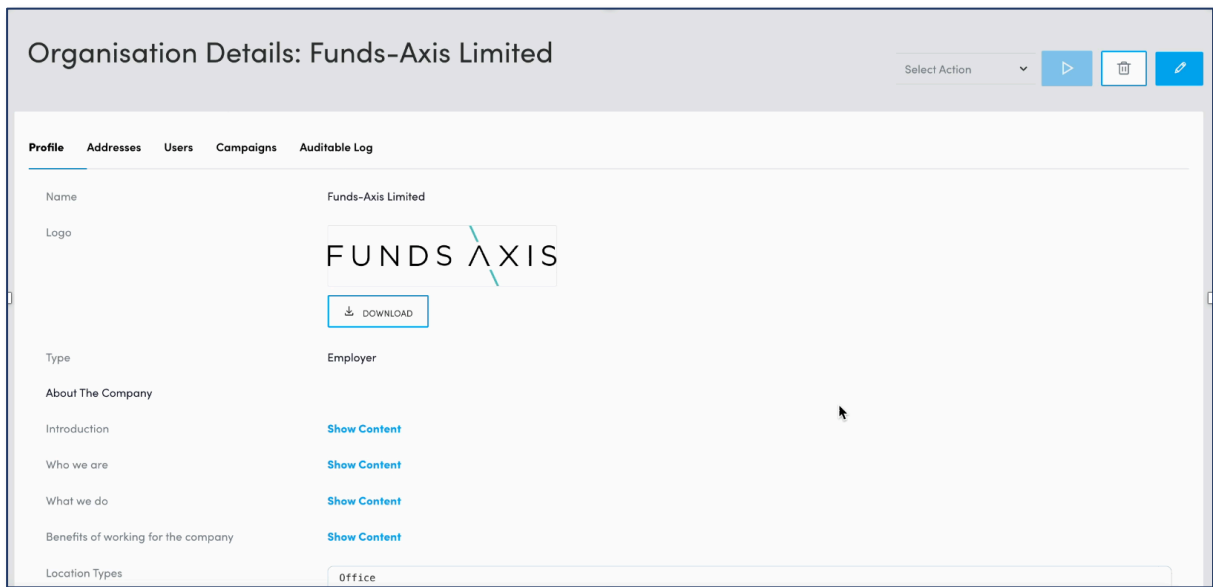


Figure 10: Extracts from employer self-service login³⁷

³⁷ © Workplus. Permission granted by Funds Axis

In any online marketplace, the platform alone is insufficient to maximise the potential value. Any platform must provide a personalised and targeted flow of careers information supported by relevant marketing to users from the supply and demand sides, to maximise traffic, engagement and ultimately the success of the platform in supporting career connections. As administrator, Government will have oversight of the flow of information and be able to measure success against key performance indicators.

Employers should aggregate their efforts and messaging around their sectoral bodies e.g., FinTechNI, The FinTech Academy, HIRANI to ensure that their costs are minimised, and impact maximised to a variety of career explorers.

Working in collaboration with the Careers Service (building on the work of the COIU) sectoral bodies must provide clear communication and messaging to positively influence career choices. They should work to define roles and use jargon-free language to better present the jobs and opportunities available in FinTech and Life & Health Sciences. Simple guidance could be provided to teachers, parents, Job & Benefits officers, employability organisations detailing developments in the sector and the likely future skills need within industry, allowing them to better guide career explorers.

The available pool of talent beyond graduates needs to be explored further including tapping into those either deemed 'under-employed' or 'economically inactive'. Schemes such as Assured Skills Academies, Apprenticeships and other skills-based programmes e.g., Skill Up, need to be facilitated by Government, training providers and sectoral bodies in collaboration with SMEs from both sectors to increase access to wider talent pools.

6.3.2 Further consideration

The next phases of the career platform project (led by DfE) will be critical in establishing the direction of career connections to support the 10X economy to provide more personalised and targeted careers support.

6.4 Need for lifelong learning which is coherent for SMEs and career explorers

There is much evidence from both the OECD countries and the EU 27 that lifelong learning is prevalent, and that Northern Ireland lags behind in encouraging this once individuals have left the education system. What is harder to determine from the evidence is whether the main purpose of the policy on lifelong learning is for a societal good, an economic good or both. The small advanced economies examined use policy levers to effect greater uptake of lifelong learning by removing real or perceived barriers to training for companies and individuals.

The 10X Skills Strategy demonstrates that to meet the needs of the future economy, Northern Ireland will have to rely, partly, on the re-skilling and upskilling of the existing workforce, to complement those entering the labour market from education and the reduced numbers through immigration. It is not just an economic must but critical to the retention of staff within SMEs. However, there is confusion across SMEs of the lifelong learning skills products from government, education and private training providers.

The Northern Ireland Skills Council has indicated³⁸ that by March 2027 it will undertake a review and rationalisation exercise to minimise duplication and introduce a business pledge with respect to lifelong learning.

6.4.1 Recommendation

More needs to be invested by all, government, business, and individuals in lifelong learning to meet the prize of a balanced skills economy. Current examples such as Skill Up shows that there is an appetite for life-long learning, and this could be built on for specific sectors such as FT and LHS.

Government should ensure that publicly funded lifelong skills training is coherent and marketed as a set of unique “products” which are relevant to individuals and SMEs, regardless of delivery partner.

6.4.2 Further consideration

The Continuous Learning Reform programme in Finland and the Skillnet model in Ireland are worth further consideration if Northern Ireland has the ambition to create a vibrant and active in-company training offer.

³⁸ [DfE \(2023\), Northern Ireland Skills Strategy – Skills for a 10X Economy 1st Annual Monitoring Report](#)

These are included in the summary of policy levers (below) used in other small advanced economies to encourage lifelong learning:

- Co-design of training courses to ensure a better “fit” with industry needs (Ireland, Finland, Sweden)
- Recognition and accreditation of prior experiential learning (APEL) (Finland, Sweden)
- Recognition of foreign qualifications (Sweden)
- Continuous professional development (Finland)
- Government funding for individuals (Denmark) and co-funding companies (Ireland)
- Use of apprenticeship system for re-skilling and upskilling (Finland)
- Facilitating and organising training (Ireland and Scotland)
- Flexibility on funding qualifications, micro-credentials – PhDs (Ireland, Finland)
- Agility of the system to react to business needs (Ireland)

7 Appendices

7.1 Government Publications in Northern Ireland

7.1.1 *The 10X Economy*

DfE has set out its 10X Economic Vision³⁹ with the concept of embracing innovation to deliver a ten times better economy with benefits to all its people.

This high-level strategy will realise this ambition by focussing on innovation in areas where the economy has real strengths, and making sure these gains mean something to all businesses, people and places in Northern Ireland. This level of ambition to build a ‘10X Economy’ reflects the scale of the challenges ahead as well as the opportunity to make a generational change.

There are seven priority clusters identified to deliver this ambitious growth; they relate to areas where the emergence of significant capability and capacity with the potential to drive the economy forward has been identified. The clusters are:

1. Agri-Tech
2. Life & Health Sciences
3. Advanced Manufacturing and Engineering
4. Fintech/Financial Services
5. Software (including cyber)
6. Screen Industries
7. Low Carbon

The ambitions of an innovation-led economic strategy may not realise its full potential if there is not sufficient attention paid to the people aspects of any innovation strategy. Innovation needs people to work. As Van Reenen (2021)⁴⁰ states:

“Innovation, after all, begins with people. Simply stimulating the “demand side” through R&D subsidies and tax breaks may only drive up the price, rather than the volume of research activity. By contrast, increasing the supply of potential inventors can both directly increase innovation and reduce its cost.”

³⁹ DfE (2021) [10X Economy](#)

⁴⁰ Innovation & Human Capital Policy, NBER Working Paper No.28713, Revised October 2021, No 103791

He goes on to state that for most economically advanced countries, innovation is the critical ingredient for long term productivity growth, but there needs to be the supply of the right type of human capital in the right volumes and his paper then examines the number of “inventors” created per thousand workers as a measure of the importance of human capital in delivering innovation in the economy.

Lenihan, McGuirk and Murphy (2021)⁴¹ reinforce the concept of innovation being a driver of long-term productivity and economic growth but they claim that when exploring the human capital issue and innovation too much emphasis has been placed on the education and knowledge elements and insufficient emphasis on the management practices and motivational factor of those in work.

Innovation is a well-recognised determinant of growth, and it is a challenge to understand why and how firms innovate. Human capital, the set of skills, knowledge, capabilities, and other attributes embodied in people that can be translated into productivity is crucial to firms’ capacity to absorb and organise knowledge as well as to innovate.

Bloom, Van Reenen and Williams (2019)⁴² explore the relationship between the demand side policies for innovation (R&D tax incentives, university grants, government funded research) and the supply side policies (education and training) and they cite examples where it may be better to invest in the supply side measure e.g. in STEM education, in order to increase the knowledge, skills and absorptive capacity in both the scientific workforce and general society.

7.1.2 Institutional Design to Support an Integrated Economic, Skills and Innovation Policy Agenda

David Skilling (March 2020)⁴³ in his paper “Institutional Design to Support an Integrated Economic, Skills & Innovation Policy Agenda” also highlights the importance of effective strategic integration between skills and innovation policy, especially in Small Advanced Economies that Northern Ireland aspires to be. He sees three important stages to achieving this:

- A clear statement of understanding of the need to integrate skills and innovation policy
- The need for a “whole of government” policy approach to integrating innovation and skills policies with a focus on aligning policies to generate the desired outcomes

⁴¹ Driving Innovation: Public Policy and Human Capital, Research Policy, Vol 48, Issue 9

⁴² A Toolkit of Policies to Promote Innovation, Journal of Economic Perspectives, Vol.33, No.3

⁴³ DfE (2020) [Institutional Design to Support an Integrated Economic, Skills and Innovation Policy](#)

- The integration of innovation and skills policy through strategic priority sectors...and without this focus on priority sectors, SAEs are unlikely to be able to sustain high levels of investment in skills and innovation, or to generate returns.

To maximise the potential value created by the 10X Economic Vision, based on innovation, Northern Ireland will need sufficient human capital with the right level and subject knowledge to exploit the innovations in each cluster for long term economic growth. This human capital can only come from the education system, the existing workforce or through immigration. Given that immigration policy is a reserved matter for the UK Government and that current government policy is to reduce most immigration, this review will focus on the current workforce and outputs from the education system.

7.1.3 Skills for a 10X Economy

Delivering on the ambitions of the 10X Economy⁴⁴ will require a step change in the skills of the workforce in these priority clusters. ‘Skills for a 10X Economy’⁴⁵, the new Skills Strategy for Northern Ireland recognises this and proposes three policy objectives to deliver these skills: Addressing Skills Imbalances; Creating a Culture of Lifelong Learning; and Enhancing Digital Skills, Developing a Digital Spine. Developing the skills for the future *10X workforce* will be critical to deliver the scientific, engineering and enabling technologies that will support the Priority Clusters in the 10X Economy.

In its Skills Studies series, the OECD (2020)⁴⁶, OECD Skills Strategy Northern Ireland (United Kingdom): Assessments and Recommendations highlights the policy priority of “*Reducing skills imbalances in Northern Ireland*” as important as such imbalances can negatively affect economic growth through their consequences on increased labour costs; lower labour productivity growth, and slower adoption of new technologies.

It states that there is a general recognition that reducing skills imbalances in Northern Ireland requires the provision of effective career guidance along with robust and reliable local labour market information and skills needs. The OECD say that “there is also a need for targeted education and information on career pathways and requirements, not only for individuals making career choices but also those who might influence career choices.”

They highlight how this situation could be turned into an “opportunity” through three actions:

⁴⁴ DfE (2021) [10X Economy](#)

⁴⁵ DfE (2022) [10X Skills Strategy](#)

⁴⁶ OECD (2020) [Skills Strategy Northern Ireland](#)

- Improving the quality and consistency of career guidance
- Improving the dissemination of careers guidance information
- Including employers in the provision of careers guidance

Although published before the 10X Economic Vision, the OECD analysis and recommendations are even more valid if we are to realise the potential of “10X”. We will need to have the right number of people with the right knowledge and skills to fill the current and future occupations and job roles in the priority clusters. We will also need strong business leadership to ensure the maximum level of innovation. The OECD (2020) also recognised this with their policy directions and recommendations on “Transforming Workplaces to make better use of skills in Northern Ireland” whereby they identified four main policy directions:

- Making management and leadership capabilities a priority for Northern Ireland
- Developing the right skills and attitudes for managers and leaders of the future
- Raising the motivation to participate in lifelong learning for current managers and leaders
- Minimising the barriers to participate in lifelong learning for managers and leaders.

It should be noted that when referring to careers guidance that this applies equally to those in the education system, those in work and those seeking to join the labour market/ work (Careers Explorers). The channels to engage these three groups may differ but the same broad principles of a good Careers information, advice and guidance system still pertain.

7.1.4 Skills Barometer

The UUEPC has published Skills Barometer reports since 2015, and the 2021 Report was updated to consider the potential opportunities offered by the 10X Economic Vision. The Report⁴⁷ highlights the need for more labour to work in the economy. Taking the number of people in the workforce in 2020 as 901,560 they forecast that the workforce in Northern Ireland will grow by 47,720 by 2030 under the Baseline scenario, and by 73,060 people under the High Growth Strategy. UUEPC believes that this is relatively modest growth when compared to the period 2012 -2020 and in a period where the 16-64 year old population is due to grow to 1.2 million between now and 2030.

⁴⁷ DfE (2022) [Skills Barometer 2021](#)

Growth under the 10X Economic Vision is forecast to grow in both Financial Services (and the subject areas that support them) and in Life & Health Sciences. Using the UUEPC data (pp12) for these subject areas we can see the projected growth.

Industry*	Total Numbers in workforce 2020	Baseline Projection	High Growth Projection	% Change
Finance & Insurance	20,670	+770	+1,510	0.7
Information and Communication (ICT)	25,440	+5,660	+9,090	+3.1
Professional Scientific & Technical	44,810	+8,840	+10,910	+2.2

Table 5: Skills Barometer, DfE (2022)

*ICT is included as some of those classified as working in the ICT sector will work within FinTech and Life & Health Sciences roles.

Whilst UUEPC may assess the growth as modest, compared with previous decades, there remains the issue of where will the economy find an extra 21,500 individuals with the right skills sets to fill these roles? In the past, growth in the economy has relied on the outputs of the education system and immigration to fill vacant roles. With the change in immigration policy by the UK Government and the introduction of the points-based visa application system and the decline in visa applications for EU residents⁴⁸, there may be more emphasis by employers on finding individuals from the education system and the existing workforce.

Even if the scale of people to fill these roles can be found, the individuals in the education system need to be studying the right subject areas throughout their education pathway to be qualified for the job roles. Programmes such as Assured Skills can have an impact on those who have taken subjects not closely aligned with the labour market, but the challenge remains in terms of the scale of intervention required and the suboptimal efficiency of re-training someone who has tertiary education qualifications. There is also an issue with gender in that only 15% of young females study “Narrow STEM” subjects compared with 36% young males, and this inequality inevitably manifests itself in the workforce.

⁴⁸ Commons Library (2022) [How has immigration changed under the UK’s new ‘points based’ system?](#)

This is supported by the evidence in the ‘Northern Ireland Skills Strategy – Skills for a 10X Economy. 1st Annual Monitoring Report’⁴⁹. Where it was found that there had been no change in the numbers achieving STEM qualifications, 24%, against a target of 27% by 2029-30. There was also a gender imbalance found in that 80% of employees earning above the Real Living Wage were in male dominated STEM sectors (Construction, Manufacturing, Transport & Communications) and these sectors accounted for 50% of all STEM jobs. Employees in STEM sectors were also less like to avail of flexible working and there was less incidence of males working part-time compared with females. This maybe a disincentive to female workers.

So, we can see that choosing the right subjects in the education pathway becomes vital if the opportunities of the 10X Economy are to be realised and captured. This places a greater onus on careers information, advice, and guidance to give young people and their parents the right information for them to make real, informed choices for their future careers.

7.1.5 Careers Guidance

In December 2019, six international organisations (European Commission, ILO, OECD, EFT, UNESCO, Cedefop) came together to publish a first booklet on the importance of investing in careers guidance. According to the 2021⁵⁰ revised booklet:

“Effective career guidance helps individuals to reach their potential, economies to become more efficient and societies to become fairer.”

According to these organisations, the overall aim of careers guidance is to develop the capacity of individuals to manage their careers (known as career management skills). It involves a range of interconnected learning activities that help people access services, resources and experiences related to employment, further education and training. These include:

- Careers education
- Careers information
- Individual and group guidance/ counselling
- Skills assessment and psychometric testing
- Engagement with employers
- The skills needed for job searching and self-employment

⁴⁹ [DfE \(2023\), Northern Ireland Skills Strategy – Skills for a 10X Economy 1st Annual Monitoring Report](#)

⁵⁰ ILO (2021) [Investing in Careers Guidance](#)

- Career development is a whole of life experience and is relevant for those in the education system, in work and for those seeking to get into work

Despite the various contexts across the world, the booklet does set out what should happen when career guidance systems are working well:

- Services and relevant stakeholders will be well-coordinated and provide seamless lifelong support within a context of stable and appropriate funding.
- All who require career development support will have the right and ability to access it
- Quality of services will be assured through professionalised services with qualified practitioners, quality tools, timely and granular labour market information, clear standards and processes of continual improvement informed by evidence on service effectiveness from monitoring and evaluation that also draws from user feedback
- Technology, in its different forms, will be used to increase access, provide innovative services and better cater to the different needs of beneficiaries.

The six international organisations involved also highlighted the importance of Employer Engagement saying:

“Employer engagement enriches career guidance. When people in work cooperate with schools and other providers, better understanding can be expected of the working world in all its varieties. This is particularly important for youth. It allows access to useful experiences and to new and trustworthy information which broaden and deepen career aspirations. First-hand encounters are powerful learning opportunities. Direct experience of workplaces helps individuals to develop the skills, knowledge and attitudes needed to access available work.”

Employer engagement activities give learners direct exposure to the world of work. These include:

- inviting volunteers into schools to bring learning to life
- career talks and job fairs to broaden, raise and inform career aspirations
- mock interviews, CV workshops and other activities focused on recruitment skills
- job shadowing, workplace visits and exploring the world of work
- work placements to gain first hand experiences of workplaces
- mentoring to develop confidence and preparation for work
- enterprise competitions to develop entrepreneurial capacities and interpersonal skills
- the promotion of job vacancies for education leavers
- outreach to promote upskilling and reskilling at work

- regular career reviews accompanying performance evaluations to steer workers towards relevant training and internal career opportunities.

7.1.6 Independent Review of Careers

In their Independent External Review of Careers Delivery in Northern Ireland, Hughes and Perry (2022)⁵¹ also state the importance of employer engagement:

“Employer engagement is a critical success factor in providing greater opportunities for young people and adults. The expertise of employers and career guidance professionals coming together with partner organisations in local communities to not only deliver careers support, but also to help shape and influence skills and modern dimensions of career guidance.”

Their work also highlighted other areas of best international practice, namely:

- Triage approaches and diagnostic screening
- Groupwork Guidance
- Remote Guidance
- Integrated Career Guidance provision
- Place/ Space-focused initiatives
- Technology focused provision

In conclusion, good careers guidance must be fit for purpose with the people who are using it, be they in the education system, in the workplace or those seeking work (Careers Explorers), and it works best when employers are closely engaged.

7.2 The FinTech Sector in Northern Ireland

7.2.1 Overview

According to the Whitecap Consulting report (2020)⁵² on the FinTech sector in Northern Ireland:

“FinTech can be defined as the application of technology to improve financial products and services.”

By their own admission this is a wide definition, and they then categorised the sector into:

⁵¹ Hughes (2022), [Independent External Review of Careers Delivery in Northern Ireland](#)

⁵² Whitecap Consulting (2020) [NI FinTech Ecosystem](#)

- FinTech Start Up and Scale Ups
- Established Financial Services and FinTech companies
- Tech companies including financial services and FinTech activities

According to the Kalifa Review of UK FinTech (2022)⁵³, FinTech is not a niche of the financial services sector but rather a new way to develop and deliver new consumer and business benefits through technologies. The report highlights the value of the FinTech sector to the UK economy:

- Represents 10% of global market share and £11bn in revenue, the UK is a dominant force in FinTech.
- The total tech spend by UK financial services firms was £95bn in 2019
- SMEs and corporates are all keen users of FinTech. UK citizens are becoming digitally active and 71% are now using the services of at least one FinTech company.
- Investment into UK FinTech stood at \$4.1bn in 2020 – more than the next 5 European countries combined

The FinTech NI Association is a trade association established in 2019 to represent the interests of the growing FinTech sector in NI and, according to their report in the Symposium, March 2022, there are 7,000 people employed in the FinTech sector, in 74 companies and creating £391.5m in GVA to the NI economy each year. Invest NI sees the FinTech sector as a 15% part of the larger NI Financial and Professional Services Sector (7,000 employees) out of a total of 43,869 employees. In his report for the UK Government on the FinTech Sector in the UK, Ron Kalifa (2022) highlighted the strengths of Northern Ireland, “emerging” in areas such as Reg Tech; Insurtech and Wealth Tech.

FinTech NI (2022) stated that the unique selling points for the FinTech sector in Northern Ireland are:

- Geographical Location (UK/EU/USA)
- A supportive and collaborative community
- Talent, Skills and Education
- Expertise and focus on cybersecurity, AI, Data Analytics and RegTech

⁵³ Kalifa (2021), [The Kalifa Review of UK FinTech](#)

7.2.2 Talent & Skills

The Kalifa Review Report has three recommendations for action under the talent and Skills theme, namely:

- Retrain and upskill adults in support of UK FinTech by ensuring access to short courses from high-quality providers at low cost
- Create a new visa stream to enhance access to Global Talent for FinTech start-ups
- Build a pipeline of FinTech talent by supporting scaleups to offer embedded work placements to FE and HE students and Kickstarters (young unemployed).

In their 3 Year Strategy Document (2021)⁵⁴, FinTech NI has identified Talent & Skills as one of their strategic goals for the three-year period. They set out two objectives in this area:

1. “Working with industry, build a pipeline of experienced talent attracting skilled workers into the FinTech sector domestically and back into Northern Ireland from overseas.”
2. “To promote FinTech as a career opportunity to the next generation of talent and nurture a culture of risk-taking entrepreneurship.”

The Whitecap Consulting report (2020) also references Talent and Skills in their findings and recommendations, as well as four actions:

- There should be a continued effort to build the talent pool
- There should be raised awareness of FinTech careers in schools, colleges and universities
- Consideration should be given to more options for re-skilling programmes to boost the FinTech talent pool
- NI should seek to retain key skills such as software development, and to attract these skills from other regions

7.3 The Life & Health Sciences Sector in Northern Ireland

In their report ‘Life Sciences 2030 Skills Strategy’ report⁵⁵, Cogent Skills the Science Industry Partnership, describe the Life & Health Sciences sector as: “Life & Health Sciences involves biomedical sciences, engineering, computer science, data analytics, chemistry, physics and mathematics working

⁵⁴ FinTechNI Symposium (2022) [Summary](#)

⁵⁵ Cogent Skills (2022) [The Life Sciences 2030 Skills Strategy](#)

in close partnership with clinical research and high-value manufacturing expertise". This definition demonstrates the breadth of the sector and the many disciplines involved.

In the UK, the LHS sector generates £73.8bn annually, employing 223,000 people in 5,870 companies, 80% of which are SMEs. GVA/ worker is high at £104,000 and £31bn is exported each year. MedTech employs 57% of the overall workforce and contributes 32% of the sector's turnover. Biopharma employs 49% of the workforce and adds 68% of the sector's turnover. Expansion in the sector is expected to grow in the future (to 2030), with an increase of 133,000 people required.

According to the Health Innovation and Research Alliance (HIRANI)⁵⁶, the Life & Health Sciences sector adds £1.9 billion to Northern Ireland's economy annually. They state that there are over 300 companies involved in the sector, employing 18,000 people. There are 17 world leading research centres with Queen's University Belfast, listed in the Top Ten UK universities for Biosciences research.

Invest NI has categorised the areas of expertise of the Life & Health Sciences sector as:

- **Precision Medicine** – Biomarker discovery and validation, molecular diagnostics, clinical diagnostics
- **Pharma & Biotech** – Drug development, biomarker discovery and validation, Biomedical research
- **Chemical Trials** – statistics, Modelling, Digital Health, Regulatory expertise
- **Diagnostics** – Research & Development, Medical testing solutions, Clinical diagnostic tests, Oncology
- **MedTech** – Innovative healthcare solutions, Non-invasive neurostimulation, Ventilation equipment, Neonatal and perioperative care.

In relation to skills required for the LHS, the Life Sciences 2030 Skills Strategy Report made ten observations:

1. There was a need for more digital, computational and statistical literacy.
2. A need for more Leadership skills.
3. More communications skills were required.
4. An increase in translation and commercialisation skills.
5. Ongoing skills updates to reflect technological and regulatory change.

⁵⁶ [HIRANI Website](#)

6. A requirement for cross team and cross disciplinary working.
7. Succession planning for an aging workforce.
8. The promotion and facilitation of agile careers.
9. An increase in Continuous Professional Development.
10. A need for holistic sales and marketing skills.

It is likely that the LHS sector in Northern Ireland will have similar skills needs into the future.

7.4 Primary Research Data

DEMAND-SIDE ANALYSIS	Qualitative summary analysis (Catalyst Belfast)	Qualitative summary analysis (Ormeau Baths)
SESSION #1 CAREER DRIVERS	<i>Life & Health Sciences Insights</i>	<i>FinTech Insights</i>
<ul style="list-style-type: none"> • Factors influencing the development and entry into careers • Current key trends driving the growth of the industry • Factors influencing career choices • Pathways into industry • Types of training & support programmes for employees • Specific qualifications & courses that are sought from candidates when recruiting 	<p>Lack of interview preparation and poor CVs reflects an issue in the available talent pool.</p> <p>Difficult for SMEs to compete with big companies, even though they offer competitive salaries, benefits, and great in-house culture.</p> <p>Difficulty in finding employment for university graduates. High demand for software engineering students in NI.</p> <p>High cost of recruitment whereby 15% of salaries are paid to recruiters. Hence, LinkedIn and Indeed are preferred. Even in LHS, there are departments like Sales & Distribution which need recruitment.</p> <p>Pathways to target placement students with a possibility of continuation after graduation. Promote the ability to get hands-on experience in different departments, experience the entire company, which is not always the case in larger corporate company cultures.</p>	<p>Huge investments in FinTech due to greater ROI/GVA for NI economy, supported by Invest NI. However, demand currently outstripping supply of talented employees</p> <p>There is a shortage of skills and funding after Brexit, but there is opportunity for growth. Plus, a shortage of those skilled in Artificial Intelligence, Regulatory, Risk Knowledge & Data Science. Such tasks are currently sub-contracted to meet shortfall.</p> <p>Major messaging/branding problem around FinTech as to which sector does it belong to? How can roles be explained to a layperson?</p> <p>Finding balance between bringing in big FDI players to FinTech and supporting growth of indigenous SME interest - difficult for small firms to access funding via Invest NI or VCs</p>

	<p>Constant need to upskill Digital healthcare incl self-diagnosis, digitalisation of medical notes e.g., new NHS Encompass patient e-records initiative.</p> <p>STEM subjects are known as difficult in school, therefore there is often less appetite but a noticeable push in the past 5-years to increase uptake levels.</p> <p>DfE offers 12-week 'Assured Skills' programmes, with a guaranteed job interview and c.80% employment.</p> <p>Need to approach schools before students reach university age e.g., Miniversity Narrowing down on subjects at school leaver stage can lead to skills shortages.</p> <p>International students at universities have 2-years upon graduation to secure sponsored VISA. Hence, not having a sponsor licence may reduce talent pool.</p>	<p>Cybersecurity training often held online, but courses not funded by Invest NI. Financial support is less compared to that of other countries.</p> <p>There are key factors that influence career choices such as Apprenticeships; Software Engineering; Business Technology; In-house Academies. Plus targeting people from non- traditional backgrounds such as 'back to work mums', career movers/changers, etc as alternative means to open-up talent pools.</p> <p>Graduates with Finance and Law degrees find it hard to pitch as they sometimes lack soft skills and business skills (especially after COVID-19). Graduates are new to receiving constructive criticism. Open University students have shown high loyalty to SMEs.</p> <p>The important role of apprenticeships should be recognised in the FinTech context.</p> <p>Assured Skills Academies often get more applications than seats available.</p>
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		<p>There are diversity of employees coming from different routes, offering varying skills.</p> <p>Schools should encourage students to take- up FinTech via career fairs & talks explaining jobs other than the traditional professions (medicine, law, dentistry, etc). Schools still use old software from 2000 and don't evolve fast enough to meet needs of SMEs.</p> <p>Demography of candidates is late 20-30's</p> <p>FinTech jobs are lucrative, and qualifications are dependent on the role. Jobs are in demand regardless of economic situation. SMEs look only for few years of experience in Technology or a computer science degree, with Senior Developers especially difficult to recruit.</p> <p>FinTech start-ups allow staff to get first-hand experience on projects that would not be available with bigger companies but involves a higher risk.</p>
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SESSION #2: JOBS & CAREERS	<i>Life & Health Sciences Insights</i>	<i>FinTech Insights</i>
<ul style="list-style-type: none"> • Current recruitment processes - is 'JobApplyNI' used? • Best methods to promote careers and Key factors in attracting new talent • Aid of tailored training support programmes for recruitment of talent • Difficulties in recruitment • Skills or qualifications of roles which are a struggle to recruit candidates for (or experience-based difficulties) 	<p>SME employers do not use 'JobApplyNI', (previously 'Jobcentre Online'). Some employers were deterred due to poor applicant quality.</p> <p>Usually potential candidates are 'head hunted' for jobs. Referrals via friends or family is a useful method of recruitment (with finders' fees offered to employees).</p> <p>Employee monitoring forms are outdated but required to meet Equality legislation.</p> <p>Career progression is not set out in SMEs. Hence, lose talent to bigger companies which offer career progression and bigger salary/compensation packages.</p> <p>Need to attract new talent via careers conferences. Set KPIs, have regular appraisals and obtain feedback, to retain staff within SMEs.</p> <p>Need to provide training opportunities to upskill.</p> <p>Conduct Annual training reviews and have training plans</p>	<p>SME employers had not even heard of 'JobApplyNI'. Instead use social media and recruitment agencies for senior roles albeit no agency specialises in FinTech, per se.</p> <p>Academies, Apprenticeships, Word of mouth, Family & Friends referrals are better options. Need to build networks.</p> <p>Niche and competitive roles take longer to fill E.g., Senior Software Developers can take-up to 18-months to recruit.</p> <p>Commercial sponsorships are a good way to attract talent but expensive and requires effort e.g., Aisling Awards, Digital DNA, Industry awards. ROI depends on number of recruitment roles and same with work visa sponsorships.</p> <p>Cost-effective in the long term to upskill and reskill junior employees to free up the time of senior staff. Recruiting</p>

	<p>up to date as per ISO13485 Quality Management system for Life & Health Sciences regulatory requirements/standards.</p> <p>Utilisation of Invest NI training grants by Life & Health Sciences SMEs including conducting regular internal audits and training skills reviews.</p>	<p>highly experienced employees is more costly and may not work. Job rotation develops skills.</p> <p>Two-way mentoring programmes allow young employees to upskill and older employees to create more depth in the team. Reverse/Informal mentoring and cross-disciplinary functional teams help with development for career progression.</p> <p>Courses with placement years offer future candidates with better soft skills for SMEs.</p> <p>Skills in Cloud Computing, Development Operations (DevOps) & Artificial Intelligence (AI) are highly sought after but candidates are difficult to find.</p> <p>Careers Teachers have a high degree of influence in schools with student subject & career choices.</p>
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SESSION #3: CHALLENGES & OPPORTUNITIES	<i>Life & Health Sciences Insights</i>	<i>FinTech Insights</i>
<ul style="list-style-type: none"> • Key challenges in recruiting/retaining talent and steps to overcome such • Does quality of careers advice meet the current recruitment requirements • Barriers to training staff • Use of government training programmes and their effectiveness • Potential solutions to alleviate above issues 	<p>There is a high demand for talent with more jobs on offer than potential candidates. Hence, employees have a high bargaining power on salaries resulting in a ‘candidate-driven’ marketplace.</p> <p>Retention of quality talent is a challenge.</p> <p>Employees are poached by Corporates or MNC’s offering higher salaries and better benefits packages to lure candidates from SMEs.</p> <p>Working From Home (WFH) has now become a default candidate expectation.</p> <p>Invest NI can help in benchmarking salaries and formulating training plans.</p>	<p>Attrition is caused by poor recruitment.</p> <p>“Unicorn” skills are harder to retain E.g., Payment specialists, Financial Crime, Fraud.</p> <p>Provide benefits such as health insurance & industry accreditations to compete with bigger companies</p> <p>Job rotation of employees e.g., Senior staff to mentor juniors in specific roles.</p> <p>‘Claw-back’ fees are increasingly inserted into employee contracts for training if they leave employment after specific timeframes.</p> <p>Teachers need to get ‘careers training’. Initiate a similar programme to Deloitte Schools Programme for FinTech (Scotland).</p>

		<p>Online training courses, bureaucratic administrative practices of Invest NI has delayed training offerings to staff.</p> <p>SME companies have not used government training available due to either lack of awareness or perceived paperwork associated with reclaiming expenditure.</p> <p>Branding/Messaging in FinTech to make it appealing for younger generation like the previous push in Creative Industries for Film/Gaming.</p> <p>FinTech policies in NI are more fragmented mainly due to insufficient funding, capacity, and not having a functioning NI Executive in place and lapsed timelines to recruit talent.</p>
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SUPPLY-SIDE ANALYSIS	
Qualitative analysis of Supply-side (Catalyst Innovation Centre, Derry-Londonderry)	
PART 1 Pathways & Programmes (Understanding)	
<ul style="list-style-type: none"> • Understanding of FinTech/LHS • Sectors/sub-sectors within FinTech/LHS • Progression pathways into sectors e.g., traditional versus alternate routes • Type of training/support programmes are available for FinTech/LHS 	<p>FinTech is often deemed as too ‘techie’ and needs to be broken down to simpler terms to be comprehensible. In most of the companies (SMEs) listed in the North-West region, difficult to get a description of what the companies do. This makes SME companies undesirable for students who seeks for understanding in layperson terms. Companies like Allstate, FinTrU, etc don’t even know the sector they fall into! LHS suffers from a similar identity issue, albeit to a lesser degree as STEM is understood.</p> <p><i>Homeground</i>⁵⁷ developed by DSDC is currently used by Foyle College and serves as an interactive Digital Map profiling over 90 local companies in the Digital, Creative and FinTech sectors in Derry City and North, which have experienced strong growth over recent years, with a dynamic cluster of companies working with global clients.</p> <p>DfE has developed a ‘<i>Skill Up</i>’ website to work at your own pace plus the Assured Skills academy has been utilised by the FinTech company FinTru in Derry City.</p> <p>Not all roles in FinTech / Life & Health Sciences are Science-related which is a misperception in itself.</p>

⁵⁷ www.homeground.me

Students are often not aware of Higher-Level Apprenticeships (HLA). Apprenticeships need to change the perception of gaining industry experience albeit hard to get into HLAs.

Generating Engineering & Manufacturing Excellence (*GEMX*)⁵⁸ is equivalent of MEGA in Mid-Ulster. MEGA/GEMX are examples of education-employer engagement & collaboration in other sectors to show how careers are explored and promoted in the context of FinTech/Life & Health Sciences

'Next Steps' is another website resource for careers in Advanced Manufacturing and Engineering, with a 'Job for Me' programme within the website.

Traineeships through North-West College are recommended pathways into both sectors.

North-West College careers teachers were invited to a Careers Conference, where they were given a chance to speak to network with fellow careers professionals (next event is in November 2023).

PwC has an aptitude test which allows students to find out what they are best at in terms of FinTech roles within its consulting practice. DSDC produced an animated comic on careers to engage students into the Creative Industries.

Invest Derry & Strabane⁵⁹ has Life & Health Sciences as one of its key growth sectors with 30 companies employing over 3,000 people in the NW region.

⁵⁸ <https://gemx.uk/>

⁵⁹ <https://investderrystrabane.com/lhs/>

PART 2: Jobs & Careers (Exploring)	
<ul style="list-style-type: none"> • Ways to find out about careers in FinTech/LHS • Key factors for jobs in FinTech/LHS E.g., salary/travel/promotion/L&D • Influence of stakeholders on careers (parents/teachers/peers) • The barriers/pain points in engaging young people and career changers in FinTech/LHS 	<p>Each school promotes a career differently: some include it in their timetables, some have Careers Teachers and others dedicated Careers Officers.</p> <p><i>Xello</i>⁶⁰ is accessible app available to schools which allows students to explore careers and gives direction upon filling a survey. Top 10 careers are given based on personal interests – young people reported liking the app with its usage and engagement positively received.</p> <p><i>Morrisby Careers</i> (formerly FastTomato)⁶¹ is a school careers platform which gives careers advice for students.</p> <p>Methods of engagement for parents is via Facebook to share key events, messages and announcements with parents to inform and influence their children’s career choices.</p> <p>Cannot get teachers out for career fairs as the schools cannot get substitutes to cover teachers if they attend career fairs. Also, cannot get pupils to attend due to rising cost of transport. Best to pick a time of the year like June where both parties are less busy and make it informal and interactive. Cannot cater to the demand as the supply is restricted.</p>

⁶⁰ <https://xello.world/en-gb/>

⁶¹ <https://www.fasttomato.com/>

	<p>Funding for supply side is deteriorating. Therefore, need to hold career conventions for multiple schools in one place. The personal interests of students needs to be identified because 90% of students interest is different to what the career advisor has recommended. Students below 25 want to and wait and see what's right for them. However, opportunities which are present for those aged 18 to 24, are limited after 25.</p> <p>Lack of motivation, confidence and health reasons after age of 25 leads to unemployment. Registered unemployed persons used to £1,500pp funding allowance for training, hence many turn down job offers as its not economically viable for them to take-up employment.</p>
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PART 3: Challenges & Opportunities (Solutions)	
<ul style="list-style-type: none"> • The best routes to advance career opportunities in FinTech//LHS • Factors which enable progression & promotion pathways in FinTech/LHS sectors • The key drivers to growing recruitment numbers in FinTech/LHS in NI • Issues of recruitment vis-a-vis retention in FinTech/LHS sectors 	<p>Northern Ireland Schools & Colleges Careers Association (NISCA) offers different up and coming careers. They hold conferences, run learning communities and deliver workshops in schools. careersportal.ie is a better career portal.</p> <p>DfC has a forthcoming Careers event (May 2023) with a range of regional employers attending. The event is targeted at those deemed ‘economically inactive’ i.e., people who have dropped out of school or college who are currently not in employment but represent a larger pool of available talent.</p> <p>Limit spending money on careers and more on Labour Market Partnerships (LMP). As DfC wants higher level employees, they are more focused on short term outcomes than the ‘bigger picture’. DfC needs to work with career services. Job fairs held in September are attended by bigger companies as small business lack resources (time and staff) to attend.</p> <p>Having a connected workplace website for all young people in NI could access, with all employers listed in one place is the ideal.</p> <p>Some individuals need more support than others. Target the unemployed people as well. Work coaches should use the information to sell to customers. Schools can use past pupils.</p>

	<p><i>CINE</i>⁶² is a creative programme for Creative Industries (Film, Gaming, Music) where the presentation is informative and where applications are more focused to find out the type of person you are in meeting personal interests/hobbies to turn into employment. A similar approach to FinTech and Life & Health Sciences could be ideal including a 'jargon buster' to demystify technical language used in both sectors. Derry & Strabane District Council (DSDC) runs an annual Careers Fair bringing both FinTech and LHS employers usually held in a larger venue to accommodate numbers.</p>
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⁶² <https://nervecentre.org/whats-on/cine-creative-industries>