Publications of the Ministry of Economic Affairs and Employment 2021:23

Talent Retention and the Development of Digital Skills

A study of the ecosystem-based Digitalisation Academy located in Vaasa, Finland

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Ministry of Economic Affairs and Employment of Finland Helsinki 2021

customers, and digital skills were – and still indeed are – in high demand. The company was growing, but it would have grown even faster had employees with the right skill set been available.

Paschinsky was not alone. Several other companies working in the region's vibrant energy cluster were facing the same struggle. While universities brought thousands of bright young people to Vaasa, too many of them left the city, or even Finland, after finishing their studies. In particular, students that had moved to Finland from abroad were likely to lack connections and could benefit from a better cultural and practical understanding of how to get on the first rung of the career ladder in Finland.

Collaboration between the Vaasa region's ecosystem actors did exist, but there was clearly a need to bring universities and companies closer together in solving this matter. However, deepening collaboration alone would not solve the problem. Paschinsky realised that there were other issues that needed fixing. Companies' needs in terms of digitalisation skills were changing rapidly, but there was also variation between companies. While universities provided high quality teaching, traditional university education was not responsive enough to the industry's changing and fragmented needs.

Moreover, there was a growing demand for a workforce that had good communication skills, that was able to contribute in multicultural and multidisciplinary teams and that understood how to run projects. Skilled coders were of course still in high demand, but in order to succeed in the job and to benefit the employer's business within a relatively short orientation period, these additional skills had gained relevance.

Paschinsky was determined that the talent shortage issue needed a wider-scale solution. Therefore, he contacted several stakeholders in the region to join forces with them and move from focusing on the problem to a solution. I was one of those contacted, and the University of Vaasa's InnoLab became the hub that developed the Digitalisation Academy in wide collaboration with stakeholders. We did not participate in the day-to-day running of the Academy's teaching and other activities, but our research team was enthusiastically involved in developing the Digitalisation Academy model. In addition, I was also a member of the Academy's steering group.

The Digitalisation Academy was established in 2018 as a collaborative action between Devatus and several other companies in the region: Wärtsilä, Wapice, Danfoss, the KWH Group, VEO and Vaasan Sähkö. Financial support was also received from LähiTapiola and the Ostrobothnian Chamber of Commerce. The University of Vaasa, Novia University of Applied Sciences and Vaasa University of Applied Sciences (VAMK) joined the initiative as partnering organisations. Peter Hellström, an expert in digitalisation processes and

transformation in business and industry, was recruited as the head of the Digitalisation Academy in August 2018, and its first pilot period ran from 1.1.2019 to 31.12.2020.

It soon became clear to us that while financial contributions from companies were necessary to run the Academy, the development work would benefit from broader shoulders. The Digitalisation Academy was an innovative way to provide solutions to a problem acknowledged at the national level: a lack of talent in the digital field. The Academy model developed in Vaasa showed a lot of promise as it did not rely on public funding. Instead, companies shared the costs, and universities took on a supporting role. Funding from the Ministry of Economic Affairs and Employment made the DA-Pito project and our development work possible.

The DA-Pito project's goals and team

This publication marks the end of the DA-Pito project, which had three main tasks. The first was to support the development of the Digitalisation Academy by searching for ways to release its full potential. Its second goal was to scrutinise how the Academy model could be developed in the future and, based on that analysis, create a model that could be easily communicated to other Finnish clusters struggling with talent shortages to provide feedback and inspiration. The third aim was to give advice to all key stakeholders – companies, universities and students – on how to work better together in solving talent retention issues.

The research team's close relationship with the Digitalisation Academy has been beneficial for the DA-Pito project; communication with stakeholders and access to information have been flawless. However, we must acknowledge the limits that even a partial stakeholder role brings. It would not have been possible for us to credibly conduct, for example, an impartial assessment of the Digitalisation Academy's success. Therefore, our focus has been on where our positioning best serves the purpose: in development work.

Our project's work would not have been possible without financial support from the Ministry of Economic Affairs and Employment. Our gratitude, however, goes beyond the financial support received, as the Ministry's representatives have played a significant role as insightful members of the project's steering group. For that, we want to warmly thank Tiina Hanhike, Pirjo Kutinlahti and Lasse Laitinen from the Ministry. Furthermore, the Ministry's Talent Boost Programme and the events organised as part of it have been inspiring and collaboration with the programme's head, Laura Lindeman, always fruitful. We would also like to thank DA-Pito's advisory board members for their dedication and support – Francesca Cucinotta from the Centre for Economic Development, Transport and the Environment; Peter Hellström and Mika Konu from Technology Centre Merinova; Heidi Kuusniemi from the University of Vaasa's Digital Economy Research Platform;

Johanna Hämäläinen and Kai Kamila from Wärtsilä; Juha Nieminen from VAMK; and Andreas Paschinsky from Devatus. Many of them also helped us in finalising this report by giving valuable feedback. In addition, Leena Kunttu, Ville Manninen and Adam Smale kindly helped us with feedback on the first draft of the report. Many thanks also go to our colleagues from the University of Vaasa, who provided insightful info boxes from their fields of expertise for this report. Collaborating with Andrei Palomäki (Studio Andrei), who provided the report's visualisations, was smooth as always.

Next, it is my pleasure to thank the team of enthusiastic and skilled researchers for our shared journey. I have previously described the three main goals we had for this project. In addition, there was a fourth mission. It was to include people at the very heart of the talent retention theme in the discussion. Therefore, our team consists of both Finnish and foreign academics with a variety of scholarly and cultural backgrounds – and many with years of experience as educated talents working and living in a foreign country. You can read more on our team at the end of this report. This publication is written in English for the same purpose: to enable international talents who are living in Finland, or who are considering moving here, to participate in the debate.

As this report also marks the end of my time in Vaasa, I would like to extend my gratitude to all those in the region that have helped InnoLab's team and myself over the years. From the report's perspective, collaboration with the following experts has been especially active, helping our team to grow, network and develop, specifically in terms of ecosystem thinking. Heartfelt thanks to Riitta Björkenheim (Vasek), Tomas Häyry (the City of Vaasa), Juha Häkkinen (the Chamber of Commerce), Katja Rajala (Vaasan yrittäjät), Joakim Strand (the Finnish Parliament), Sture Udd (Wasa Innovation Centre), Marja Riitta Vest (VAMK) and Kenneth Widell (Wärtsilä).

Our view regarding the discussion on "international talent"

The authors of this report realise that issues related to talent attraction and retention can be sensitive in nature and that debates around these topics are highly politicised. Therefore, some notions from our working group may be useful in placing us in the field. Educated and talented young people are the core of the Digitalisation Academy and also of the DA-Pito project. This is a pool of people that businesses, industries, cities and regions aim to attract and retain. As the workforce moves beyond countries' borders, these people are often referred to as "international talent" in both governmental policies and academic research. While following this terminology helps us to avoid confusion when discussing, for example, the Finnish Government's Talent Boost Programme or previous research that has used the same wording, "international talent" is not always precise enough. There are a few problems. Firstly, if "international talent" aims to refer to foreign students and graduates, there is a risk we downplay the difficulties these people

may face when wishing to stay and work in Finland; the playing field is not even for a foreigner who may have to worry about visa problems, overcome language barriers, build contacts and tackle prejudice in the job market. What is likely to make their situation more fragile and complex is not that they are "international" but that they are from abroad and treated as foreigners here. In order to openly discuss these issues, we need a language that acknowledges these factors and is precise. Secondly, one could ask whether simply moving country makes someone "international"; we may have Finns that may be international in their approach and, similarly, people with different passports that just happened to change country without being very international themselves. These are the reasons we are not able to just pick one expression ("international talent" or "foreign talent") and use it throughout the report but instead use both depending on the context.

Although this report discusses an educated workforce mostly in the context of "international talent" or "foreign talent", typically referring to highly educated young people that have moved to a country from abroad, the authors recognise every individual's ability to contribute positively to their surroundings, regardless of their age or educational or cultural background. As individuals, our worth cannot, and should not, be weighed in financial terms. We understand that the discussion on attracting talents from abroad can be painful for people who have – for one reason or another – fallen or been pushed out of the job market. In the future, Finland needs to improve its actions with regard to supporting these people and helping them return to working life, whether they be Finns or foreigners. On that front, flexible solutions created in collaborations between educational institutions and businesses are needed. However, we are also aware of positive news: for example, actions concerning lifelong learning are going to improve in Finland in the coming years.

If you have questions or feedback regarding this report, the project leader is the correct person to contact.

24th February 2021, in Glasgow, Scotland.

Mari K. Niemi
DA-Pito Project Leader and Director of the University of Vaasa's InnoLab (2018–2020)
Research Director, e2 Research (2021–)

1 Introduction: Digitalisation and an educated workforce – factors in Finland's success

1.1 Visions of Finland's future

When it comes to innovation, digitalisation and utilising new technologies, Finland has a brave vision of its future role. The country aspires to be the most attractive and competent environment for experimentation and innovation by 2030 (Research and Innovation Council Finland, 2017). Finland's national goal is to be a competitive developer and the best adopter of new technology and innovations (Ministry of Economic Affairs and Employment, 2019a). In terms of attracting talent from abroad, the vision is equally clear. In 2020, the latest Talent Boost Action Programme was approved by the government. The goal of this programme is for Finland to become an "internationally attractive place to work, study, research and pursue private enterprise, with a view to applying the expertise of international specialists to accelerate the growth, globalisation and regeneration of businesses and RDI" (Ministry of Economic Affairs and Employment & Ministry of Education and Culture, 2020).

The spirit and actions of the Vaasa-based initiative, the Digitalisation Academy, are well in line with the current government's 2019 programme. It names digitalisation as one of the megatrends driving the change: the key to the country's success lies in its ability to tap into the opportunities this change provides. The programme underlines the need for ecosystem collaboration across sectors, for example, through companies and higher education institutions (HEIs) innovating together. An emphasis is placed on regions, as Finland's future development entails greater demographic concentration into growth centres, which has consequences: "We must foster vitality and the ability to function effectively in all parts of the country." (Government Programme, 2019). Moreover, the programme clearly states the need for a talented workforce: "The Government will support growth by investments in RDI, by developing new operating models in public-private partnerships, and by attracting more top international talent to Finland" (Government Programme, 2019).

Some critical voices have pointed out areas where Finland needs to improve its game. For example, the goal of obtaining a leading role in digitalisation may be optimistic. A report published in 2017 by the Boston Consulting Group found that the Nordics in general only

compare well in terms of digital vision and strategy; when it comes to execution, Nordic companies are well below the global average. While Finnish companies' digitalisation strategies are "world class", they do not deliver commensurate results. In short, the Nordics, Finland included, should look for braver and bigger steps and act faster (Boston Consulting Group, 2017).

In the globally competitive environment of the 2020s, achieving the above-mentioned goals requires bold investments in education, inclusive and agile collaboration across sectors and success in the global "war for talent". Finland needs to ensure its base of competence and make sure it has the right skills and circumstances to achieve this.

Since spring 2020, the Covid-19 pandemic has affected the way we work, socialise and, to some extent, want to live. University campuses have been closed and empty, with studies taking place digitally. In addition, many international exchange programmes have been cancelled, further diminishing contacts and the networking aspect of studies. In the case of universities such as Vaasa, which welcomes students from around Finland and abroad, an unfortunate consequence may be the following: students' relationships with the city, their knowledge of its opportunities and their willingness to move there may be negatively affected. Following the pandemic, what at first was seen as forced remote work has become the preferred way of living for some. In addition, a rapid rise in digital skills, facilitating distance working and studying, has opened up new alternatives in terms of how to arrange work in the future. It is quite possible that students will, in the future, demand more opportunities for distance learning so that they do not necessarily have to move because of their studies. For places such as Vaasa, dependent on people coming from elsewhere to fill positions in the job market, this would not be a welcome trend. However, there may also be more positive aspects in sight. As jobs are less place-based, and more people can work from a distance, cities such as Vaasa could attract those who are willing to move from more densely populated areas to live closer to nature, have more living space and still be in a vibrant, international city.

1.2 Growth in the digital economy and the adoption of novel technologies create new demands

Digitalisation as a global megatrend affects our lives in multiple ways: the way we work, consume, innovate, network, socialise and relax. A recent report by ETLA, Research Institute of the Finnish Economy, (2020) measured the size of the digital economy in Finland. Calculations performed for that report indicate that the digital economy comprised nearly 11% of Finland's GDP in 2017, or over EUR 21 billion.

Digitalisation has contributed to both innovations and standard procedures in production, services, business models and development. This has created an urgent need for experts in the digital field. Digitalisation itself, however, does not guarantee success: it requires that the organisation has the right capabilities and employees with skills to implement digital technologies efficiently (Halme & Niinikoski, 2019). Consequently, many countries, regions, cities and companies alike are implementing talent attraction and retention programmes to meet the growing need for a skilled workforce (Rilla et al., 2018).

Interest organisations operating in the fields of technology and business, such as Technology Finland and the Finland Chamber of Commerce, have been active in introducing the demand for an educated workforce into public debates. Technology Finland (2018) estimated that the country needed over 53 000 new talents between 2018 and 2021. Similarly, a more recent report by the Finland Chamber of Commerce summarises the issue from the business perspective: the immigration of a skilled workforce is crucial for Finland's competitiveness and for tackling the demographic challenges Finland will face in the relatively near future (Finland Chamber of Commerce, 2020).

It is important to note that talents in the digitalisation field are not the only experts in short supply, albeit they are an important group. The reason is linked to Finland's demographic forecast. If the current population trend continues, Finland's population will begin to decline in 2031, and by the year 2050, there will be 100 000 fewer citizens nationwide (Official Statistics of Finland [OSF], 2019). In order to keep the country vibrant and support the welfare society, Finland needs a new young workforce alongside its existing, ageing population.

1.3 Foreign workforce needed – where are the bottlenecks?

According to demographic forecasts, the population in Nordic countries will become increasingly urban, diverse and old. Immigration continues to increase the population, but the average citizen is ageing, putting pressure on welfare systems. Many areas suffer from talent shortages, and due to the urbanisation megatrend, the situation is most difficult outside metropolitan areas. In remote and sparsely populated areas, populations are declining and ageing rapidly. Consequently, municipalities outside metropolitan areas increasingly recognise the importance of immigrants' contributions to their communities and pursue talent attraction and retention policies (Nordic Council of Ministers, 2018). Highly specialised technology companies typically seek a workforce with specific skills and a higher education background. While there is a need for a workforce in general and society benefits from a variety of skills, we must recognise the kind of workforce that industries and businesses are urgently lacking and admit that the current composition of immigrants does not sufficiently respond to these needs.

One promising route for responding to the skill gap is the recruitment and retention of foreign students (typically referred to as "international students") in Finland. However, the influx of international students does not translate into an equivalent increase in the educated workforce, as many foreign graduates struggle to find relevant employment and adequate opportunities to integrate into society (Garam, 2018; Ministry of Education and Culture, 2019; Ministry of Economic Affairs and Employment of Finland, 2019a; Loukkola, 2020; Taloustutkimus Oy, 2020). This leads to an outflow of qualified people that could have been retained, leaving regions beset with the challenge of attracting talent that can address their needs.

Currently, every fifth foreign student moves out of Finland in the year of their graduation (Loukkola, 2020). Statistics show that it is more difficult for foreign students to find employment after graduation than for graduates with a Finnish origin, and this might be one of the reasons they leave Finland (Loukkola, 2020). The Confederation of Finnish Industries (Susiluoto, 2019) suggests that companies should hire foreign students in order to integrate them into society and simultaneously boost such companies' own internationalisation – after all, language is often a barrier to growth for Finnish companies.

A study by Taloustutkimus Oy (2020) showed that only 23% of the Finnish companies examined are ready to hire an immigrant without almost fluent Finnish language skills. Similarly, the greatest obstacles in finding suitable employment after graduation in Finland are a lack of language skills (Finnish/Swedish) and an absence of work experience and networks (Shumilova et al., 2012). The Organisation for Economic Co-operation and Development (OECD, 2018) has also observed the labour market integration of immigrants in Finland, and it found that immigrant employment rates are lower compared to those of native-born Finns and that women, in particular, have difficulties with integration. Therefore, policies, services and other actions that encourage and ease foreign talent recruitment and retention are in great demand.

Technology Finland (2018) has listed actions it would like to see decision makers take. Firstly, it called for the active benchmarking of successful countries' actions, learning from best practices and active policy-making for Finland to improve its attractiveness. The report noted that finding internships or employment is still more difficult for foreign technology students in Finland than their Finnish classmates. Including industry-connected learning projects as a part of their studies could be a way to smoothen their path. Importantly, Technology Finland called for more flexibility in obtaining work permits in Finland; graduates should automatically receive permits to work in the country. In general, the work permit process should be made quicker and simpler – and digitalised (Technology Finland, 2018).

Findings of the International Student Barometer regarding foreign degree students in higher education institutions in Finland (Garam, 2018) raised similar issues. The study revealed that international students in Finland wish to receive support and advice on career alternatives, help in producing a CV and contacting employers, opportunities for network building, interview practice, knowledge about information sources and work placements. All the mentioned issues were also relevant when developing the Digitalisation Academy.

Cities with universities play a crucial role in turning the tide as they attract both national and international students and are hubs for knowledge and innovation. However, more could and should be done in terms of helping students network with possible future employers, for example, industry actors, in order to assure that a more skilled workforce stays in the regions – and in Finland.

1.4 Ecosystem members join forces to tackle the talent shortage

The role of universities in creating economic and social well-being for the wider society can be best approached from the ecosystem perspective (Novotny et al., 2020). What makes ecosystems so valuable and relevant is that, in them, action is directed by shared objectives and platforms, which creates new value in a network open to various actors. These can include, for example, public administration, entrepreneurs, companies, industries and start-ups and third sector actors, as well as research and education institutions. Ecosystems are constantly developing systems in which self-organisation is one of the critical features. Ecosystems are flexible and enable continuous renewal as, within them, a large number of networks function and reorganise themselves without any hierarchical control (Valkokari et al., 2021).

Innovation is best fostered in networks and arrangements involving universities, industry and public organisations, rather than in any single organisation, and this collaboration has been named as the triple helix model (Etzkowitz, 2003). The open innovation paradigm (Chesbrough et al., 2006) acknowledges that new innovations are best developed in networks of different actors, such as companies and universities, rather than in one single organisation. Finding good skills and competences outside of one single actor's boundaries is a central idea in the open innovation paradigm.

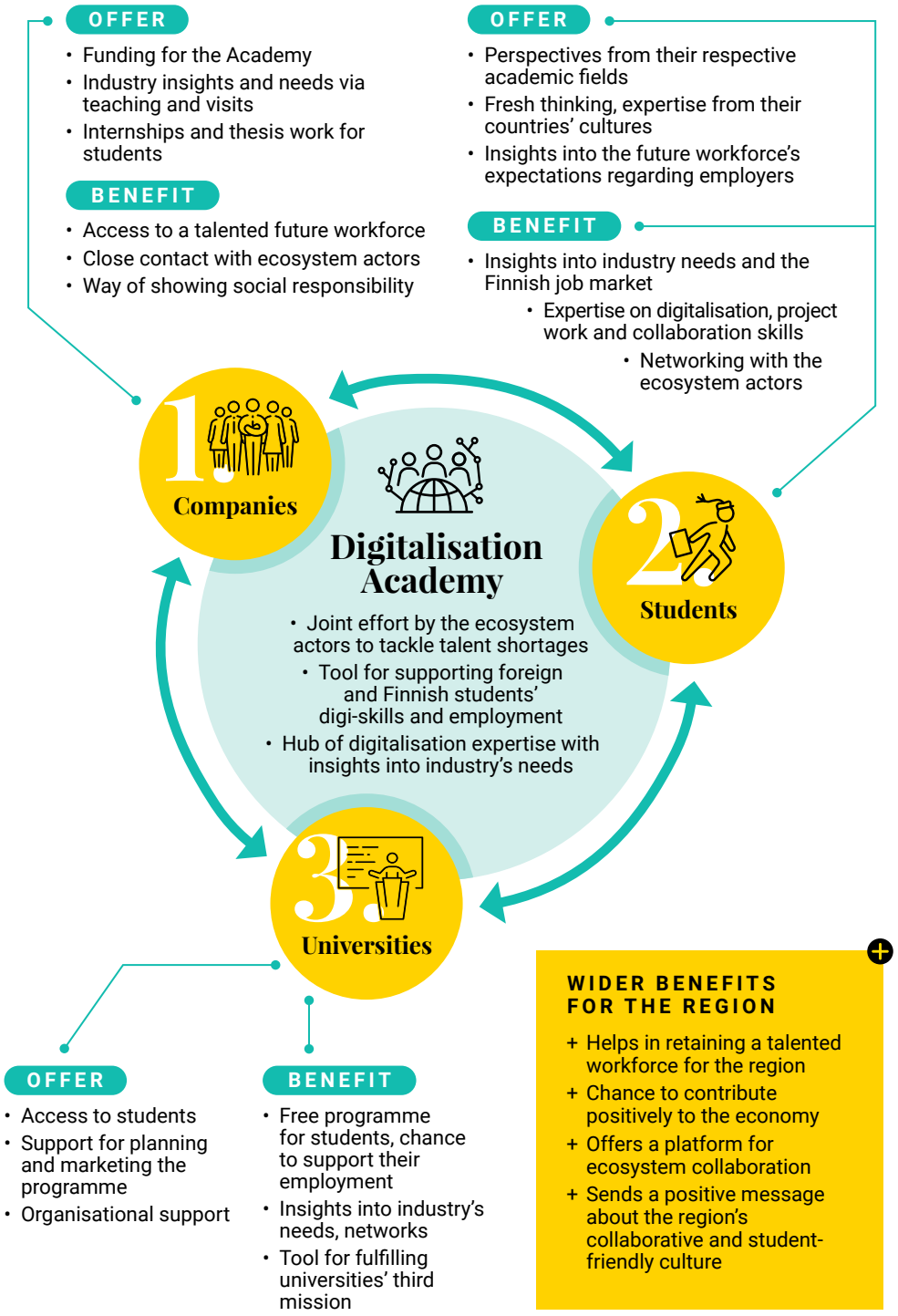
Among other things, innovation ecosystems typically require creative and active people, a sufficient amount of supporting activities and expertise, a lack of difficulty in terms of networking and forming partnerships and strong incentives for entrepreneurship

(Sotarauta, 2019: 74). The university's role includes preparing people to take part in society by developing, understanding, adopting, using and expanding innovative insights, services and products in the surrounding ecosystem (Rissola et al., 2017: 38). However, as Davey et al. (2018a, also Kalliomäki et al., 2018) underline, there is an urgent need to better align universities with business innovation supply chains and the talent needs of employers. These matters are particularly topical for regional universities in small and medium-sized cities as the urbanisation megatrend generally disfavours them. Universities are the engines of these regions: necessary sources of new industry, innovation and employment, and valuable partners for regionally based businesses in tackling deepening talent shortages and the "brain drain" to cities (Davey et al., 2018a, 2018b). Universities of the future have been envisioned (Plewa et al., 2018) as actors in a campus ecosystem, increasingly taking a leading role in shared efforts to solve pressing social challenges. Within this, needs-driven interdisciplinary research and the translation of science into effective and sustainable solutions are crucial.

The Vaasa-based Digitalisation Academy was established in 2018 as a pilot initiative by industry and universities working together and aiming to help tackle talent shortages in the field of digitalisation. From the beginning, an additional aim of the project was to support the attractiveness and success of the region's energy cluster, EnergyVaasa, and the centre of competence formed by Vaasa's universities and universities of applied sciences. Importantly, the Digitalisation Academy was envisioned as a tool for bringing together Finnish and foreign students and companies, developing students' digitalisation skills and supporting them in finding positions in the energy cluster's companies.

The DA-Pito project was established to support the first period of the Digitalisation Academy (2019–2020) and to develop and conceptualise the operating model. Funding received from the Ministry of Economic Affairs and Employment has enabled us to support the systematic development of the Academy's operations, for example, through collecting feedback from stakeholders (companies, universities, students, educators), conducting interviews and hosting innovative workshops. The funding has also enabled us to work on modelling the Academy's activities into a process that could be exported to other clusters and regions suffering from talent shortages but with a steady flow of foreign students visiting them. This could benefit, for example, the maritime industry, gaming clusters or companies in the health technology sector.

The Digitalisation Academy model



Several opportunities were detected at an early stage. Significant potential lay in the Academy's capacity to strengthen the region's cooperation networks and innovation ecosystem, as well as in its potential to support the retention of both domestic and foreign students in the region. In the longer term, it could have positive effects for the regional economy. For participating universities, it offers a way of fulfilling their third mission, a role that has significantly grown in importance in the past decade.

Alongside opportunities, risks were also identified. The successful implementation of the Digitalisation Academy model requires effort from the participating students, university staff and especially the companies involved. The latter contribute not only financially but also by dedicating their workforces to creating content for lessons and exercises for the students. Therefore, it was necessary to scrutinise how the model could be developed to produce value and the best answer to the needs of all the key stakeholder groups in order to maintain their participation on a sustainable basis.

When we started the DA-Pito project, our goal was to find ways to make the Digitalisation Academy as flexible, useful and efficient as possible for each stakeholder group. Our initial analysis was – and still is – that in order to be relevant, the Digitalisation Academy needs to respond quickly to skill shortages, produce results commensurate with stakeholders' investments and be flexible to the different needs of companies and students alike.

1.5 Data collected and structure of the report

A wealth of previous academic research on talent attraction and retention has supported our understanding of this matter. For the purpose of this project, we reviewed literature on talent retention by searching the Web of Science and Scopus databases, covering the years 1999–2020. We identified 115 articles that were relevant to this topic and addressed talent retention at both organisational and policy levels. We used the results of the systematic literature review to feed into the design and production of this report. Furthermore, we also familiarised ourselves with numerous reports on the topic, typically offering insights into the political side of the issue and published by, for example, ministries and other interested organisations.

Original data collected to serve this report include specifically tailored research interviews with the three stakeholder groups most relevant for developing the Digitalisation Academy model: company representatives, university personnel and Finnish and foreign students. The aim of the data collection was to gather different viewpoints, ranging from concerns and critical remarks to ideas on development and other insights that might otherwise be passed over. The goal was to gain tools for our development work, which is reflected in the number and selection of the interviewees (explained in detail below). It

needs to be underlined that it is not possible to draw generalisable conclusions based on these data, for example, with regard to various groups' attitudes and experiences. Instead, our focus has been strictly on development work.

The first set of interviews focused on academia. We carried out 16 one-hour interviews with people from the academic side to understand the universities' changing roles in academia-industry collaboration and to examine the functioning and current state of the Digitalisation Academy. Seven of those interviews were with individuals working in the academic institutions collaborating with the Digitalisation Academy: The University of Vaasa, Novia University of Applied Sciences and VAMK. Interviewees included director-level individuals working with services in education and degree programmes. Nine of the interviews were with students, four of them from the University of Vaasa and five from VAMK and Novia University of Applied Sciences. The interviewees represented both women and men (four and five, respectively) and Finnish and foreign students (five and four, respectively) rather equally. The second set of interviews was carried out with interviewees representing industry's perspective on the collaboration, in order to gain their feedback for developing the Academy. All the interviews were carried out via Zoom and Teams in the spring and early autumn of 2020 and lasted about 1 hour 15 minutes each. Of the five participating companies, four were already Digitalisation Academy partners. One additional company brought viewpoints from an actor that was considering joining. These interviews serve both this report and further academic publications that will follow the project. Finally, two interviews were conducted with individuals at the heart of the initiative, Andreas Paschinsky and Peter Hellström, who were interviewed to gain a status update on the Academy and to provide support in writing the development section of this report.

Furthermore, we participated in and organised events that brought together stakeholders from various fields to discuss these issues and to identify problems and solutions. This has improved our understanding of the issue, which is hopefully reflected in the report. Our team has participated in two Talent Boost events: one in Tampere (7.11.2018), where we participated by giving a talk on "Rethinking the academia-to-industry talent supply" and sharing our insights into the Digitalisation Academy model; and the other in Turku, where our researchers joined the event to obtain ideas and networking opportunities (12.11.2019).

Events organised in the Vaasa region have typically attracted participants from several industries and other backgrounds to jointly seek solutions for mutually identified problems. In an information and communications technology (ICT) workshop for universities and companies in the Ostrobothnian and Central Ostrobothnian regions, our team hosted a table to discuss "How can companies help to tackle the talent shortage issue in collaboration with universities and universities of applied sciences?" (18.2.2019,

by the Ostrobothnia Chamber of Commerce and the University of Vaasa's Digital Economy research platform).

A learning café-style workshop was arranged at the University of Vaasa (on 25.4.2019) by the InnoLab research platform to learn more about the needs of different regional stakeholders regarding the role of the university in the local innovation ecosystem. Several stakeholders took part in the four-hour event, including large corporations and small to medium-sized companies, City of Vaasa officials and councillors, regional development organisations, non-profit organisations and higher education institutions (including students, researchers and other personnel). The ideas and conclusions from this workshop have contributed to our understanding of the needs of different stakeholders regarding the university, and close local collaboration has helped to identify further research needs in relation to the DA-Pito project.

To engage local, regional and national stakeholders in a discussion on our project's themes, we organised three panels on talent attraction, retention and digitalisation during the Wasa Future Festival in 2019 (8.–9.8.). In a panel on "Attractive Cities and New Vaasa" (in English), we discussed talent attraction and retention, as well as how to build a socially and economically sustainable, innovative and inclusive urban environment. In the second panel, the theme was "Solutions for the Future: Knowledge, Innovations and Sense of Community"(in Finnish and Swedish). The third panel in the Digitalisation Academy's field focused on "Digitalisation and Public Sector" (in English). Panelists in these sessions included researchers and other experts, mayors of cities, members of the Finnish and European Parliaments, youth representatives (e.g. student unions), ministry officials, business representatives, Talent Boost Programme staff and foreign talents living and working in Vaasa. Finally, we have participated in public discussions on the topic on our dedicated blog and in op-ed pieces on various platforms[1].

Finally, when we were close to finishing this report, we organised a cluster webinar with representatives from Lahti and Lappeenranta to give us feedback on the model: Could it also work in their regions? What resonates with them and what might need further thought?

This report continues as follows. In the next chapter (chapter 2), we take a closer look at talent retention in Finland and beyond, first focusing on a theoretical understanding of talent retention. After that, we discuss the findings of academic literature on talent retention from three perspectives: organisational, regional and national. Finally, we

1 E.g. Niemi: "Suomessa jyllää suomenkielisten asiantuntijuus", Tiedekeskiviikko blog 2.10.2019; Dan and Shakeel: "International talent retention in Finland – are we asking the right questions?" InnoBabble blog 3.2.2020; Niemi: "Miksei koulutettu ulkomaalainen kelpaa?" Kauppalehti column 24.2.2020.

scrutinise talent attraction and retention activities in Finland and learn of initiatives similar to the Digitalisation Academy in Finland and beyond.

The Digitalisation Academy model is thoroughly scrutinised in the report's third chapter, beginning with its basic structure and building blocks. After that, we move to a critical assessment of the model in the form of a SWOT analysis (SWOT standing for Strengths, Weaknesses, Opportunities, and Threats) and continue to list development ideas. The chapter concludes with a discussion on the possibilities of reproducing the Academy for other regional clusters, as well as alternative working models for Digitalisation Academies in the future.

The fourth chapter of this report is dedicated to lessons learned and, specifically, what stakeholders can learn from this and how they can improve their actions and mindsets in responding to the mutual challenge of talent retention.

2 Talent retention in Finland and beyond

2.1 Theoretical understanding of talent retention

When talking about talent, the first question should be "What is talent?" In common parlance, talent refers to a special skill or ability. It also refers to someone who is educated, typically above what is considered average, or who has achieved a high level of performance in a specific activity or field such as sports or arts. In the world of work, business and public policy, there has been a growing interest in issues related to talent and talent management over the past two decades (Dan et al., 2021). The processes of globalisation, digitalisation and growing international competition have fuelled this interest. Research on talent management has gradually developed since the publication of McKinsey's seminal report on the "war for talent" in 1998. Talent management has become a hot topic in policy circles, driving academic interest in this subject. Despite this growing interest, recent research has shown that many questions concerning talent management remain. These questions relate to why and how talent management programmes are developed and implemented and what their outcomes are. Moreover, leading authors in the field have argued, in a recent special issue of the International Journal of Human Resource Management entitled "A Contextualized Approach to Talent Management: Advancing the Field" that our understanding of the organisational context in which talent management is developed and implemented is insufficient (Gallardo-Gallardo et al., 2020). It is argued that the meaning of talent is embedded in a given organisational setting at a specific point in time and is influenced by different factors, such as workforce composition, ownership structures and individual perceptions (Wiblen & McDonnell, 2020). For this reason, it is important to understand how contextual factors influence talent retention at different levels of analysis: organisational, regional and national. We discuss in detail each of these levels later in this chapter.

Digitalisation and the demands of Industry 4.0 (i.e., data-driven, automated business processes) have further sparked interest in talent and its management. The 2019 Boston Consulting Group's "Decoding Global Talent" series of articles has focused on trends in global talent, including expert-level professionals who work in the digital and IT&C industries. These IT&C experts known as digital talent (Dan et al. 2021), possess a high degree of flexibility and mobility – both highly valuable skills during the current Covid-19 pandemic. Global talent can constitute the engine of innovation, business development and economic growth. Given this, it is no surprise that in the corporate sector the meaning of talent is closely, if not explicitly, associated with being hi-tech.

Attracting specific and carefully selected talent is only one part of the puzzle. The key is not only to attract talent, but also to keep it. The concept that both practitioners and scholars use for keeping talent in a certain organisation or jurisdiction is talent retention. From a policy perspective, talent retention is not a stand-alone process. Rather it is part of broader talent management programmes or practices, which include the attraction and integration of talent and the overall management of the talent ecosystem in a specific jurisdiction (Future Place Leadership, 2019). Research, most of which deals with retention in an organisational, multinational corporate setting, typically operationalises retention through talents' willingness or intention to stay (Ortlieb & Sieben, 2012). In order to increase retention, several factors and conditions need to be in place. These include allocating resources where they are needed, keeping employees motivated and satisfied and providing adequate career development opportunities and supervisory support as well as work-life balance (George, 2015; McCracken et al., 2016). These factors are likely to increase organisational commitment and reduce turnover. In a recent study, George (2015) distinguished two main types of factors that influence professional workers' retention: organisational and occupation-related factors. At the organisational level, retention factors such as the type of management, a conducive environment and social support matter. Important occupational factors include development opportunities, autonomy, compensation, crafted/sculpted work that is tailored to employees' needs and abilities and work-life balance.

2.2 What attracts educated talent and makes them stay?

There is scattered evidence about the factors that make talent stay. Before we can review the existing evidence on talent retention, it is important to acknowledge the role that context plays in the implementation and outcomes of talent management initiatives (Gallardo-Gallardo et al., 2020). The retention of talent depends on what types of talent we consider, in other words, the socio-demographic (gender, age, nationality, etc.) and professional characteristics of talent (level and type of education, work experience, etc.). Talent retention also depends on the organisational setting, which can be an organisation/company (which in turn varies depending on the type of activity/industry, geographic location, size, management characteristics, etc.) or a municipality, region or country. In the former case, we talk about organisational strategies and initiatives that aim to manage and retain talent, whereas in the latter case, the aim is to develop public policies to retain talent in a certain jurisdiction. Such initiatives are oftentimes government-facilitated but involve other stakeholders from the business, non-governmental or academic sectors. All these levels of analysis touch upon characteristics that influence the retention of talent. For this reason, it is important to structure the review of the evidence according to levels of analysis and contextual factors. We organise this section accordingly and first

The KP Youth Employment Programme – digital skills for all (https://www.kpyep.com)
Although Pakistan has taken several initiatives towards developing digital competencies for youth employment, the Khyber Pakhtunkhwa Information Technology Board's (KPITB) flagship initiative, entitled the "KP Youth Employment Programme (KPYEP)" addresses youth employment through building a skilled workforce. The KPYEP aims to empower unemployed youths and provide training, digital skills and employment prospects by designing its approach in a way that meets the changing demands of digitalisation (Khyber Pakhtunkhwa Information Technology Board, 2019). This initiative also seeks to minimise the skill gap that exists in industry-academia collaborations through offering courses that increase employability. In terms of geographic coverage, the programme covers seven districts of Pakistan's Khyber Pakhtunkhwa province. The targets of this initiative are youth groups who are interested in starting their careers as developers and do not have any particular previous experience in the field. This will produce a large base of IT workers in the market. No study credits are offered to the students, and the duration of the studies varies depending on the course. In terms of funding, the KPITB offers this programme free of charge; however, the certification cost is not covered.

ROMANIA
The IT&C sector in Romania has been growing steadily, and it is estimated that by 2025 it will reach 12% of the country's GDP. With an estimated 140 000 employees in the IT&C industry in 2020, four main IT hubs (Bucharest, Cluj-Napoca, Timișoara and Iași) and three rapidly growing centres (Brașov, Sibiu and Craiova), Romania currently ranks at the top of the list of countries in Central and Eastern Europe concerning the development of the IT&C industry (Brainspotting, 2020). The figures are expected to continue to grow in the coming years, and the talent attraction and retention capabilities of the Romanian IT&C sector and the continual development of up-to-date skills will prove instrumental to maintaining the momentum.

The Informal School of IT (https://scoalainformala.ro/)
Initiatives such as the Informal School of IT aim to contribute to the goals described above. The purpose of the initiative is to develop the digital skills needed in the growing IT sector using hands-on, alternative teaching methods based on the needs of specific companies and the labour market. Geographically, it covers six IT hubs in Romania: Cluj-Napoca, Bucharest, Iași,

Timișoara, Brașov and Craiova. The target groups include all those interested in developing a career in IT or improving their IT skills, depending on the level and type of course (there are also courses for children and teens, but most are for adults who have at least a high-school degree). The duration of the courses varies. This initiative does not offer study credits. In terms of funding, it is paid for by the students, with the fees depending on the city and type of course and it averages averages 150 euros per month (4 sessions). The Informal School of IT aims to provide IT training that is an alternative to university courses. Most courses are not accredited by the Ministry of Education or the Ministry of Labour. However, companies may recognise the certificate and value it despite the lack of official accreditation.

3 A Digitalisation Academy – the model

3.1 Building blocks and success factors

The starting point for the Digitalisation Academy was regional businesses' need for an educated workforce in the digitalisation field. Therefore, the aim was to cultivate students' digitalisation skills in close collaboration with companies, hoping this connection would increase the relevance of studies and create much-needed networks and support students' recruitment into Vaasa-based companies. Running the Academy was funded by the companies participating in the initiative. Technology Centre Merinova became the administrative base camp for the Academy; the person responsible for running the Academy's activities works under Merinova. Three regional higher education institutions took a supporting role, and a representative from each also participated in the Digitalisation Academy's steering group, working alongside company representatives. Physical activities (e.g. classes, practices, group and project work) took place on the Palosaari campus in a dedicated classroom on the top floor of a building that houses Technobotnia, a wide-ranging laboratory co-owned by the three universities participating in the Digitalisation Academy.

It is worth underlining that, in the beginning, foreign students were not a specified target group of the Digitalisation Academy. The hope was that the Academy would appeal to all students, regardless of their backgrounds. From the beginning, the teaching was given in English in order to make the Academy accessible to all students – whether their first language was Finnish, Swedish or something else. However, it became apparent early on that the benefits of the Academy could be especially significant for foreign students if elements such as supporting their recruitment into the Finnish job market were included. Such offerings included, for example, support in understanding Finnish recruitment processes and CV writing. Obviously, companies and the entire ecosystem in Vaasa would benefit if any students, Finnish or foreign, stayed in the region. However, on a national level, the biggest loss for Finland is when students educated in the country leave for good, and the risk of this happening is highest with foreign students, who often struggle to find their first job in Finland. Therefore, placing emphasis on supporting these students is a worthwhile investment.

Another important element to highlight is that the Academy wished to target students from various academic fields. Future experts in marketing, communication, strategic management and so on were considered to be equally interesting for the companies, alongside skilled coders and others with a clear technological orientation. Feedback from the companies indicated that, in an ideal scenario, students would learn to work in a multidisciplinary environment and learn from each other's expertise. Consequently, for

example, future engineers would have a wider understanding of issues such as marketing, communication and project management. Importantly, students could also make friends and connections across sectors. Studies on talent attraction and retention show the importance of so-called soft locational factors, including closeness to friends and family (see chapter 2.2.). Therefore, supporting foreign students in making friends and building networks in Finland was seen as being especially important.

3.2 Establishing a Digitalisation Academy – tips and ideas

A natural starting point for establishing a Digitalisation Academy initiative in another cluster in Finland would be a regionally identified lack of a talented workforce. Ideally, the need for such a workforce would be uniform enough to make collaboration fruitful and relevant to all partners. In the Vaasa model, a common interest was found among companies within the energy cluster, while regional universities provided the students. In the Digitalisation Academy model, collaboration between companies and HEIs is a must, making academies suitable for regions with existing HEIs. Our advice would be to gather all relevant organisations around the table early on, but also to choose one organisation to be responsible for keeping the wheels turning.

As in all collaborations, early planning is highly important. It enables all stakeholders to join and fix the activities in their schedules and makes it possible to utilise resources from all partner organisations and find committed individuals that prioritise the Academy's activities. In addition, it is important to collaborate with HEIs early on to ensure that study credits can be given to students if desired. The process of recognising the content of a Digitalisation Academy as a part of students' study records and granting credits may not always be straightforward, and therefore it is important to communicate with HEIs regarding the matter in advance.

A wide group of stakeholders can be a strong asset for a Digitalisation Academy, but only if all of its member organisations are committed to it, their expectations and roles are clear and they all contribute in ways agreed upon jointly. Communicating and marketing are a good example of this: a lot can be achieved in terms of visibility if all the partnering organisations share information about the Academy on their web pages and use their communication channels to promote the initiative. Equally, the portfolio of master's thesis, summer job and internship opportunities available to Academy students can be seen as impressive if pooled together. The same is true in terms of teaching: combining expertise from several universities and companies will produce an impressive amount of timely, high quality knowledge on offer – something that would otherwise be beyond the students' reach. Importantly, when all the stakeholders contribute, individual workloads will remain moderate.

Finally, the role of the steering group is an important one and could be developed further from its current form. Including student representatives, arranging more frequent meetings, giving

more weight to developing ways to measure the Academy's impact and assigning more clearly defined tasks and roles would very likely make the steering group's work more effective.

Digitalisation Academy's student's views: What were the benefits for me?

Info box 5: Overview of the Digitalisation Academy's pilot period 2019–2020

Peter Hellström

The Digitalisation Academy was established in January 2019 with a group of 16 students from 3 universities (the University of Vaasa, VAMK and Novia). The size of the first group was relatively small in order to make the management of the first pilot group easier. The pilot phase lasted for two years (2019–2020), and the agile project method was used to enable rapid changes in the routine and the content of the programme. The second group, starting in October 2019, was expanded to 21 students. About one third of the students came from each institution, and approximately half of them were from Finland and half from abroad. The selection of the students was based on both their CVs and interviews.

In terms of gender parity, 12.5% of the first group's students were female. There was a notable improvement for the second group, as 24% of the students were female. The regional shares of foreign students in the second group were approximately 50% from Asia (Vietnam and China), 25% from Africa and 25% from India and Pakistan. There were about 90 applications for each group.

The Academy's teaching language is English, and it uses a so-called flipped classroom, using Udemy's online courses as material (www.udemy.com). Every student gets their own Udemy licence for one year, with access to 3 500 different courses, specially chosen for business use (digitalisationacademy.udemy.com).

The business licence offers the possibility of assigning courses and following up on students' progress and activity within the group. Students also have the possibility to use the licence for courses that help them in completing their degree studies or when entering working life. Every student will also receive a certificate for each completed Udemy course, which can be used on LinkedIn as proof of merit.

The Academy's education comprises three main topics – Cyber Security, Data Science and Digitalisation – each worth 5 ECTS. These topics were chosen after consultation with the partnering companies and thus reflect urgent skills needs.

Alongside learning digitalisation skills, the Digitalisation Academy offers foreign students contact with their fellow Finnish students. Similarly, Finnish students become familiarised with an international and intercultural working environment. Furthermore, students gain valuable skills in project management, interdisciplinary teamwork, working cultures in the Finnish business environment and skills related to job-seeking.

Nine companies participated in the Digitalisation Academy with the first group of students: Wärtsilä, Danfoss, VEO, Devatus, Wapice, Mirka, KWH Logistics, Vaasan Sähkö and Gambit. Eight of those companies continued their participation with the second group of students. New partnerships have been under discussion, and two companies have expressed their interest in joining the initiative. In the early stages, the Digitalisation Academy also received funding for development work from Lähi-Tapiola and the Ostrobothnia Chamber of Commerce.

Topical activities of the Digitalisation Academy
Digitalisation Academy students attended Wärtsilä's Smart Technology Hub Ecosystem Challenge from 11–12 November 2019, a two-day event where the students got to innovate and develop new ways of solving different challenges together with 60 other students from different universities in Finland.

The Academy's first major project will be to produce an application for the EnergyVaasa cluster. For this project, the Academy will have an actual customer, the Vaasa Region Development Company (VASEK), which will provide the student teams with both an incentive and a challenge.

The third Digitalisation Academy group and distance learning
The third group, starting in October 2020, was expanded to 25 students. The Covid-19 virus hit both Finland and the rest of the world, resulting in a decision to teach the third group entirely through distance learning, using tools like Zoom and Microsoft Teams. Some of the students joined the Digitalisation Academy from their home countries instead of staying in Vaasa. While distance work has added some new challenges for both students and teachers, it made it possible to increase the group size further. This will most probably be the "new normal", and one of our partner companies has already informed us that they believe that up to 40% of their personnel will work remotely from their homes, even after the Covid-19 pandemic. This is a good reason to develop such teaching, learning and teamworking methods further as the Digitalisation Academy continues.

3.3 SWOT analysis and points for development

The following analysis on the strengths, weaknesses, opportunities and threats related to the Digitalisation Academy model is mostly based on the interview data gathered within the project, providing insights from all stakeholders.

Strengths

What are the strengths of the Digitalisation Academy model? What makes it appealing and effective?

- Appealing ethos: a joint effort shared by the ecosystem actors
- Quick and flexible way of responding to specified talent needs
- Can shorten students' paths from completing their studies to becoming productive employees
- As companies are sponsors, studies are free for the students
- Companies receive access to an updated and skilled future workforce
- Universities gain access to collaborations with companies and insights into their needs
- Platform for cross-sectional collaborations between companies, students and universities

Weaknesses

What are or could be seen as weaknesses? How should the Digitalisation Academy be improved?

- Reliance on only one funding source (companies) is a risk (the Covid-19 pandemic is a challenge)
- Networking and social aspects are important but harder to facilitate in some circumstances (e.g. Covid-19)
- Many stakeholders make this a work-intensive initiative in terms of scheduling and building commitment
- Resourcing requires wider shoulders: coordination, communication and marketing are necessary for success
- Some of the impacts are difficult to measure
- Partnering universities' different administrative systems may add to the workload — coordination can take time
- Role of the steering group is critical — also in ensuring that their respective organisations are committed

Opportunities

What opportunities are there for the Digitalisation Academy model? What trends speak on its behalf?

- The need to retain talent will continue and will remain relevant
- Could be scaled up by adding more partners and by expanding to wider target groups (e.g. lifelong learning) and to other clusters in Finland
- Companies' and universities' increased commitment would likely improve results
- Enhancing communication efforts would help strengthen the brand
- Could be used by universities in marketing their degree programmes
- Improving cross-sectional networking may result in new start-ups
- A stronger feeling of community may increase willingness to stay in the region
- Can help partners in establishing their reputations as socially sustainable actors
- Can add to the attractiveness of the region, companies and participating universities

Threats

What threats may harm the Digitalisation Academy? What weaknesses could become threats? Is there competition in the field?

- If built too quickly (e.g. a lack of coordination, planning and communication), the student and partner experiences may be negatively affected
- If higher education institutions find the initiative undermining or interpret it as being a challenge to their roles, collaboration may be difficult
- Some companies have their own talent programmes — a need to show the benefits of taking joint responsibility
- If companies do not get involved practically (teaching, visits) alongside giving financial contributions, the networking and employment elements may become weak, and the teaching may lose relevance
- Difficulties in measuring the impact can undermine the perceived value of the programme and may lead to some partners losing interest
- The flipped classroom approach requires planning and preparatory work, and an inability to do so may affect the efficiency of the programme

3.4 Development ideas for the current Vaasa-based initiative

While the SWOT analysis above focuses on aspects of the model, data collected in our project provide ideas worth considering as focal points in developing the Vaasa-based pilot.

1. **Improving communication – internal and external.** A clearer message regarding the Digitalisation Academy's activities and action plans should be developed and communicated in order to have a wider reach. This requires increased communication on how the Academy's vision, goals and action plan benefit the entire ecosystem. It also requires continuous discussion, learning and the seeking out of opportunities to connect the most relevant actors: universities, students and companies.

2. **Widening the funder base.** Currently, the Digitalisation Academy is funded by its partner companies. The ongoing pandemic and difficult economic conditions have further heightened concerns that the companies' financial support may be discontinued or reduced with regard to its current level. There are two main solutions to this threat: increasing the number of partnering organisations or deepening the collaborations with existing ones. Succeeding in both would not only help the Academy to get additional financing but also resources for teaching, more connections and an increased number of students wishing to take part in the programme. However, extending the network will only be useful if sufficient resources can be directed to, for example, communication, planning and the administration of the Academy. It is also important to consider what alternative models and approaches could be adopted to ensure the Academy continues to function in the future – on a more or less self-sustaining basis. Could the Academy become a tool for universities in fulfilling their expanding duties related to their third mission, e.g. in terms of lifelong learning activities and talent boosting efforts?

3. **Strengthening the brand.** As the initiative supports the success of the region, regional actors could participate more widely in the Academy's branding and marketing. This would not only attract more potential students but also give the Academy the necessary visibility and recognition. Promoting the initiative on the company and university websites and at different events and fairs, as well as in local media, could strengthen the brand name. Working on the Digitalisation Academy's branding is also important for spreading awareness to a wider audience, for example, across Finland. This may encourage others

to follow in the Academy's footsteps and utilise the model in addressing talent shortages and improving digital competencies in their regions.

4. **Developing the steering group work.** The collaboration between different actors to ensure the Academy's functioning is a demanding task. It could be aided by improving the steering group's effectiveness. By involving relevant stakeholders and identifying clear roles and tasks, as well as ensuring active participation in the meetings and related activities, it can help in providing much-needed advisory support. It is also important to have someone responsible at each partner institution for communication, coordination and assisting the Academy where needed. Since the initiative involves different actors, it is important to have clearly defined points of contact.

5. **Establishing an internal follow-up, feedback and monitoring system.** A formal follow-up system would help identify the fronts on which the Academy needs to improve. It could be used to collect feedback from students on what is working well and what needs to be improved, as well as for soliciting their suggestions. Similarly, evaluating the extent to which students were able to network, develop the necessary competencies and find thesis opportunities, internships or job placements could help demonstrate the Academy's performance. Finally, timely feedback from companies and universities is vital to its continuous development. The steering group could be a key resource for the latter.

3.5 Scalability of the model

In order to scrutinise the Digitalisation Academy model's scalability, the DA-Pito project organised a webinar for the ecosystem actors from Lahti and Lappeenranta in February 2021. In the session, representatives from higher education, businesses, the public sector and development companies learned about the model and gave us their feedback.

As expected, the general theme of talent retention resonated strongly with the participants: the need to find ways of encouraging students, whether Finnish or foreign, to stay in these regions is acute. The situation of foreign students in terms of finding their first company contact was described as being especially difficult. Therefore, strengthening connections between students and companies was considered important, and some actions had already been carried out on this front.

The main strengths of the Digitalisation Academy model identified by the participants included the fact that it stems from companies' concrete needs and is based on their

funding, making it a flexible, relevant and timely initiative. The interdisciplinary approach also gained positive feedback, and it was seen as something that working life requires.

Possible weaknesses identified included that the Digitalisation Academy best suits areas with various companies with similar enough needs so that a common goal can be found. Without this basic condition, establishing an academy would be difficult. Also, in some areas, the companies needing a skilled workforce are mostly small and medium-sized firms led by entrepreneurs, which may not have resources to recruit staff members that do not speak Finnish (e.g. if the entrepreneur him/herself does not speak English). For them, the perspective of foreign talents would therefore not resonate so well. However, the Digitalisation Academy model could also be easily organised in Finnish and could equally benefit from recruiting Finnish students who come to Lahti and Lappeenranta for their studies and normally leave after graduating.

The most promising concrete idea in terms of scaling up Vaasa's Digitalisation Academy model was related to Lahti region's upcoming new cluster in the field of electrified transportation. The City of Lahti is known for its ambitious approach to meeting climate targets, and the region already has a good industrial basis; expertise in automation, the electrical industry and logistics; and some ongoing promising activities in the field of electrified transportation. The Lahti-based "Academy of Electrified Transportation" could be run in English, targeting both Finnish and foreign students. Companies involved in it would be in the technology industry.

Discussions with representatives from Lahti and Lappeenranta helped us in highlighting the strengths and also important preconditions. Across Finland, there are several existing and upcoming clusters, ranging from the maritime to the food industries and from the gaming sector to forestry and beyond, which could benefit from the Digitalisation Academy model in addressing talent retention and skills management issues.

4 Lessons learned and future actions

4.1 Challenges for ecosystem collaboration

Before moving forward with ideas on future actions, we would like to share, based on this project's findings and previous research, some critical notions of difficulties embedded in ecosystem collaboration that need to be discussed. Unless these are recognised and taken into account, disappointments and frustration may follow.

Collaborations between ecosystem actors provide the opportunity to join forces and, in this way, enhance the capacity to address existing challenges concerning talent shortages in a more effective way. However, it is often challenging for such organisations to establish the routines, practices and principles needed to initiate, implement, sustain and benefit from collaborations (Awasthy et al., 2020). In addition, both research and practice have begun to document the potential "dark side" of such collaborations and to point out specific reasons and factors that hinder them. The partners that form the ecosystem can have different organisational cultures, values and goals, as well as organisational routines and practices that may be difficult to reconcile (Dan, 2017; Ali et al., 2021; Parida et al., 2014). These factors can lead to conflict and unmet expectations, which, although common and inevitable, are an essential aspect of the practice of ecosystem collaboration (Shahzad et al. 2020; Shahzad, 2018). Moreover, ecosystem partners may experience opportunistic behaviour, which means that some partners benefit from the collaborations while making insignificant contributions. This challenge is intrinsic to multilateral collaborations and is generically known as "the tragedy of the commons" (e.g., Almeida et al., 2020). In practical terms it can lead to a lack of trust and commitment and a disincentive to continue the collaboration over the medium and long term. Unbalanced interdependencies, resulting from differences in size, market position and the power to influence decision making, can pose additional challenges to effective and sustainable collaboration. If unresolved, they can deteriorate the very foundation of the partnership (Shahzad et al., 2018; Liu et al., 2009).

The above-mentioned factors are all relevant to the Digitalisation Academy initiative. Reliance on only one funding source (companies) risks putting pressure on corporate budgets to the extent that the other main partners do not contribute in financial terms. The different sizes and organisational capacities of the ecosystem partners and their varying levels of commitment make the collaboration time-consuming and work intensive. This has implications for the practicalities of the collaboration, which require adequate resources. Relatedly, managing this collaboration requires efforts regarding coordinating schedules and extensive communication and promotion activities.

4.2 How to boost university-industry collaboration for talent retention

In order to respond effectively to socio-economic and socio-demographic changes, even more attention is now being devoted by governments, universities and industries to attracting and retaining foreign talent (Vauterin, 2012). However, ecosystem thinking currently lacks the idea of reshaping and aligning universities' strategic activities with industry's innovation supply chains and talent needs (Davey et al., 2019). Industry collaboration is still considered quite challenging since both parties have different objectives and operating models. The question of collaboration is still most topical, even critical. Solving it requires the industry taking an active role in prevailing the vision of a fourth industrial revolution and digitalisation in order to develop strong, long-term bonds with universities in terms of utilising the talent available in them.

Next, we will focus mostly on how universities could improve their role in ecosystem collaboration. However, a few words on the role of industries and businesses are also needed. In order to build and nurture dynamic ecosystem activities, all partners could step up their game. One important aspect of this is quite a basic one: understanding the other parties' work cultures, operations and "business models". This includes being curious, asking questions and openly explaining what is important to the organisation one is representing.

It is not always clear for industrial or business partners entering a collaboration with universities what the key performance indicators for universities are: How are universities funded and on which performance targets is this based? While it is in the universities' interests to find jobs for their students, this should happen after their graduation or in a way that does not threaten them to graduate on time, otherwise the universities will suffer financially. Equally, universities are experiencing an increasing push to publish, and to do so in an accessible manner (open access publications), something for which there is no equal appetite among industrial partners.

Based on these examples, it is clear that mutually beneficial collaboration can only be achieved through compromises, open communication and lots of goodwill from all partners.

A change in mindset

Attention must be focused towards boosting the value of university-industry collaboration, which is still an under-recognised source of value co-creation. Energising this type of collaboration is necessary for advancing sustainable foreign talent attraction and retention solutions. The value generated by such collaboration helps society tackle the problems of decreasing public funding for universities and industry's challenges in

terms of gaining a sustainable competitive advantage and tackling obstacles related to activating other actors in the ecosystem towards transitioning to the knowledge economy. Such a shift in thinking, from closed towards open boundaries, necessitates that industry partners involved in university-industry collaboration encourage and generate creative opportunities for successful talent recruitment. A relevant example of such a vibrant collaboration towards a sustainable society is the co-creation ecosystem known as the Smart Technology Hub and Smart Partner Campus created by Wärtsilä, a major Finnish energy technology and manufacturing company in Vaasa. The aim of this initiative is to provide an open platform of knowledge transfer, opportunities for students to work on international projects and an ecosystem of co-creation that supports students, employees, employers and researchers in their interacting and networking.

Commitment towards improved collaboration with universities

Learning from key stakeholders must be the key focus of an integrated infrastructure and knowledge management framework, where this input is necessary for building capacity for greater capture of value. Organisations need not only to acquire new talent but also to utilise and retain the knowledge and value already imbued in their pools of talent; both are needed in order to cope with the challenge of acquiring new and valuable practical knowledge and staying ahead in the R&D and innovation race. Joint initiatives, such as the Digitalisation Academy, support firms by producing a bespoke, educated workforce for them in the form of student talent and so help in mitigating the talent shortage. The future of digitalisation and the competitive market environment requires companies to go beyond their current operative standards and integrate with universities even further in order to forge closer ties to highly educated talent. This provides them with an opportunity to access skills and competencies as well as to address regional talent shortage issues. This also provides an opportunity for university students and researchers to mutually agree and work with the most relevant industrial projects that best suit their career development. However, this integration requires commitment and dedication from the firms – which they sometimes lack. Ecosystem thinking and its dynamic interactions are important and require improved collaboration and clear communication.

Make it formally and openly communicated

Academia and industry should communicate openly about the needs of both sides. Companies might even participate in developing educational content as it will help supply the industry with competent people to hire and retain in the future. This is possible by actively taking part in joint workshops and seminars. However, university-industry collaboration, at the moment, is mainly based on personal networks; formal arrangements or programmes for long-term cooperation are rare. Building trust, establishing permanent contact points and appointing dedicated people to smoothen such collaborations are

required first steps in forging such ties. Industry must involve itself more actively in knowledge-sharing activities within the region, as these will help it connect with the skills available through different projects.

Be inclusive towards ecosystem actors

Universities also need to comprehensively develop their technical education by covering the most pressing issues in society. This means that their curricula should not only serve one stratum of an ecosystem but the whole ecosystem. For example, in Vaasa, customer service companies can still feel isolated, which means collaboration is mainly focused on the manufacturing industry. Therefore, customer service companies need to be more actively included in the ecosystem – they also provide solutions to the region's talent shortage issues by hiring students and other talent. Small and medium-sized companies are the backbone of the economy, and they should be involved in discussing and co-creating solutions to the talent shortage. This will help the whole ecosystem to work together in order to retain the best talent in the region. Of course, it will require a boundless mindset, more flexibility towards the local language, an open organisational culture and collaboration in terms of bringing students and different industrial actors together. This will help the whole ecosystem to create a working community and to pool innovative ideas and fresh knowledge.

4.3 Universities' future roles

Universities have long played an important role in accelerating countries' economic growth and development by educating and training a workforce that can serve industrial needs (Yusuf & Nabeshima, 2006, Shakeel, 2020). They also have a historical role as places where scientific breakthroughs, critical thinking and new ideas are developed and nurtured. However, the conventional model of teaching and learning is being questioned, and universities are faced with an enormous challenge to transform their operations in order to remain relevant and maintain their role as value-offering institutions in the contemporary world. The rise of the fourth industrial revolution, the technological advancements of the recent past and the use of information and communication technologies offer numerous opportunities as well as posing challenges to educational institutions. The opportunities, if properly exploited, can make universities increasingly important institutions, extending their contributions to society. However, if ignored, they can challenge universities' very existence and marginalise their utility.

The growth of knowledge-based economies, driven by technological advancements, has brought the world to a point where development and growth are not necessarily dependent upon a pre-existing industrial base, massive infrastructures and expertise

in conventional business (Swab, 2016). Instead, growth today is more reliant on technological proficiency and innovations with value offerings – assets that can serve the needs of the digital age. This digital revolution requires countries to equip their workforces with the skills necessary to meet present-day industrial needs.

Universities need to be proactive while strengthening public values

Universities need to play a proactive role by adjusting to the changing needs of society and the economy alike. It may no longer be desired that graduates spend months training in the workplace before they can start contributing in real terms. Instead, universities will have to transform their education and integrate content that has practical relevance, as well as developing teaching methods that enable students to utilise the learned knowledge in a practical setting as soon as they graduate. If universities fail to step up, part of their functioning may be replaced by other actors. For instance, platforms offering online courses for skill development, massive open online courses (MOOCs) and content available on digital forums may influence universities' student intakes for conventional degree programmes. This may consequently affect universities' revenues, which could have serious consequences in the long run.

Universities will not only have to take measures to address the challenges at hand, but also take a leading role by participating and contributing in the domains where they possibly could, but rarely have contributed in the past. Firstly, universities will have to open up in order to develop closer cooperation with other academic institutions, industry, society and other stakeholders to ensure an efficient utilisation of resources and the understanding of their needs. The advancement in technology has made it possible for universities to collaborate with other academic institutions in planning joint courses and other activities, sharing resources and developing complementary services that can help improve the mobilisation of resources.

Likewise, universities may benefit from placing emphasis on what could bring value in the long run. For instance, in Finland, graduate placement has not been viewed as a key performance indicator of higher education in the same way as, for example, graduation times have. Investing more heavily in careers services and rewarding universities based on their graduates' success in employment after graduation could support the performance and culture shift needed. This would be a welcome change in terms of taking responsibility for students in the longer term, especially for those coming from abroad and sometimes needing more support in finding employment.

Bridging the gap between what is taught and what is needed

Universities need to develop closer collaborations with industry in order to better understand what is needed and what can help students contribute to the workplace. There is a need to develop joint projects where students can work on practical tasks during their academic life and involve industrial partners in practical coursework. This will help students learn industry practices, provide students with an opportunity to familiarise themselves with skills that could be useful in the future and build the trust and confidence necessary to thrive in working life.

A closer connection with society

Universities also need to develop a closer connection with society. Looking from the outside in, universities may seem to be working in silos to which members of the outside community have very little access. Much interesting research ends up being published in academic journals, which are rarely available to the masses. Universities opening their doors to the outside community, arranging activities and seminars for the common good and sharing and disseminating information that has public value may help the general public get access to useful information. Moreover, this can help develop trust and closer collaboration, in turn leading to open discussions that can help universities understand the needs of the community and society. In the future, having strong skills and a proven record in partnerships, stakeholder collaboration and ecosystem activities could be a way for individual universities to positively differentiate themselves from others and to attract students and faculty who share a mindset that embraces working as a wider community.

Universities as means to promote inclusiveness and social sustainability

Universities need to understand their strategic importance and the role they can play in addressing issues that go beyond conventional teaching and research. Universities can help improve the inclusiveness and social sustainability of regions. Universities mobilise students, researchers, knowledge and networks, which can benefit the cities they are located in. Finland, being a leader in terms of the quality of its education, can successfully attract thousands of international students and benefit from their skills and diverse expertise. However, this potential is not fully realised. The influx of international students does not translate into an equivalent increase in the educated workforce as many foreign graduates do not find relevant employment and adequate opportunities to integrate and contribute to society (Garam, 2018; Ministry of Education and Culture, 2019; Ministry of Economic Affairs and Employment of Finland, 2019; Loukkola, 2020; Taloustutkimus Oy, 2020). This leads to an outflow of qualified people who could have potentially been retained, leaving regions beset with the challenges of attracting talent to address their needs. Foreign graduates' poor employability has previously been explained by students lacking an understanding of the local work culture and language, a lack of social and

networking skills, and by companies' reluctance to hire foreign talent (Zafar, 2019). Thus, talent retention goes beyond economic measures and requires a supportive and equitable environment for foreign talent to feel included and play an active part in society (Geddie, 2015; Lepori et al., 2015). Universities can play an important part in supporting the inclusion and retention of foreign talent, as well as other groups of students in danger of being sidelined, by taking a more proactive, collaborative, inclusive and networked approach.

The balancing act

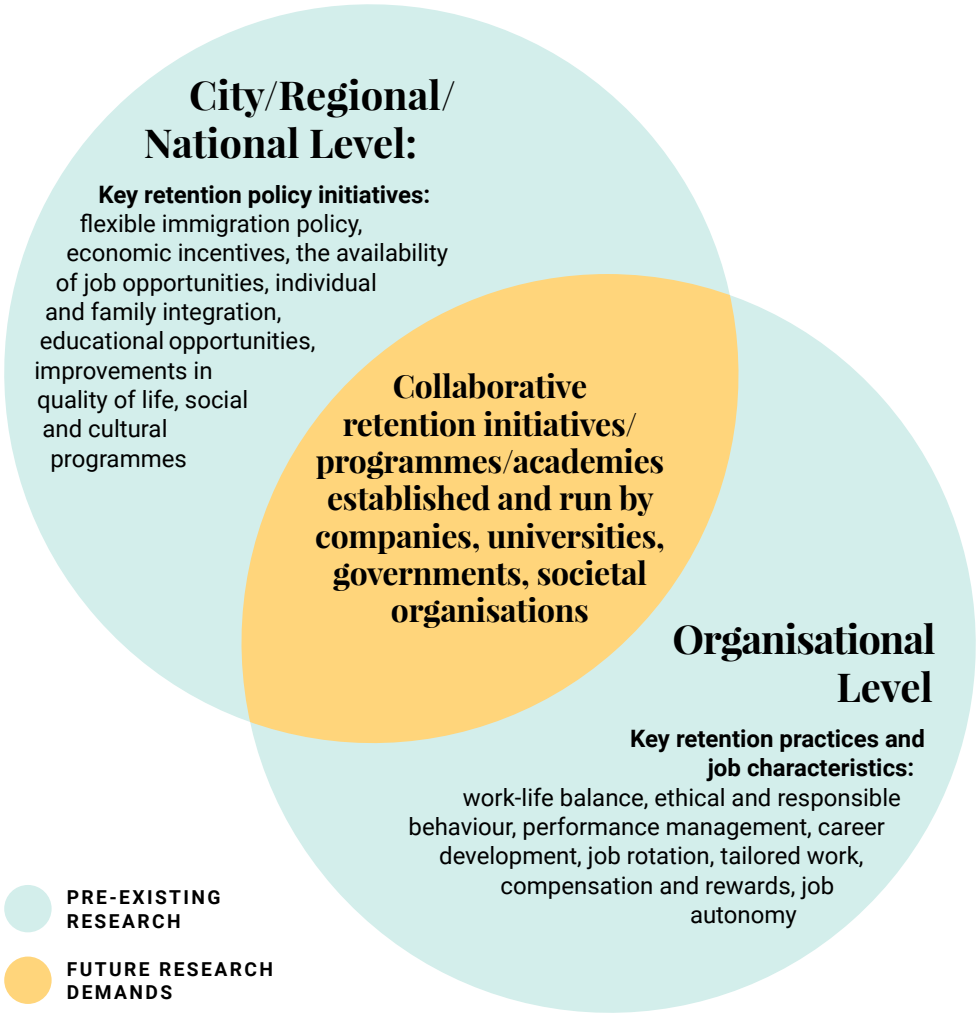
While developing a closer connection with industry and other stakeholders, universities must ensure that collaboration does not compromise their core activities. For centuries, universities have acted as knowledge hubs, creating and disseminating knowledge for societal good. Breakthroughs in science and the understanding of the world need space and time and are not linked with immediate financial targets. This increased emphasis on collaboration with industry may influence universities' approaches with regard to a shift from basic (pure and curiosity-driven) to more applied research (practical and market-oriented), as well as stimulating a prominent orientation towards industrial needs (Etzkowitz & Leydesdorff, 2000; Debackere, 2000; Dooley & Kirk, 2007). Therefore, this perspective of universities' attuning to the demands and needs of the labour market is contrasted with a competing viewpoint that argues for a more balanced role of universities. The proponents of the former propose the need to maintain a balance between the extent to which universities should operate according to entrepreneurial principles, which may undermine traditional public values, such as a public service ethos, equity and the development of a wide spectrum of values. Although they are more difficult to measure in economic terms, these values are equally important for the advancement of knowledge and the development of society. This balancing act can serve against the "commodification" of educational services, which runs contrary to the very notion and raison d'être of academia and constitutes a trend that may not be socially desirable over the medium and long term (Ivana et al., 2019; Lawrence & Sharma, 2002).

4.4 Directions for future study

There has been a steady growth in literature on talent retention, along with scholarship on talent and talent management in general (George, 2015). However, most of this work is concerned with talent retention in an organisational setting, usually in the corporate world of multinationals. Research on business HRM has long addressed issues such as employee turnover, which are closely related to retention (Holtom et al., 2008). There is less research on the talent retention policies of governments, regions or local authorities and limited research on collaborative, multi-actor programmes. For this reason, initiatives

such as the Digitalisation Academy provide a good opportunity to better understand how different stakeholders, such as companies, public authorities and universities can join forces in order to address talent shortages.

Capturing the focus of future research on talent retention



The first and most developed stream of research focuses on retention practices at the organisational level (George, 2015; Holtom et al., 2008; McCracken et al., 2016; Ortlieb & Sieben, 2012). These studies usually focus on large, multinational companies, which may have already established talent management programmes. To a lesser extent, this research also captures the retention practices of small and medium-sized companies, which might not have full-blown retention strategies but may have developed certain initiatives or practices designed to retain talent (Dan et al., 2021). Retention practices at the organisational and job levels can involve work-life balance, ethical and responsible organisational behaviour, performance management schemes, compensation and rewards, career development, increased job autonomy and tailored and flexible work arrangements (which are highly relevant during times of crises such as the Covid-19 pandemic).

A second stream of research is less developed and relatively more recent than the first one (Geddie, 2015; Hooijen et al., 2017; Lepori et al., 2015; Shin et al., 2019). It looks at talent retention initiatives taken at the city, regional and/or national levels, usually by public authorities. These may be stand-alone local or regional initiatives, or they can be part of a larger national programme, such as Finland's Talent Boost. The key point, however, is that local action is encouraged and required, given that talent shortages and requirements are best identified and addressed locally, by relevant actors and stakeholders. These policy initiatives may include flexible immigration arrangements, economic incentives, the availability of job opportunities, integration schemes, improvements in the quality of life and social and cultural programmes.

A third stream of research, situated at the intersection of the first two, closely relates to the Digitalisation Academy, but is insufficiently researched. This nascent branch of research scrutinises collaborative talent retention initiatives jointly undertaken by different stakeholders, including companies, universities, city, regional and/or national governments and other societal organisations. While there is a growing interest in these initiatives in both Finland and elsewhere, there is little systematic research on the process of managing these collaborations and on their sustainability over time and their effectiveness in retaining international talent.

5 Authors

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Appendix: Research questionnaires

Addressing the issues of talent shortages and retention: A multiple case study approach

Background information of both partnering and non-partnering respondent(s)

1. Years of experience in the company
   a. Less than 5 years
   b. More than 5 years

2. Your name and position in the company

3. Which unit (organisation/business unit) are you from?

4. In what capacity are you involved in the Digitalisation Academy programme and how do you contribute to it?
   a. Do you participate in teaching?
   b. Are you a steering group member?
   c. Have you participated in any events related to the Digitalisation Academy (DA)?

General questions about the Digitalisation Academy (DA)

Partner firms

1. What is the DA all about in the context of your organisation? How do you see it?

2. What made you join this initiative? What were the motivational drivers?

3. What were your expectations before joining it and how are they being met?

4. Do you have your own tailored activities to tackle talent shortages?

5. One of the aims of the DA is to address the issue of talent shortages. Has this been relevant to you and if so, how?

6. Has the DA responded to your current needs with regard to talent shortages?

7. What kind of suggestions do you have for improving the DA?

8. The trial period is ending soon. In your opinion, in what areas has the DA succeeded and how would you improve it?

I. Overall activities

II. Communication and collaboration

III. Responding to talent shortages

Challenges – (Tafti et al., 2017; Thomas & Kerr-Phillips, 2009; Goswami & Jha, 2012; Yiu & Saner, 2014; Oladapo, 2014; Schuler et al., 2011)

Prior literature on talent management has identified certain internal and external key challenges for the talent shortages faced by organisations. We would like to hear your organisation's point of view, for example, on how relevant these challenges are and how you manage these.

Internal challenges:

A. In your company, do you have people with foreign backgrounds and people who do not speak Finnish/Swedish?
B. A lack of management commitment and support (an openness and readiness towards talent acquisition and retention) as well as a lack of organisational policy targeting talent shortages
C. A lack of internal resources – training requires resources but companies fear that trained people will leave after a certain period of time. Thus, they need to integrate and motivate talents to ensure they stay
D. Trust issues (companies' reluctance to hire international/student candidates), students are often seen as a high risk and low value option
E. Companies' inability to utilise knowledge produced in the universities
F. Resistance to cultural change – e.g. language barriers, cultural awareness
G. A lack of coordination among different departments in implementing talent management processes
H. Challenges in terms of digital transformation and globalisation

External challenges:

A. Finding a person with the relevant prior experience and the right set of skills – a student's ability to use the latest technologies and programming skills
B. Vaasa as a region for attractive work opportunities
C. Work permit (students' 25-hour-week work restriction during their studies) and partners' integration (dual employment for spouse)
D. University programmes (content) lack a practical understanding of industry needs
E. A lack of coordination between companies and universities/students

Partner organisations

What kind of role do you think the DA can play in tackling some of these challenges?

Opportunities – (Tafti et al., 2017; Schuler et al., 2011; Thomas & Kerr-Phillips, 2009)

Prior literature on talent management has identified certain key opportunities in order to address talent shortages while retaining talent for organisations. We would like to hear your organisation's point of view, for example, on how relevant these opportunities are and how you ensure these opportunities are realised.

A. Obtaining a competitive advantage by retaining your best talent
B. Attracting and retaining valued domestic and foreign talent
C. Longer-term collaboration opportunities with universities
D. Integrated talent management programmes
E. Strategic alignment between talent management/retention strategy/ policy and business strategy
F. The commitment, support and involvement of management
G. Holistic approach to developing talent and to filling a talent shortage gap
H. Increased cross-sectoral communication and collaboration
I. Strong employer brand

Partner organisations

What kind of role do you think the Digitalisation Academy can play or is playing in providing valued talent in order for you to take advantage of some of these opportunities?

Organisational perspective/Factors tackling talent shortages and facilitating talent retention (Thomas & Kerr-Phillips, 2009; Schuler et al., 2011; Sinha & Sinha, 2012; Boomer Authority, 2009; Eyster et al., 2008; Bethke-Langenegger et al., 2011)

Addressing the issue of talent shortages

1. What kind of role should your company play in addressing the issue of talent shortages?
   a. How can trust be developed between students and companies?
   b. Do you think companies should be more active in close collaborations with universities and participate in workshops and student training in order to prepare their future employees? If so, what further actions must be taken?
   c. What actions can universities take in terms of updating their curricula and making changes regarding their educational practices in responding to industrial need?
   d. How flexible should the local language requirements be when hiring international students?
   e. Do you consider the issue of gender equality while looking for candidates? Do you think the effective utilisation of female talent potential remains untapped?
   f. How is the DA helping your organisation to reach out to the best talent available? Are any communication and interaction actions being taken to raise awareness of where students and companies can find each other?

Partner organisations

What kind of role do you think the Digitalisation Academy can contribute or is contributing to addressing the issue of talent shortages by connecting with trained talent and channelising networking possibilities?

Addressing the issue of talent retention

1. What kind of role should your company play in retaining the best talent? What actions have been taken so far and what else can be done?
   a. Breaking language barriers, offering dual employment and flexible working conditions and working hours
   b. Top management support and cultural support/an inclusive culture with effective communication embracing employee diversity to motivate talent and to integrate talent retention at the overall organisational level
   c. Organisational openness and readiness and competitive remuneration packages
   d. Skills and leadership development, a supportive learning climate, performance assessment and recognition

e. Very little organisational bureaucracy and gender equality and inclusiveness
f. Developing a solid internal organisational policy for talent retention

Partner organisations

What kind of role do you think the Digitalisation Academy can contribute or is contributing to addressing the issue of talent retention?

Concluding question

How would you improve the DA in the future so that you will remain a part of it while getting the most out of it? Consider the following:

a. The company's contribution to it – payment matters etc.
b. The role of the steering group – how can it be organised so that the company can contribute?
c. Relationships between students and the DA and between students and companies
d. The overall quality of the teaching content and methods
e. Organisation – timing, duration, class schedules, etc …
f. Mechanisms for evaluating the DA's performance etc.

Interview with Universities/Universities of Applied sciences

Degree programme coordinator

1. Are you familiar with the Digitalisation Academy (DA)?/How do you see the DA initiative?

2. Is the DA initiative complementing students' degree programmes?

3. Can students include DA work for credits in their degree programmes?

    a. If so, how many credits and how will DA work be integrated into their degrees?
    b. If not, what are the obstacles and can these be addressed in the foreseeable future?

4. What does the DA need to do in order to get its work assimilated into the degree programme for credits?

5. How do you see this DA programme impacting students' graduation timelines, and what are the possible implications it could have for the university (in terms of graduation targets)?

6. Can the DA programme positively or negatively affect the reputation of the degree/accreditations etc. in any way?
    a. Could it be used in the marketing of the degree or as a selling point?

7. How do you see their enrolment at the DA affecting international students' residence permit matters?

8. Do you think their enrolment at the DA will affect students' performance in their conventional studies or their grades, credits, participation in different activities, etc.? (the question becomes more relevant if the DA credits are not registered in the degree programme)

9. What is your view on getting companies involved in teaching/the changing role of universities? Would you personally like this change to take place/ how could it affect the future of universities?

10. How would you describe your working relationship with the DA management team (frequency of discussions/planning meetings, expectations from each other, resources on hand [human, financial, infrastructure])?

11. Do you have any idea of whether the previous year's Academy students benefitted from becoming part of this programme (jobs, internships, master theses, networking, etc.)?

12. What kind of support does the DA require from you if any?
    a. Were you contacted by the DA to discuss credits/students' degree-related issues?
    b. How much effort did you put into discussions with the DA coordinator?

13. What aspects of the Academy need radical improvement if any, and should it become successful/achieve its objectives? Any suggestions?
    a. What kind of help/assistance can be provided from the university side?

14. What are your hopes and concerns for the future?

15. Is there anything else you want to add in addition to what we have discussed that could be valuable in this context?

16. Now, before we finish, I would like to ask one hypothetical question: If you were given a free hand, would you want the academy to continue in the future (why/why not)?
    a. If so, what changes should be made to improve it (administratively, planning-wise, resources, practical issues, credits, job market)?

Administrative staff

1. What is your take on the DA programme? (Is it important and why/why not?)
    a. Do you think the initiative could help students in achieving their desired objectives (getting master theses, internships or employment, networking, etc.)?

2. What kind of support does the University of Vaasa provide with regard to this initiative?

3. Is there anything else the university can do in order to facilitate the development of the DA?

4. How is your relationship with the DA programme director/coordinator?
    a. Can you also tell us how frequently you have discussions with other university staff concerning the DA (concerning planning, administrative support, practical issues, etc.)?

5. What are the DA coordinator's expectations regarding the university?
    a. Are these realistic and is the university in a position to meet these needs?

6. Are you familiar with the support that other universities/UAS are providing for this initiative?
    a. Is the higher share from other institutes a cause for concern?

7. Do you think that the previous DA programme has achieved its desired objectives?

8. What are the things you have liked or practices that need to be altered?

9. Has the DA added to the university's workload (coordination, communication, publishing information, marketing, other costs, contact with industry, etc.) in any way?

10. Are you satisfied with the way this programme was advertised on the university's platform?
    a. If so, what has been good about it, and if not, what can be improved in order to increase its reach?

11. Which aspects of the academy need radical improvement, and should it become successful/achieve its objectives?
    a. What kind of help/assistance can be provided from the university side?

12. What are your hopes and concerns for the future?

13. Is there anything else you want to add in addition to what we have discussed that could be valuable in this context?

14. Now, before we finish, I would like to ask one hypothetical question: If you were given a free hand, would you want the academy to continue in the future (why/why not)?
    a. If so, what changes should be done to improve it (administratively, planning-wise, resources, practical issues, credits, the job market)?

Interview with students participating in the DA programmes (UVA, VAMK, Novia)

1. How did you come across the DA?

2. What expectations did you have regarding the DA?

3. Were your expectations met?
    a. If so, how, and if not, what was lacking and what were possible reasons for this?

4. In your opinion, how well was the whole programme planned (advertisement, recruitment process, notifications, start date, timings)?

5. Were you aware of whether the work done with the DA could be used as credits towards your degree programme?
    a. If so, at what point, and were the promises (if any) made by the DA honoured by your school?
    b. How important is the registration of credits as part of your degree from your point of view?

6. Were you satisfied with the lecture contents, teaching style and overall working style (the availability of the projects, practical learning, industrial-focused teaching/training) of the Academy?
    a. If so, can you highlight good points?
    b. Do you have any suggestions as to how it could be improved?

7. At what stage of your degree did you join the DA?
    a. Are you satisfied with the timing of your joining? If not, when could be the ideal time for a student to join the DA?

8. Since you were also taking courses for your degree, was it difficult to prepare for the DA classes (time needed for preparation/overburdened/overlapping/conflict with jobs, etc.)?

9. Being an international student, you are required to pass a certain number of credits to have your residence permit extended. Did you consider this when you were deciding whether to become part of the Academy?
    a. How can this issue be addressed (if the credits issue still remains unresolved)?

10. How much has the Academy helped you in getting a master thesis with a company, an internship, networking contacts or an opportunity to work on small projects with a company?
    a. How was the process of getting a master thesis/internship carried out? Were there any special recruitment procedures for Academy students?
    b. Did you receive any special treatment when you contacted the partner companies or applied for internships/jobs/master theses?
    c. How frequently did you have opportunities to interact with professionals (for networking)?
    d. Were the timings or the schedule) of the allocation of theses/internships appropriate for you if you obtained any?

11. Do you think the DA will strengthen your resume and will help in finding future employment (resulting in long-term benefits)?

12. What were the strongest and weakest points of the DA?

13. What suggestions do you have for improving the DA?
    a. Which of these is the most important and the second most important?

14. Is there anything else you want to add in addition to what we have discussed that could be valuable in this context?

15. Finally, I would like to ask a hypothetical question: If you could go back in time (to when you made the decision), would you join the DA programme?
    a. What are your reasons for this choice (anything that you have not highlighted before)?

Interview with the head of the DA

1. How easy or difficult was it to get UVA/VAMK/NOVIA to participate in the DA programme?

2. What other universities/UASs did you contact for this purpose if any?
    a. Why did they not participate in this initiative?

3. Who was your primary contact at the universities/UASs?

4. Were you able to get the necessary support from the universities/UASs?
    a. If so, what kind of support?
    b. If not, how could they have helped you?

5. In your opinion, were the people designated by the universities for coordination purposes suitable for this task?
    a. Did they have enough power to take the required decisions (without being too affected by bureaucratic issues)?

6. What were the major obstacles that you faced at the beginning of the programme (from the university/UAS side)?

7. Since the DA has been running for a couple of years now, have the working relationships/coordination improved? If so, in what respect? (UVA/VAMK/NOVIA)

8. How would you compare the participation of one of the institutes to that of the other participating universities (comparison of UVA with VAMK and NOVIA and vice versa)?

9. Are you satisfied with the way the DA was advertised by the universities/ UASs and companies? What needs to be done in order to enhance its reach?

10. Did you, at any point in time, feel that the universities/UASs had any reservations about the programme? If so, what kind?

11. In your opinion, what are the major motivating drivers/concerns that the universities had regarding this initiative (in terms of degree reputation/ student credit registration/the effect on students' graduation timelines)?

12. What were the major driving factors/impediments that companies had (according to your understanding)?

13. How do you compare the current DA programme with that of the previous year in terms of performance/achieved goals?

14. Is it what you hoped for when you initiated this programme? If not, why not? Please explain.
    a. Was the DA able to achieve its stated objectives (in terms of master's theses, internship opportunities and future employment)?

15. Were any follow-up activities conducted to get feedback from the students/ companies/universities? If so, were any changes made based on the feedback?

16. Are there any changes that you would like to see in the structure of the DA (participating institutions' roles, your role, the steering group's role, etc.)?

17. How has Covid-19 affected the functioning of the DA (short-term and long-term effects)?

18. What are your hopes and concerns for the future?

19. If the companies were to withdraw their financial support (reduce their financing of the DA), is there any way the academy could continue to function (alternative model for the future)?

20. Is there anything else you want to add in addition to what we have discussed that could be valuable in this context?

21. Now, before we finish, I would like to ask a hypothetical question: If you were given a free hand, what would you like to change to achieve the desired objectives/to facilitate collaboration (from the university side)?
    a. Can you answer the same question but from a company perspective?

Electronic publications
ISSN 1797-3562
ISBN 978-952-327-840-0

Electronic version: julkaisut.valtioneuvosto.fi
Publication sales: vnjulkaisumyynti.fi