LABOUR MARKET TRENDS IN DIGITAL NOMADISM

FINAL STUDY

PREPARED FOR THE GOVERNMENTAL AGENCY FOR IT DEVELOPMENT ON BEHALF OF NEW LAND MEDIA KFT

PROJECT GINOP-3.1.1-VEKOP-15 "ENCOURAGING AND SUPPORTING COOPERATION BETWEEN EDUCATIONAL INSTITUTIONS AND ICT ENTERPRISES"
("PROGRAM YOUR FUTURE")

SZÁZADVÉG

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1. Executive summary

Introduction

Digitalization has permeated all facets of economic and social life, becoming a vital part of daily activities for individuals and businesses. Hungary excels in certain areas of the digital ecosystem, such as digital infrastructure, where it performs above the EU average. However, in other areas, it has consistently lagged behind the EU for many years.

Closing this gap is particularly challenging as Hungary is significantly below the European average in terms of the digital readiness of workers and small businesses. Additionally, the proportion of people with high IT skills is low.

Consequently, a major constraint on the development of Hungary's digital economy is the shortage of IT and digital professionals, which is increasingly problematic for both domestic and multinational companies operating in the Hungarian market.

Moreover, it is anticipated that in the coming years, the demand for jobs requiring advanced digital skills will continue to rise. Simultaneously, the supply of workers with skills below market expectations is projected to grow, exacerbating the labour shortage.

As a consequence of the COVID-19 pandemic, numerous companies, both in IT and other sectors, have enabled their IT and digital workers to telework (home office), creating opportunities for them to become digital nomads. This trend poses a risk of an increased number of domestic IT professionals choosing to work abroad for financial reasons or other motivations such as career advancement or a change of environment, thereby exacerbating the domestic IT skills shortage.

The research aimed to investigate the prevalence of teleworking and digital nomadism among IT professionals in Hungary and its impact on the IT labour market, particularly focusing on the home office practices adopted by employers following the COVID-19 pandemic. Additionally, the study sought to understand the extent to which the domestic labour market is threatened by the high availability of remote jobs for foreign employers.

Methodology

The study was prepared using the following methodological tools:

a) Review of international and national literature: This involved analysing both international and national sources to create a comprehensive situation analysis chapter, including international comparisons.
b) Primary research (CAWI Methodology): Conducted to refine the information gathered from secondary sources and to collect any missing data, ensuring a thorough understanding of the topic.

Key findings from secondary sources

Remote work has experienced a gradual but consistent rise globally over the past 5-10 years, with a notable surge in remote workers following the pandemic. In March 2020, the COVID-19 pandemic led to an extraordinary and rapid shift in the labour market, occurring virtually overnight. This significant change for IT workers is illustrated as follows:

- according to Eurostat data[1][2], 5.5% of employees aged 15-74 in the European Union worked regularly from home in 2019. This rate has been stable at around 5% over the past decade, but the pandemic has pushed the rate up to 12.2% in 2020, as the proportion of people working remotely from time to time has increased by around a third;
- the proportion of occasional remote workers who are self-employed is lower than the proportion of regular remote freelancers, but there is a steady upward trend: n 2011, 12.6% worked remotely, but in 2019, 16% did the same;
- the epidemic has also increased the importance of teleworking in the domestic labour market. Examining the period from 2011 to 2019, the teleworking data for domestic working-age individuals (ages 15-74) show significantly lower figures compared to the EU average, both for regular and occasional remote workers. The share of employees regularly teleworking ranged from 0.5% to 1% of all employees between 2011 and 2019, while the EU average for employees regularly teleworking was around 5% over the period. Due to the pandemic, this rate increased to 2.6% (compared to the EU rate of 12.2%).
- when considering Hungarian workers of all employment statuses, the share of regular remote workers between 2011 and 2019 fluctuated between 0.8% and 1.8%, while the share of occasional teleworkers was higher, ranging from 1.4%

[1] How usual is it to work from home? - Products Eurostat News - Eurostat (europa.eu)
[2] https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfsa_ehomp

to 2%, reflecting the EU trend during the same period. As a result of the pandemic, 3.3% of Hungarian workers switched to regular teleworking and 5.1% to occasional teleworking;

- according to CSO's periodic survey[3], the proportion of workers who have switched to teleworking as a result of the restrictive measures has increased significantly since March 2020. By February, 2020, the number of Hungarian workers working in home office was estimated at around 100,000 (2% of total employment). The number of people so employed tripled in March 2020 with the introduction of the restrictive measures, then doubled in April, and then increased eightfold at its peak in May. The number of teleworkers (as a share of total employment) reached 17% at its peak in May 2020, roughly 760,000;
- the location of work is becoming increasingly irrelevant for the future of work. Instead, the critical question is, "What enhances employees' potential and motivates them to work better and more efficiently, regardless of where they are?";
- remote working has now become a reality in sectors such as agriculture, banking, and insurance, and in roles like account managers and customer service representatives, which were previously not feasible before the pandemic;
- labour market analyses for Generation Z consistently show that the ability to work remotely is among the top 5 criteria for job selection for the youngest workers;
- while teleworking has fulfilled the dream of many employees, it has also created unprecedented recruitment opportunities for employers. The labour market is no longer restricted by national borders and has become virtually global;
- however, there are significant risks for employers and the broader economy. The pandemic seems to be dismantling barriers to the permanent relocation of skilled and experienced workers abroad, potentially worsening the digital skills shortage;
- according to a U.S. labour market survey[4], 34% of individuals who became digital nomads due to the pandemic intend to continue this lifestyle over the next

[3]CSO, https://www.ksh.hu/docs/hun/xftp/idoszaki/koronavirus-tavmunka/index.html

[4] Source: MBO Partners: The Rise of the Digital Nomad https://s29814.pcdn.co/wp-content/uploads/2021/05/MBO-Partners-Digital-Nomad-Report-2020.pdf

year. Additionally, 53% plan to work as digital nomads for the next 2-3 years, while 90% of those who were already digital nomads before the pandemic plan to maintain this way of working in the future.

Results of the primary quantitative research

The analysis of international trends was clearly supported by the primary data collected in Hungary for this research.

- the pandemic led to a notable shift in the use of atypical employment forms: prior to the pandemic, 62% of respondents worked exclusively in the office, but by the time of the research in spring 2022, this percentage had fallen to 13%. Simultaneously, the proportion of individuals working solely from home has nearly quintupled (rising from 8% to 37%). Working as a digital nomad has also grown more than threefold from a low base, from 1.7% before the pandemic to 5.8%. Additionally, there was a fourfold increase (28.5%) in the prevalence of hybrid home-office working arrangements, where employees predominantly work from home but spend one or two days per week in the office. However, hybrid working (where staff prefer to work in the office but spend 1-2 days a week in a home office), which is predominantly office-based, has lost popularity: from 17% before the pandemic to 13% now),
- among the advantages of working from home, two thirds of respondents mainly mentioned the option "I don't have to travel to work". High percentages were also reported for having greater autonomy and flexibility in managing time off, with nearly a third of respondents stating they worked more efficiently,
- regarding working from home, the primary challenges identified by respondents were lack of company (54%), continuous work (35%), and a monotonous, stressful environment (27%),
- as for the benefits of working as a digital nomad, the most frequently mentioned were flexibility (64%) and the ability to work on one's own schedule/greater autonomy (41%). Additionally, a significant number of respondents (38%) highlighted the benefit of being paid for performance rather than time,
- the most frequently mentioned disadvantages of working as a digital nomad, similar to teleworking from home, were loneliness (31%), constant working

(29%), work pressure (29%), lack of a sense of belonging (26%), and communication difficulties (22%),

- the significance of various forms of teleworking is evident from the fact that 90.6% of respondents considered the ability to work remotely as important or very important when looking for a job (rating it above 5 on a scale of 10),
- the determination of respondents is demonstrated by the fact that a majority (59.2%) have declined a job offer that did not offer some form of teleworking, with 46.3% doing so more than once,
- furthermore, the vast majority of respondents (93%) anticipate a strong global increase in atypical forms of employment over the next 10 years, particularly home office (working from home). Additionally, a high proportion (83%) foresee a rapid expansion of teleworking, and many (66%) expect growth in flexible and part-time work (rated 4 or 5 on a five-point scale). Almost two-thirds of respondents worldwide associate the rise of digital nomadism and freelancing with a high likelihood of success,
- however, respondents are notably more pessimistic about the adoption of atypical forms of employment in Hungary. Although domestic expectations for teleworking and home office align with global trends, far fewer anticipate the widespread adoption of the employment forms under investigation. Furthermore, not only is the proportion of respondents rating a 4 or 5 on a five-point scale (indicating expectation of widespread adoption) much lower, but also the proportion giving a rating of 1 or 2 (indicating no expectation of widespread adoption) is significantly higher. Only 53% of respondents recognized the home office (global expectation: 93%), 45% (63%) acknowledged temporary agency work, and 39% (83%) identified teleworking as a trend anticipated to become widespread in Hungary over the next decade. Respondents least expect job sharing (11% compared to 30% globally) and digital nomadism to take hold at home (18% compared to 63% globally) in 10 years' time,
- although only a third of respondents selected digital nomadism as their most desired form of employment, nine out of ten would choose this lifestyle in the future if their living situation and family circumstances were not a factor. Two-thirds would work for a foreign employer or agent from a domestic location, and

just over half would work for a domestic employer from a foreign location if their circumstances allowed,

- these preferences align with respondents' concerns about Hungarian IT professionals potentially "emigrating" at a higher rate than before. In fact, 72.5% of respondents rated the risk of Hungarian IT professionals choosing to work abroad or from home at a 6 or higher on a scale of 1 to 10,
- higher income was the most frequently cited reason for working abroad (93% and 95%, respectively), followed by better quality of life (63% and 32%, respectively) and better career opportunities (52% and 45%, respectively),
- these responses are consistent with the respondents' views on the IT skills shortage in their country: two-thirds consider the shortage in their sector to be serious or severe (rating it 7 or higher on a scale of 10), while only 29% do not see the skills shortage as a problem (rating it 5 or lower),
- the primary reasons for this shortage were attributed to deficiencies in public education (65%), such as inadequate teaching of programming and IT. Additionally, many respondents cited qualitative and quantitative shortcomings in higher IT education (47%) and IT vocational training (35%). The idea of relocating IT professionals abroad was frequently mentioned (57%), as was the concept of working from home while abroad (33%),
- the proposed interventions from respondents clearly align with the identified causes of the IT skills shortage. Most respondents suggested better alignment of university courses with market demand in terms of content (77%), broader implementation of programming in public education (70%), and the teaching of algorithmic thinking alongside digital culture. Additionally, improving the quality of IT vocational training in vocational education was also mentioned by 70% of respondents. Other suggestions included efforts to attract IT professionals back to the country, enhancing workers' skills, making IT careers more appealing, and encouraging young people to pursue IT training.

Conclusions

The international literature and primary research conducted in this study reveal a significant rise in various forms of teleworking (such as home office and digital

nomadism), while traditional office-based work is decreasing both globally and in Hungary.

These trends are anticipated to continue growing, as supported by respondents' expectations and their future plans. 93% of respondents indicated that, ideally, they would prefer to work remotely, while only 3% favoured working solely in an office environment.

The rapid growth of teleworking, including digital nomadism, poses a short-term risk that a larger number of domestic IT professionals may choose to work abroad or remotely from abroad. This could exacerbate the already worsening IT skills shortage in Hungary.

Proposals

To ensure that domestic employers of IT professionals—and consequently the national labour market and competitiveness at both company and national economy levels—benefit from the teleworking revolution accelerated by the pandemic closures, prompt government intervention is essential, even in the short term.

Our recommendations extend beyond merely supporting teleworking and promoting digital nomadism in Hungary. While such measures would help retain a larger proportion of Hungarian IT professionals and attract more foreign professionals to work in Hungary, they would not address the long-term shortage of IT professionals. Therefore, we have categorized our proposals based on whether they aim to generally reduce the domestic IT skills shortage or specifically promote digital nomadism.

Our proposals are presented in three groups:

- **technical proposals** that affect both the education system and the labour market;
- **suggestions for further research** to better understand employers' expectations and attitudes towards digital nomadism, and to investigate the combination of factors required to work as a digital nomad in Hungary;
- **communication proposals** to promote the use of communication tools to encourage domestic and foreign workers to work in Hungary or to Hungary as digital nomads.

The table below summarises each of the proposals, indicating in each case whether they support the reduction of the IT labour shortage and/or the spread of digital nomadism.

Table 1: Summary of the proposals

Title of proposal	Reducing the IT workforce shortage	Supporting the spread of digital nomadism
1. Professional proposals		
Digital renewal of the education system	X	
Wide-scale introduction of topics/subjects related to programming and algorithmic thinking in public education/vocational training	X	
Transforming the structure of higher education and better matching it to labour market demand	X	
Increase in higher education admissions in IT and science	X	
Measures to increase the supply of market training (e.g. bootcamp schools)	X	
Training loan scheme for professionals with high level IT and digitalisation skills	X	
Continuation of the "Program your future" programme	X	
Increasing the number of IT and digital professionals available to domestic businesses	X	X
Developing the legislative environment to promote working as a digital nomad	X	X
2. Proposals for further research		
Perceptions and attitudes towards teleworking and digital nomadism among non-IT teleworkers		X
Conducting primary research to understand the attitudes and opinions of domestic employers on teleworking and digital nomadism	X	X
Identify potential barriers to the spread of teleworking and digital nomadism in the country and make proposals to overcome them		X
3. Communication proposals		

Launching communication campaigns to promote working as a digital nomad from a location in Hungary on international online and offline platforms, mainly for digital nomads	X	X
Development of a website in English and Hungarian to present the conditions and opportunities of working as a digital nomad in Hungary, to promote working here and to present other informative content	X	X
Sensitising domestic employers to teleworking and digital nomadism	X	X

2. Introduction

2.1. Research background

2.1.1. Theoretical and practical relevance of the research

Digitalisation has permeated all facets of economic and social life, becoming a vital part of daily activities for individuals and businesses. Hungary excels in certain areas of the digital ecosystem, such as digital infrastructure, where it performs above the EU average. However, in other areas, it has consistently lagged behind the EU for many years. Closing this gap is particularly challenging as Hungary is significantly below the European average in terms of the digital readiness of workers and small businesses. Additionally, the proportion of people with high IT skills is low.

Consequently, a major constraint on the development of Hungary's digital economy is the shortage of IT and digital professionals, which is increasingly problematic for both domestic and multinational companies operating in the Hungarian market. The shortage is intensified by low participation in adult education, which not only impedes the development of digital skills but also the acquisition of essential professional knowledge.

Moreover, it is anticipated that in the coming years, the demand for jobs requiring advanced digital skills will continue to rise. Simultaneously, the supply of workers with skills below market expectations is projected to grow, exacerbating the labour shortage. Although the proportion of ICT graduates in Hungary is better than the EU average, the percentage of ICT professionals (those with vocational or adult education and training beyond graduation) in total employment is lower than the EU average, as is the proportion of female ICT professionals.

This suggests that while a significant number of Hungarian ICT professionals have tertiary education, many may be employed in roles that could be filled by less-skilled workers, though such positions are not available. Additionally, a higher percentage of IT graduates are working abroad or for foreign companies from home, which further exacerbates the domestic labour shortage.

As a consequence of the COVID-19 pandemic, numerous companies, both in IT and other sectors, have enabled their IT and digital workers to telework (home office), creating opportunities for them to become digital nomads. This trend poses a risk of

even more domestic IT professionals opting to work abroad for financial and/or career reasons.

Professional organizations, such as the ICT Association of Hungary (IVSZ), have highlighted at various conferences that a growing number of both young and experienced IT professionals are increasingly working overseas. Foreign companies hiring Hungarian employees through headhunters often allow these employees to remain in their familiar working environments, whether they work from home, a vacation spot, a café, a rented office, or a combination of these.

The availability of skilled IT professionals in Hungary—achieved through measures such as increasing training opportunities, retaining domestic graduates, attracting those working abroad, and relocating foreign professionals to Hungary—is crucial not only for the competitiveness of the companies that employ them but also for the overall competitiveness of the national economy. A macroeconomic analysis commissioned by IVSZ[5], which assessed the impact of the Hungarian digital economy, indicates that the swift adoption of new technologies requiring IT skills could result in an annual GDP increase of nearly HUF 4 trillion within 3-5 years. This amount represents almost 10% of Hungary's current GDP.

Achieving this economic growth depends on having access to skilled workers and digital professionals. A continuous and worsening shortage of digital skills poses a significant threat to competitiveness both at the national level and for individual companies. As digitalization and technological innovations drive growth across all sectors, a lack of qualified workers hampers these advancements, placing Hungarian businesses, particularly SMEs, and the national economy at a competitive disadvantage.

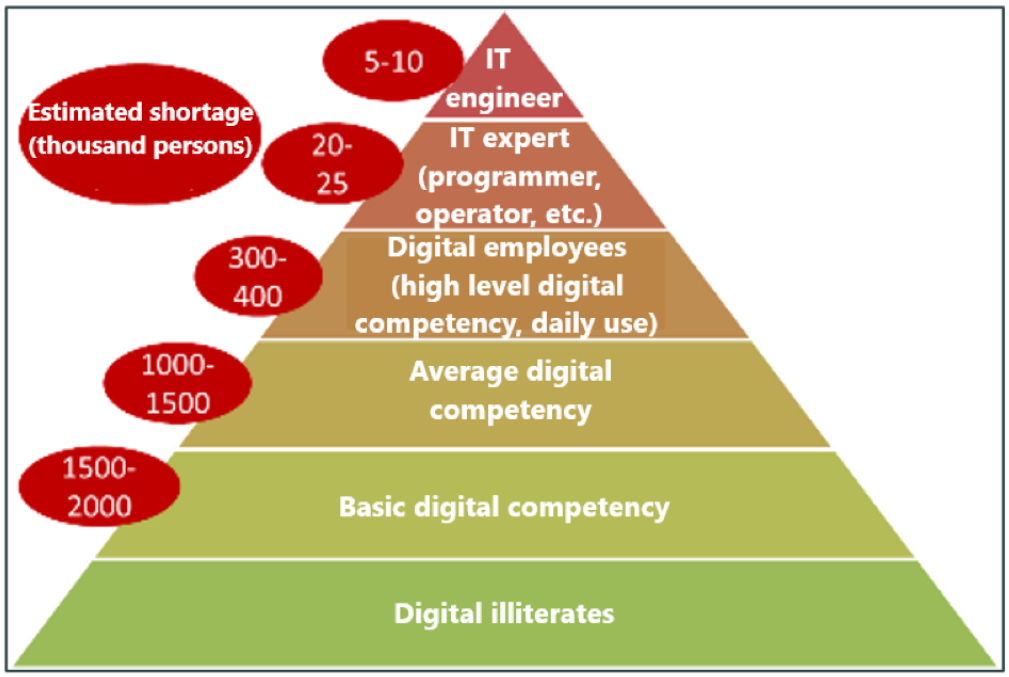
2.1.2. Dimensions of the digital labour shortage

According to the DESI 2021 report[6] on the digital economic and social readiness of EU countries, published in November 2021, Hungary fell two positions from 21st to 23rd compared to the 2020 rankings. More notably, Hungary's standing in the "Human Capital" dimension, which evaluates the digital and IT readiness of the population and workforce, declined by 3 places. Hungary shows a significant gap in the proportion of

[5] https://ivsz.hu/a-digitalis-gazdasag-sulya-2019
[6] https://digital-strategy.ec.europa.eu/en/policies/desi

employees with at least basic software skills, with a 7 percentage point difference (51% versus 58%). Additionally, the percentage of Hungarian enterprises offering ICT training to their employees is below average, at 16% compared to 20%.

Figure 1: Dimensions of the digital skills gap



Source: IVSZ

The gaps in human resources development required for the balanced growth of the digital ecosystem, as illustrated in the figure above, must be addressed comprehensively. Specifically, the following areas need attention:

- Enhancing digital literacy for students at various levels within the formal education system.
- Engaging and motivating individuals who have been excluded from the digital world (bridging the digital divide).
- Providing those with only basic digital skills with relevant digital knowledge for the labour market (up-skilling).
- Up-skilling individuals who already possess above-average digital skills or work in engineering fields other than IT, and where necessary, retraining them as IT or digital professionals (re-skilling).

- Increasing both the number and the skill set of IT with programming skills and digital workers, with a particular emphasis on raising the proportion of women with IT qualifications.

In this research, we concentrate on the latter area by examining the phenomenon of digital nomadism within the labour market, primarily concerning the specific IT sector (IT engineers and other IT professionals). However, it is important to recognise that this phenomenon is also pertinent to all intellectual activities that do not necessitate a constant physical presence and have been performed remotely by thousands of professionals over the past two years.

2.1.3. Components of the IT skills shortage

The picture presented by the DESI index is corroborated by IVSZ's own research and analyses conducted in recent years, with the findings summarised in the preceding figure. The figures displayed in the chart for each target group segment are estimates derived from DESI data and various surveys. At the top of the pyramid, comprising IT engineers and IT professionals, the latest surveys (e.g. the labour market survey conducted under GINOP 3.1.1. project "Program Your Future," which also underpins this research[7]) suggest that the shortage could reach 26,000 within two years.

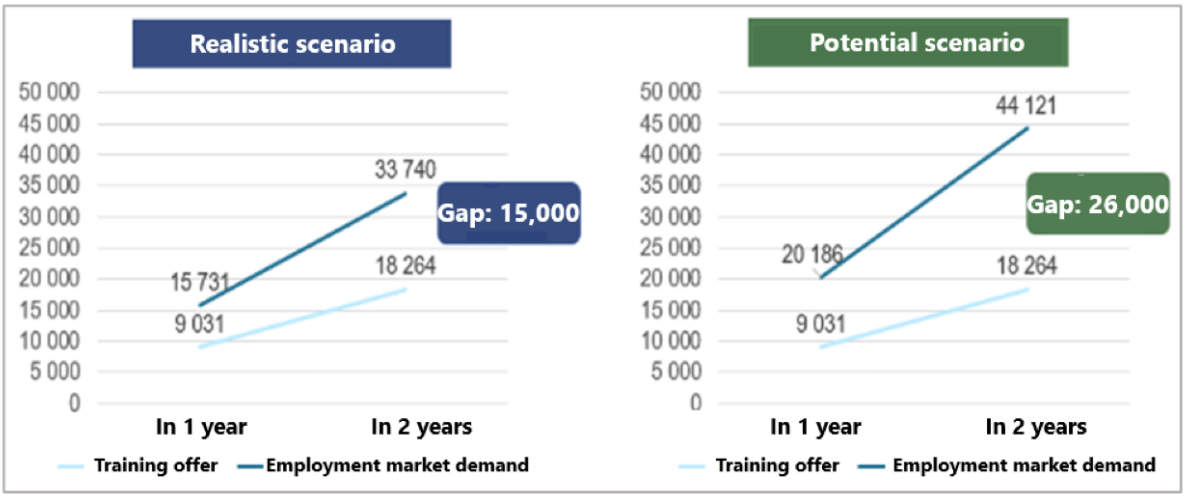
A key takeaway from the comprehensive digital labour market survey is that higher education alone cannot keep up with the increasing demand for digital professionals, both in terms of quantity and structure. The repeated survey after five years reveals a modest increase in IT graduates, accompanied by fluctuating enrolment numbers and high drop-out rates. While IT training programmes in adult education, such as bootcamp schools, have gained popularity recently, their mere presence is insufficient to address the IT skills shortage meaningfully—especially given that 72% of jobs require a tertiary IT qualification (30% of which necessitate a master's degree). In response to the significant labour shortage, employers are either compelled to hire staff with lower qualifications than required or to wait for anticipated improvements.

According to the research, different training systems (higher education, vocational education, OKJ, bootcamp training) are expected to introduce around 18,000 new professionals into the labour market over the next two years. However, this number falls short of meeting the rapidly growing market needs. In the next two years, the

[7] https://programozdajovod.hu/informatikai-kutatas

market could realistically recruit 34,000 digital professionals based on current labour market conditions, and potentially 44,000 if the right quantity and quality of professionals are available. Given current output levels, IT training is unable to keep pace with this growth, potentially widening the gap between market demand and training output to 15,000-26,000 in two years.

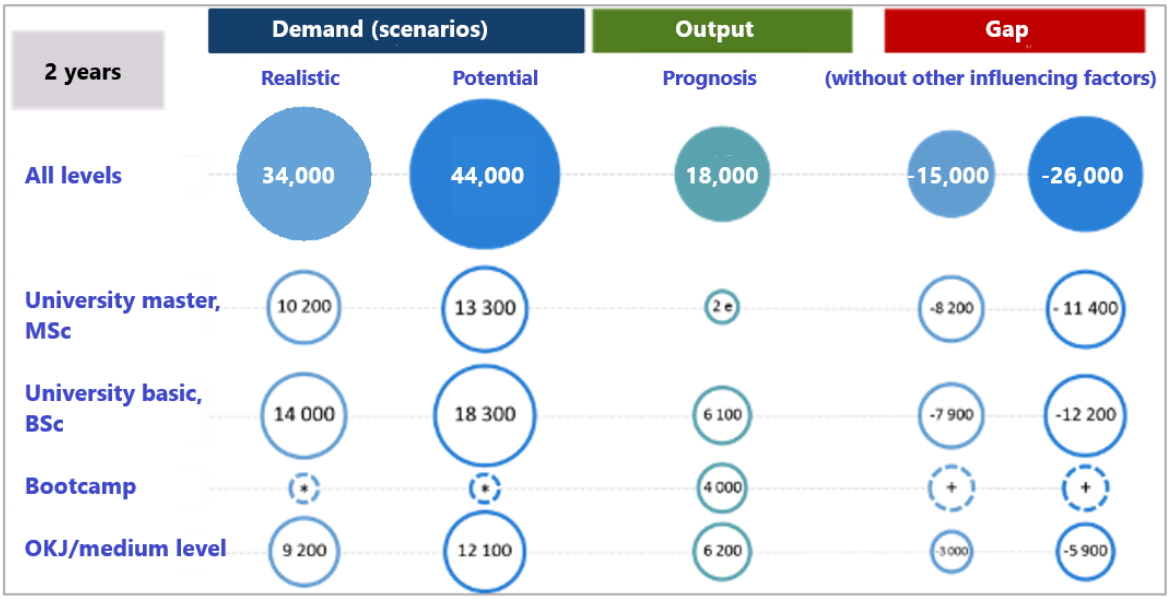
1. figure: Realistic and potential scenarios for the evolution of the IT skills shortage



Source: Labour market research carried out under the GINOP 3.1.1. project

The graph above also illustrates the disparity between supply and demand, segmented by educational attainment. It is anticipated that in two years, the shortfall could exceed 10,000 for both bachelor's and master's degrees. (The model forecasting training output is based on an analysis of training data from the past seven years, and thus does not account for any anticipated surge in training activities.)

Figure 2: Difference between labour market demand and training output



Source: Labour market research carried out under the GINOP 3.1.1. project

In addition to issues with education, other factors contribute to the shortage of IT professionals: 26% of surveyed IT workers have contemplated leaving their careers, primarily due to low wages; approximately one-third of those surveyed would consider working abroad if presented with a good opportunity.

2.1.4. Global competition for professionals

Increasingly, people are finding lucrative job opportunities abroad due to the global nature of the IT labour shortage. Before the COVID-19 pandemic, domestic employers—particularly large international firms and major local companies—attempted to address the IT skills gap by significantly raising wages. However, this approach offers only a temporary fix, as it does not substitute for proper worker training and often leads to a loss of skilled labour from less competitive domestic micro, small, and medium-sized enterprises.

Moreover, competition for skilled workers is intensifying not just nationally, but across the EU and globally, with more countries facilitating the employment of foreign professionals (whether locally or remotely). Many countries are not only offering opportunities but also actively supporting digital nomads. Recent data indicates that at least ten European countries have introduced specific "nomad visas" or residency

permits for digital nomads[8], and two recent domestic measures also demonstrate a clear intention to attract digital nomads to our country.

The adoption of the Government Decree on facilitating the employment of foreign workers from outside the European Economic Area (EEA)[9] and the Government Decision on regulating the residence of digital nomads in Hungary will not[10], by themselves, alleviate the shortage of workers skilled in advanced digital technologies. However, the settlement of foreign digital nomads can serve as a signal to domestic workers and enhance Hungary's attractiveness to international start-ups.

An important consideration, unrelated to labour shortages but still significant, is that both the settlement of foreign professionals in Hungary and the presence of digital nomads (whether working for domestic or international clients/projects) aid in revitalising the tourism and hospitality sectors and contribute to the growth of the national economy. This is because the employment of digital professionals, often associated with high earnings, has a substantial multiplier effect on the economy.

2.1.5. Definition and delimitation

From an examination of international and national literature, as well as other online sources, we found that the definition of atypical forms of employment is highly varied, with no single conceptual framework universally accepted by all stakeholders in this field.

The complexity in defining these atypical employment types (such as teleworking) is likely exacerbated by their diverse forms and the various attributes associated with them (e.g., workplace, employment type, working hours, remuneration, etc.), which can influence how the concept is described.

At the top of the conceptual hierarchy of atypical employment forms is clearly remote work[11]. This definition should be further divided into two primary aspects: workplace and working hours, as these factors most clearly differentiate the sometimes overlapping concepts. Based on these considerations, in this study, the following definitions are used:

[8] https://www.explorewithlora.com/europe-digital-nomad-visas/
[9] Government Decree 407/2021 (8 July)
[10] Government Decision 1516/2021 (29 July)
[11] Of course, there are other forms of atypical employment (e.g. contract work, part-time employment, etc.), but these are not relevant for the present study.

Remote work

A form of non-traditional work where the employee (whether salaried or self-employed) performs their duties away from the employer's premises, utilising digital tools and services. Employees can work remotely either part-time or full-time. Those who work entirely remotely do not need to visit the office at all, while part-time remote workers are required to be present in the office occasionally, typically a few times a month. Part-time remote workers should ideally live near the office to facilitate easier commuting, whereas fully remote workers can operate from anywhere in the world.

Flexible working hours/telecommuting

A form of employment where the employee works using digital tools and services (hence the term telecommuting), spending only a limited portion of their working time on the employer's premises, as agreed upon with the employer, and working remotely for the remainder of the week.

Working from home (home office)

A type of non-traditional work where the employee performs their tasks from home, using digital tools and services. This arrangement typically occurs during standard office hours.

Flexible remote working

An unconventional form of employment where the employee uses digital tools and services and is not bound to a specific location, allowing them to work from anywhere. The work is conducted during traditional office hours.

Flexing

This refers to a work arrangement where the employee is not required to adhere to the conventional 9-hour workday. It is commonly used by teams working across different time zones. However, this does not necessarily imply teleworking; flexitime can also apply to in-office work with varying schedules. The advantage is that the employee has the flexibility to choose their working hours.

Digital nomad

A specific form of employment where workers in suitable roles can perform their duties from any location in the world, thanks to digital tools and internet services. The concept

of nomadism implies that the workplace can change frequently—such as a café, library, co-working space, or beach. Digital nomads organise their own working hours and often use their free time to explore the region where they are working.

2.1.6. The aim of the research

The research aims to investigate the prevalence of teleworking and digital nomadism among IT professionals in Hungary and its impact on the IT labour market, particularly focusing on the home office practices adopted by employers following the COVID-19 pandemic. In the primary data collection, we sought to explore the extent to which the domestic labour market is threatened by the high availability of work from within the country to foreign contractors.

2.2. Main research questions

The preliminary phase of the research investigates how widely the practice of working as a digital nomad has been adopted by IT professionals internationally, through an analysis of national and international literature and previous studies. This includes:

- the motivations and factors influencing IT professionals' choices regarding atypical forms of employment;
- the categorisation of non-traditional employment types, particularly those not requiring physical presence at a workplace;
- which countries are particularly characterised by the employment of digital nomads;
- employers' experiences (both professional and employment-related) in hiring digital nomads;
- the countries that offer particularly attractive relocation conditions for digital nomads and their methods for attracting them;
- identifying international best practices and assessing which could be feasibly implemented domestically.

The quantitative research will examine the attitudes and practices of IT professionals in Hungary regarding atypical and remote work, with a focus on evaluating the risks associated with working abroad (even virtually, i.e., without leaving their familiar working environment). We want to know the perceptions, attitudes, motivations and opinions of the IT professionals surveyed on the following topics:

- **Perceptions of IT labour shortages:** How aware are they of the IT labour shortage phenomenon? How do they feel about it? To what extent do they see it as a problem for their employers and the digital economy as a whole? What do they identify as the main causes of IT labour shortages?
- **Attitudes towards teleworking and digital nomadism:** Do you typically work from the office or from home? Do you already consider yourself a digital nomad? What are your views on atypical forms of work in general and digital nomadism in particular? How aware are you of international trends in this area?
- **Personal plans and motivations:** How much time have you spent working from home, and did you enjoy it? If given the choice, would you prefer to work in an office, telework, or as a digital nomad? Would you work for a foreign company from home or a domestic company from abroad? What reasons or conditions would lead you to choose to work as a digital nomad, and conversely, why would you not choose this form of employment?
- **suggestions for solutions**: What measures would you propose to address the digital skills shortage in the country? Who should tackle this problem? Where should efforts begin? What actions should be taken in higher education, vocational education and training, adult education, and public education?

2.3. Hypotheses of the research

H1: The adoption of unconventional employment models, particularly working as a digital nomad, is gaining popularity among IT professionals around the globe;

H2: An increasing number of both international and local companies are now actively seeking to hire workers from abroad as digital nomads or remote employees;

H4: The COVID-19 lockdowns have expedited this trend, enabling individuals who previously could only envision working in a traditional office setting to embrace digital nomadism;

H5: Additionally, more countries are aiming to attract digital nomads as potential (temporary or permanent) relocation destinations, recognising them as high-earning, high-spending workers who can help address local labour shortages;

H6: Working as a digital nomad (or simply telecommuting from abroad) is increasingly appealing to domestic IT professionals;

H7: Although they recognise the severity of the IT and digital skills shortage, it does not significantly influence their personal career choices;

H8: The primary motivation for working abroad is higher earnings, but opportunities for professional growth are also a key factor, especially for younger professionals;

H9: There is a genuine concern that more Hungarian IT professionals are seeking opportunities abroad, whether through relocation or remote work;

H10: If given the option, they would prefer to work for a domestic company from within Hungary while telecommuting;

H11: To remain competitive in the global market for skilled IT professionals, Hungarian companies will need the government to make it advantageous (through tax incentives and other measures) for both local and international digital nomads to work in Hungary.

3. Methodology

The study was prepared using the following methodological tools:

c) **Review of International and National Literature:** This involved analyzing both international and national sources to create a comprehensive situation analysis chapter, including international comparisons.

d) **Primary Research:** Conducted to refine the information gathered from secondary sources and to collect any missing data, ensuring a thorough understanding of the topic.

3.1. Literature background and research history

In this project, we have mainly processed the following secondary sources, statistical databases:

- Research by **international and domestic consultancies and analytical institutes**;
- **CSO**, business statistics;
- **Program your future!** research.

A detailed list of the literature, processed in a structured way and according to a common set of criteria, is provided in the Bibliography.

3.2. Primary research

The primary quantitative research was carried out along the following parameters.

3.2.1. Sample size

Total: 622 people (the original target was 1,000)

The sample size for the questionnaire survey was decreased from the initially intended 1,000 to 622 participants, with the Client's approval, primarily due to reasons beyond the control of the Office of Education (OH) and Századvég Foundation. These reasons include:

- the completion rate of questionnaires can vary among the target population in any survey;

- in this instance, two similar questionnaires (one on ICT career models and another on digital nomadic labour market trends) were administered simultaneously to the same group, which may have led to respondent fatigue and reduced participation rates;
- it is a common phenomenon that respondents, particularly those in busy, active target groups, are increasingly willing to complete shorter questionnaires;
- there is a trend of growing numbers of market research projects supported by questionnaires. Students, small companies, and individuals—who are not researchers or market researchers—are launching more questionnaires, leading to saturation and an increase in the number of questionnaires per person;
- weather conditions and leisure time trends also influence respondents' willingness to complete questionnaires. The lengthening of the ministerial approval process delayed the questionnaire to the beginning of the summer period, contributing to the low response rate, as this is the most active work period before the summer holiday;
- the database maintained by the OH is not primarily intended for market research purposes, and many other factors may influence the responses of its members;

Due to these factors, the number of respondents specified in the sampling design was not achievable. However, from a methodological perspective, a sample population of at least 500 respondents can be representative compared to the population base (gender, type of municipality, county of residence, and age). Thus, a smaller sample does not affect the quality of the analysis or the expected results.

3.2.2. Target group

The research focused on individuals with IT qualifications. Given the low national prevalence rate (1-2%) of this population, traditional selection methods would have been time-consuming to find a sufficient number of respondents. Therefore, following the Client's guidelines, IT graduates listed in the Graduate Career Tracking System (DPR) and the Higher Education Information System (HIS) managed by OH constituted the survey population. The survey is representative of the relevant population.

The DPR and HIS databases encompass a total of 20,551 IT graduates (including those from tertiary IT studies since 2006). According to server logs, less than 4% of this population did not receive the questionnaire (e.g., due to email address changes), reaching approximately 19,800 potential IT-qualified respondents.

The DPR system considers individuals with the following qualifications at the following levels as IT qualified:

Higher education vocational training

- business Informatics
- computer engineer
- computer programmer

Bachelor (BA/BSc/BProf)

- computer engineer
- business Informatics
- computer programmer
- plant computer engineer

Master's degree (MA/MSc)

- business Informatics
- computer engineer
- computer programmer
- medical biotechnology
- autonomous systems informatics
- image processing and machine vision
- business data analysis

3.2.3. Type of research

Computer Assisted Web Interviewing (CAWI) is an efficient research method for specific target groups. During the survey, respondents interact with the questionnaire on a website accessible via computer, mobile phone, or tablet. Once they complete

the survey, their responses are instantly transmitted to the research company's database for immediate analysis. Respondents could answer questions at home, at work, while traveling, or during any waiting periods, even if interrupted. This method offers several advantages, including the ability to handle questionnaires with complex logical jumps easily, the quick processing of results, and the integration of auxiliary materials (audio, images, video) to gather data.

3.2.4. Correction for sampling bias (weighting)

Non-response can skew the sample population and affect the data sample's representativeness, so the raw data sample results were weighted based on specific criteria. An iterative weighting procedure, also known as raking, was employed for this purpose. This method, the most commonly used for correcting raw data, involves selecting variables with known population distributions. These distributions are used to adjust case weights to align the sample distribution with population proportions. The procedure generates optimal weights by first adjusting proportions according to one criterion (e.g., gender), then adjusting for another criterion (e.g., education). If any step introduces a bias (e.g., the gender ratio changes after adjusting for education), the weights are readjusted. This iterative process continues until the sample characteristics match the base population's characteristics.

Five variables were used to weight the data:

- Gender (DPR, FIR)
- Age (DPR, FIR)
- Qualifications (DPR, FIR)
- County
- Type of settlement

Table 2: Number (headcount) and share (%) of people working in ICT jobs at end of 2019

	Number	Rate
2142 Software developer	17,551	19%
7341 Electrical machinery and apparatus mechanics and repairers	9,636	11%
2152 Administrator	8095	9%
2122 Electrical engineer (electronics engineer)	5983	7%
2159 Other database and network analysts and operators	5560	6%

2141 Systems analyst (IT)	5103	6%
3142 Information and communication systems user support technician	4902	5%
2149 Other software and application developers and analysts	4369	5%
3141 Information and communication systems technician	4284	5%
7342 Information and telecommunications equipment technician and repairer	3888	4%
1322 Head of unit in charge of information technology and telecommunications activities	3673	4%
2121 Electrical engineer (energy engineer)	2971	3%
3143 Computer network and systems technician	2940	3%
2144 Application programmer	2461	3%
2153 Computer network analyst, operator	2229	2%
2123 Telecommunications engineer	1959	2%
2143 Network and multimedia developer	1343	1%
2151 Database designer and operator	1278	1%
3145 Broadcasting and audiovisual technician	1027	1%
3146 Telecommunications technician	778	1%
3144 Web systems (network) technician	666	1%

Questionnaire length: 25 questions, completion time approx. 20 minutes

4. Summary of results from the secondary literature

Remote work has experienced a gradual but consistent rise globally over the past 5-10 years, with a notable surge in remote workers following the pandemic. In March 2020, the COVID-19 pandemic led to an extraordinary and rapid shift in the labour market, occurring virtually overnight.

The literature reviewed in the secondary sources section provides time-series data on

- the evolution of teleworking over the past decade, the impact of the pandemic on teleworking,
- and the implications of over two years of remote working for the future.

Although remote working (including its variant, digital nomadism) existed as an atypical form of employment before the pandemic, restrictive measures caused a significant shift towards this mode of work across nearly all affected countries and sectors.

Overall, various studies and research reports present similar conclusions about remote working (home office, hybrid, fully remote, digital nomadism), and the following findings stand out regarding global trends for IT workers:

- teleworking (and digital nomadism as a form of teleworking) has gained unprecedented popularity, particularly during the pandemic period;
- an important finding from research on the impact of teleworking is that the question *"Where should workers work?"* is no longer relevant for the future of work. Instead, the more pertinent question is *"What enables workers to realise their potential and perform their job in a healthy and efficient manner, regardless of where they do it?"*
- labour market analyses for Generation Z consistently show that the ability to work remotely is among the top five criteria for job selection for the youngest workers;
- teleworking did not negatively affect productivity; however, some research suggests that it may be associated with longer working hours and more frequent evening and weekend work;
- managers need to fundamentally rethink recruitment and retention in a world where physical location is no longer a primary concern;
- for those who became digital nomads due to the pandemic, the long-term goal is not necessarily to maintain this lifestyle: 34% of respondents said they only

plan to work as digital nomads for the next year, while 53% stated they would like to continue for at most 2-3 years. Conversely, 90% of those who were digital nomads before the pandemic wish to continue working this way;

- a survey of digital nomads[12] found that 90% of respondents were satisfied with their lifestyle and 76% were satisfied with their salary, though they did not necessarily plan to sustain this way of life long term;
- The phenomenon of a forced but massive shift to remote working has long-term consequences for both employers and workers:
    - for employers, it opens up recruitment opportunities of unprecedented scale and scope, as the labour supply is no longer confined to national borders but is now virtually global;
    - for workers, a long-held expectation is being fulfilled as companies no longer see teleworking as an undesirable practice to be avoided but as a form of work that is widely accepted;
    - remote working has become a reality in sectors (e.g., agriculture, banking, and insurance) and jobs (e.g., account manager, sales manager) that were not feasible before the pandemic;
    - however, it also poses serious risks for employers: the pandemic seems to be removing barriers to the permanent relocation of skilled and experienced workers abroad, potentially exacerbating skills shortages and reducing the competitiveness of certain sectors;
- the economy is increasingly service-oriented, with the emergence of service roles and jobs in primarily non-service sectors, which can typically be performed remotely;
- in 2020, executives reported an average 5% increase in IT spending to address the pandemic crisis, primarily due to improvements in cloud infrastructure, strengthening cyber defences, and supporting remote working (e.g., new devices, expanding home internet service, IT security upgrades, etc.);
- the shift to home networks and the sudden strain on infrastructures have also exponentially increased the number of cyberattacks. Since the pre-crisis period, 41% of managers have encountered cybersecurity incidents, highlighting the need for prioritizing investment in cyber technology.

[12] Source: MBO Partners: The Rise of the Digital Nomad https://s29814.pcdn.co/wp-content/uploads/2021/05/MBO-Partners-Digital-Nomad-Report-2020.pdf

Digital nomadism as a potential form of remote working is directly addressed in few surveys, and few studies differentiate between various sub-categories of teleworking (home office, hybrid working, digital nomadic working, etc.). Simultaneously, surveys that specifically address the digital nomadic lifestyle (typically in the US labour market) indicate that its popularity - particularly among young workers and within certain well-defined professions (such as IT roles) - is steadily increasing, influenced by the impact of the pandemic.

In reviewing the literature and statistics on teleworking, we have endeavoured to present trends in teleworking globally, in Europe, and in Hungary through time-series data, thereby illustrating both the impact of the pandemic and the dynamics of organic growth in teleworking, independent of the epidemic.

The spread of teleworking globally

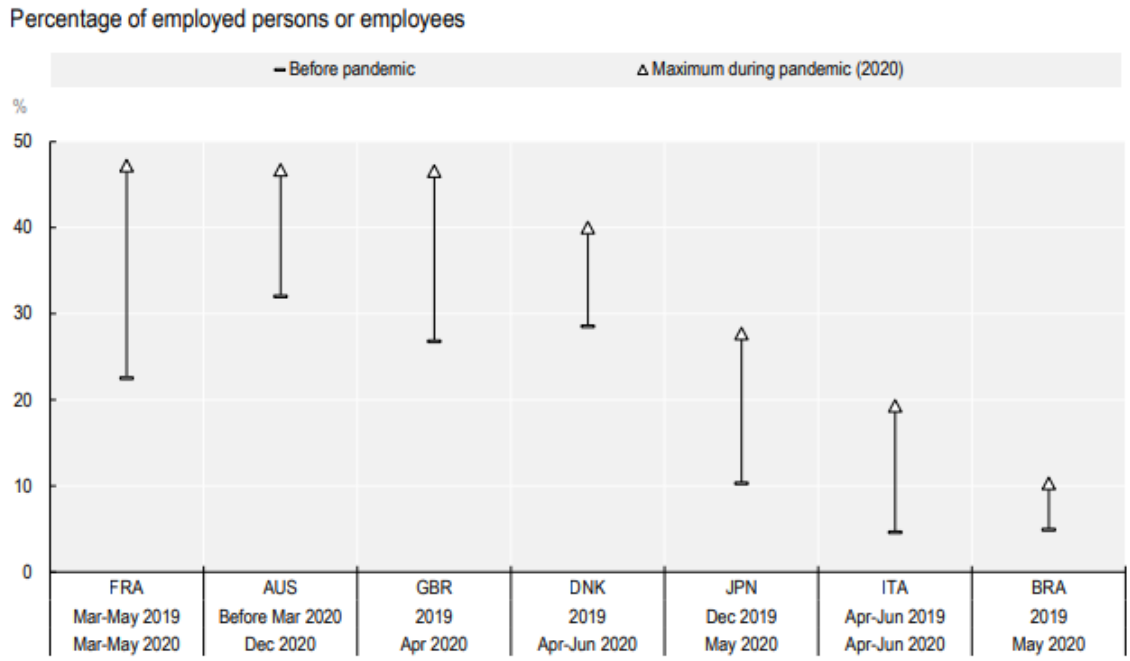
The OECD's 2020 global survey[13] essentially shows the changes in the labour market in the first wave of the epidemic in the countries covered compared to 2019.

According to the survey, which is based on data from national statistical offices, teleworking in France more than doubled (increasing by 25 percentage points) from the previous year. In the UK, it rose by 20 percentage points to 1.8 times its pre-pandemic level as of April 2020, while in Australia, teleworking in December 2020 was 1.5 times higher than its pre-March 2020 level.

Although Japan did not implement a nationwide lockdown in 2020 during the pandemic, teleworking still grew from 10% in December 2019 to 28% in May 2020. In Italy, the proportion of teleworking in the second quarter of 2020 was over four times the pre-global warming level (in line with national figures), with a yearly increase of 15 percentage points. In Brazil, teleworking grew from 5% in 2019 to over 10% by May 2020.

[13] OECD, https://www.oecd.org/coronavirus/policy-responses/teleworking-in-the-covid-19-pandemic-trends-and-prospects-72a416b6/

Figure 2: Increase in the share of teleworkers between 2019 and 2020 (% of employees)



Source: OECD

A survey of US workers conducted prior to COVID (ACS[14]), showed that teleworking in the US increased by an average of 0.16% per year over the past decade, reaching 5.7% of workers.

In early 2020, as the COVID-19 pandemic began and curfew restrictions were implemented, the proportion of teleworkers surged significantly above the annual average. By May 2020, over 40% of US employees were working remotely, more than seven times the proportion who had teleworked in 2019. However, it is important to note that while many workers in telework-compatible roles managed to transition to remote work, a significant number of workers in roles unsuitable for teleworking (such as those in food service and hospitality) faced job losses, either temporarily or permanently. Thus, the increase in teleworking was due not only to the expansion of remote work but also to a reduction in the overall workforce.

By October 2020, the percentage of US remote workers had slightly decreased to 27%, reflecting a drop in COVID cases and the reintegration of previously unemployed workers into the labour market. During the second wave of the pandemic, from October

[14] Source : https://www.rdniehaus.com/trends-in-remote-work-will-we-still-work-from-home-after-the-pandemic/

to December 2020, the proportion of remote workers increased again by a few percentage points but subsequently declined once more.

Figure 3: Percentage of teleworkers in the United States and number of COVID infections observed[15] (November 2018 to June 2021, % of employees)

Source: American Community Survey (ACS), Bureau of Labor Statistics (BLS); Center for Disease and Control and Prevention (CDC), Robert D. Niehaus Inc.

The spread of teleworking in Europe

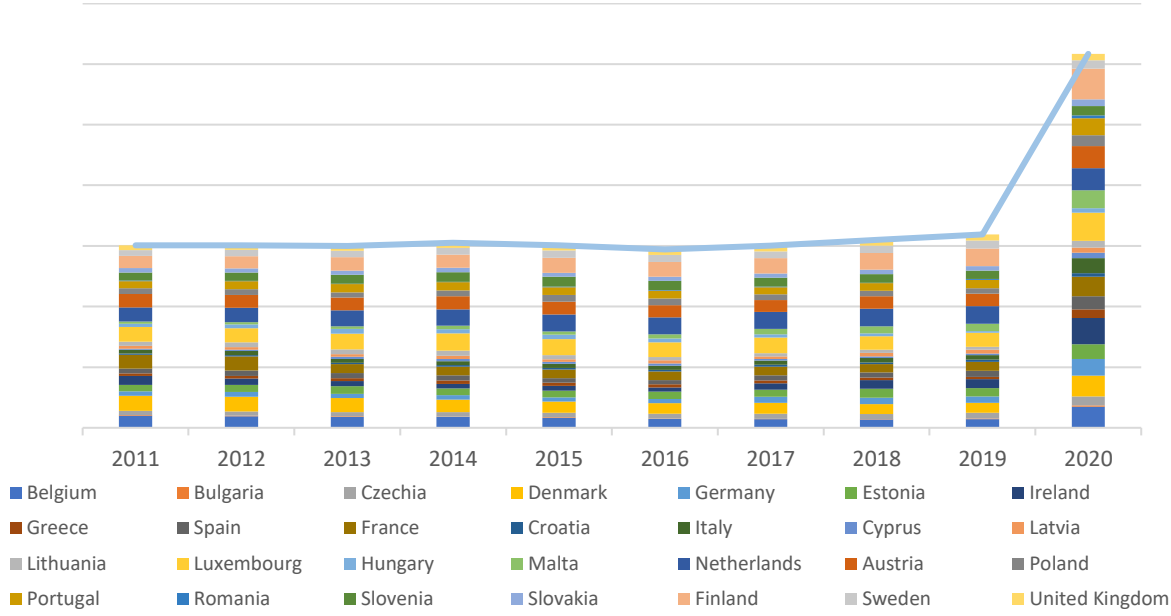
According to Eurostat data[16][17], 5.5% of employees aged 15-74 in the European Union worked regularly from home in 2019. This rate has remained stable at around 5% over the last decade (in 2011, the average share of employees working regularly from home was 5.4% in the 28 EU Member States). In 2020, however, the pandemic brought the rate down to 12.2%.

[15] Comment: Monthly data for 2018 and 2019 are based on the ACS. Since the survey is conducted annually, the estimated rate for each month of the year remains constant. In contrast, data from May 2020 to June 2021 are sourced from BLS records, which began monitoring the effects of COVID-19 on teleworking starting in May 2020. To align the two datasets, data from January to March 2020 have been interpolated using a constant monthly growth rate. Despite some notable differences in how the ACS and BLS define telework, the datasets are comparable for evaluating overall trends. Figure 2 presents a similar data series for teleworking, showing the proportion of areas where curfews were implemented compared to the total population to curb the spread of the virus.

[16] How usual is it to work from home? - Products Eurostat News - Eurostat (europa.eu)

[17] https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfsa_ehomp

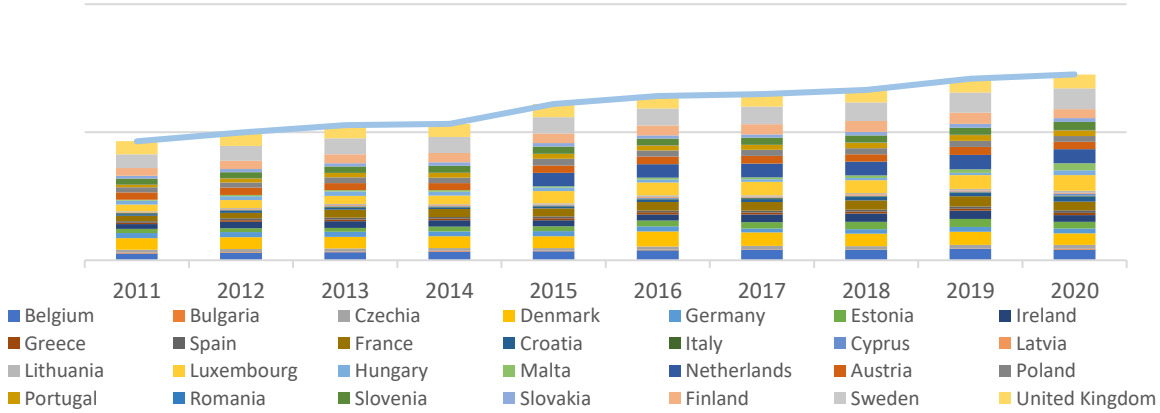
Figure 4: Change in the share of employees regularly working remotely between 2011 and 2020 (EU 28, % of employees)



Source: Eurostat, Századvég edit

The proportion of employees working remotely on a part-time basis grew modestly between 2011 and 2019, rising from 8.0% in 2011 to 10.7% in 2019. However, the pandemic's effect on this group was minimal, with only 11% working remotely in 2020.

Figure 5: Change in the share of employees working occasionally from a distance between 2011 and 2020 (EU 28, % of employees)

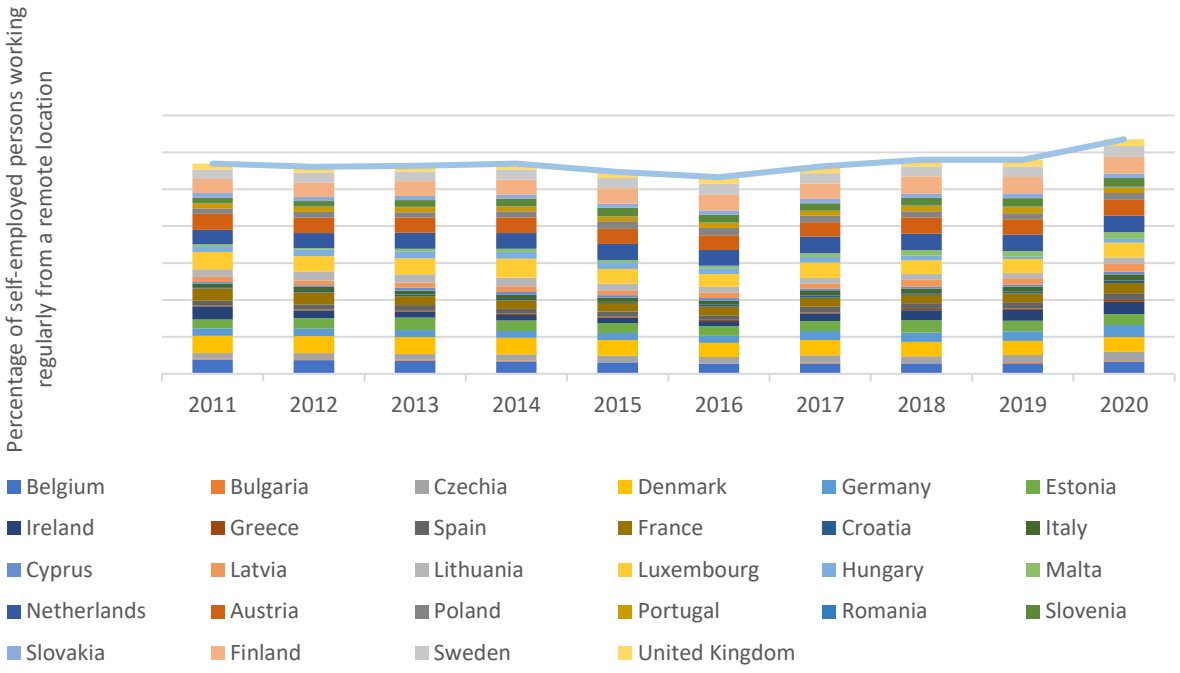


Source: Eurostat, Századvég edit

Over the past decade, the share of self-employed people who reported working regularly remotely has been consistently higher than the share of employees who regularly telework: 17.4% of those who reported working remotely in 2011, compared to 19.5% in 2019. As a result of the pandemic, the share of self-employed workers who

regularly work remotely rose by 2.8 percentage points in 2020 (roughly the same increase between 2011 and 2019) to 22.3%.

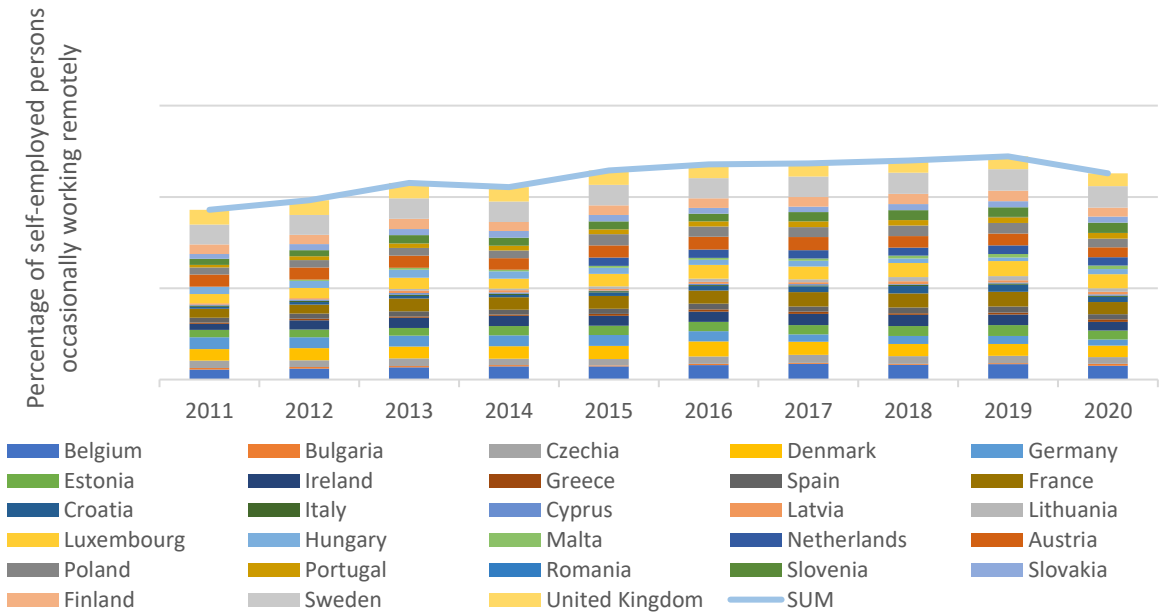
Figure 6: Change in the share of self-employed persons working regularly from a distance between 2011 and 2020 (EU 28, % of employed persons)



Source: Eurostat, Századvég edit

The proportion of occasional remote workers who are self-employed is lower than the proportion of regular remote freelancers, but there is a steady upward trend: in 2011, 12.6% worked remotely, but in 2019, 16% did the same. In their case, the pandemic has brought an interesting change, as the proportion of self-employed people who occasionally work remotely has fallen compared to previous years. This phenomenon may be explained by the fact that the self-employed started to work entirely remotely as a result of the pandemic.

Figure 7: Change in the share of self-employed persons working remotely on an occasional basis between 2011 and 2020 (EU 28, % of employed)



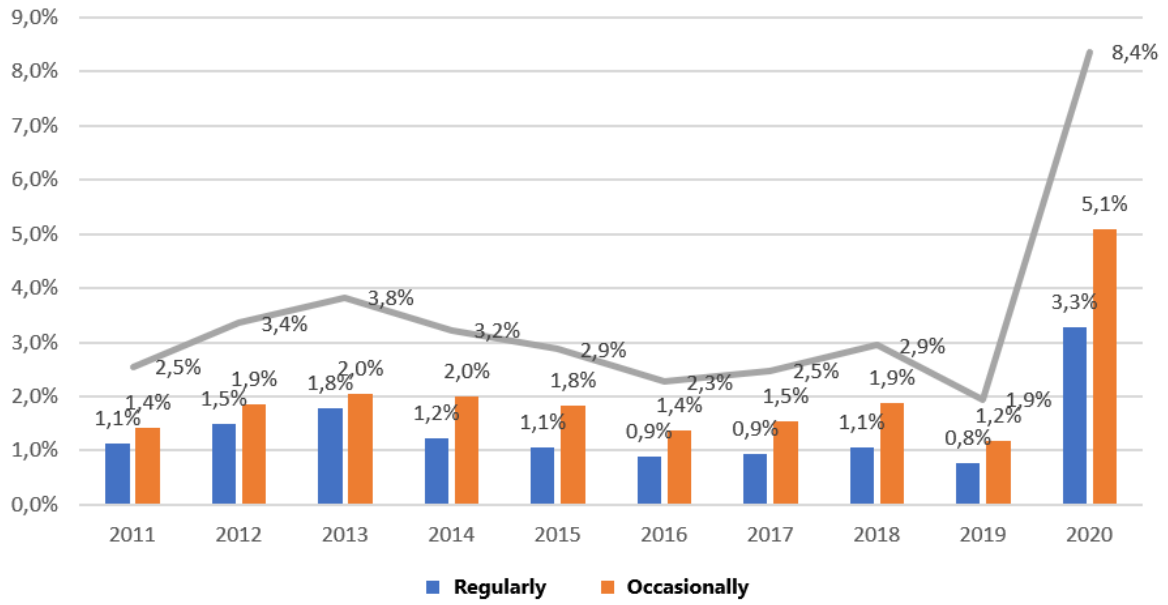
Source: Eurostat, Századvég edit

The spread of teleworking in Hungary

The epidemic has also increased the importance of teleworking in the domestic labour market. Examining the period from 2011 to 2019, the teleworking data for domestic working-age individuals (ages 15-74) show significantly lower figures compared to the EU average, both for regular and occasional remote workers. The share of employees regularly teleworking ranged from 0.5% to 1% of all employees between 2011 and 2019, while the EU average for employees regularly teleworking was around 5% over the period. Due to the pandemic, this rate increased to 2.6% (compared to the EU rate of 12.2%).

When considering Hungarian workers of all employment statuses, the share of regular remote workers between 2011 and 2019 fluctuated between 0.8% and 1.8%, while the share of occasional teleworkers was higher, ranging from 1.4% to 2%, reflecting the EU trend during the same period. As a result of the pandemic, 3.3% of Hungarian workers switched to regular teleworking and 5.1% to occasional.

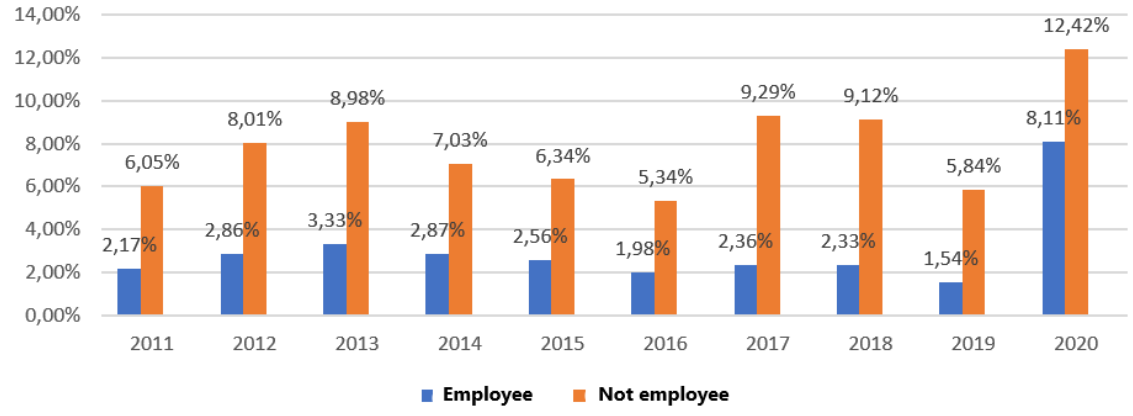
Figure 8: Share of Hungarian employees working regularly or occasionally from a distance (% of total employees)



Source: CSO, Századvég edited and supplemented

Considering workers irrespective of the frequency of teleworking and focusing on their employment status, it is evident that self-employed individuals are more inclined to opt for teleworking. The EU average for self-employed workers regularly engaging in telework was between 17-19% before the pandemic, whereas in Hungary, this figure ranged from 6-9% during the same period.

Figure 9: Share of teleworkers and self-employed in the total workforce (2011-2020)

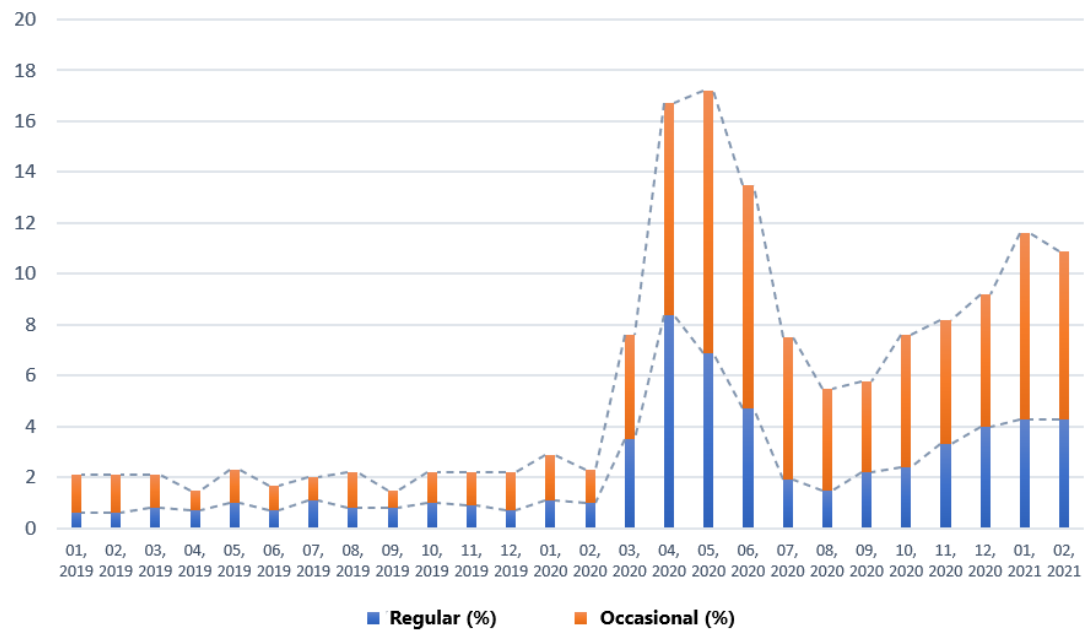


Source: CSO, Századvég edited and supplemented

According to CSO's periodic survey[18], the proportion of workers who have switched to teleworking as a result of the restrictive measures has increased significantly since March 2020. By February, 2020, the number of Hungarian workers working in home office was estimated at around 100,000 (2% of total employment). The number of people so employed tripled in March 2020 with the introduction of the restrictive measures, then doubled in April, and then increased eightfold at its peak in May. The number of teleworkers (as a share of total employment) reached 17% at its peak in May 2020, roughly 760,000.

The CSO also monitored the second wave of the epidemic, but the wave that started in autumn 2020 did not result in a spike similar to the one in spring. At the end of the second wave, but threatening the third wave, the data show a further increase in the share of people working from home, but nowhere near the rates seen in the first wave.

Figure 10: Monthly evolution of the share of regular and occasional teleworkers, 2019-2020



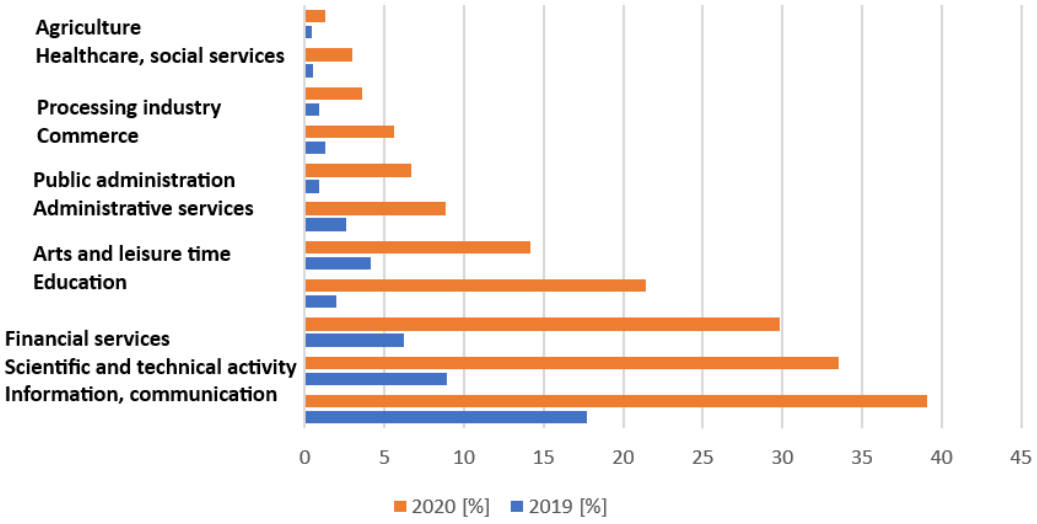
Source: CSO, Századvég edited and supplemented

The rate of shift to remote working in response to the pandemic varied across economic sectors. In the ICT sector, 39% of workers worked remotely in 2020, up 22 percentage points compared to 2019 (17%). It is important to note, however, that the ICT sector was also the most prevalent in the pre-pandemic period for teleworking. There was also a large shift in the scientific and technical and financial services

[18] CSO, https://www.ksh.hu/docs/hun/xftp/idoszaki/koronavirus-tavmunka/index.html

sectors, with the share of remote workers increasing from 6-8% to between 29-32% in both sectors.

Figure 11: Share of teleworkers by industry (2019-2020, % of total employment)

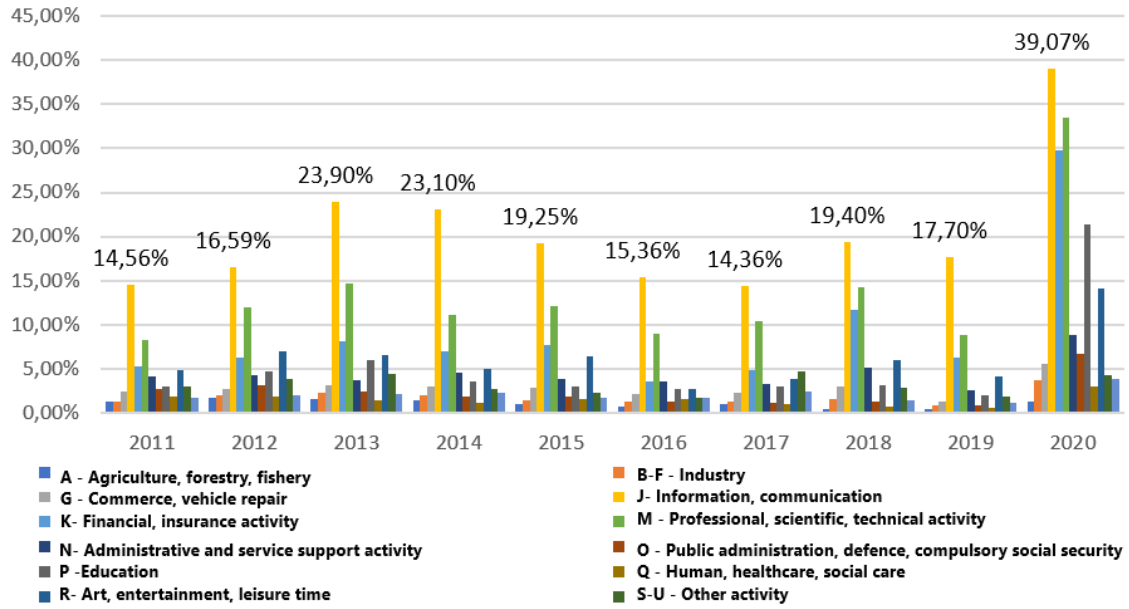


Source: CSO, Századvég edit

Time-series data show that the ICT sector has consistently had the highest share of remote workers since 2011.

Given the trend in the ICT sector, it's crucial to recognize that the rise of digital nomadism presents both opportunities and risks for employers. If a significant number of Hungarian workers seize this chance to work from abroad, it could exacerbate the shortage of skilled labour in Hungary. This, in turn, could negatively impact not just the ICT sector's competitiveness but also affect other industries and the national economy as a whole.

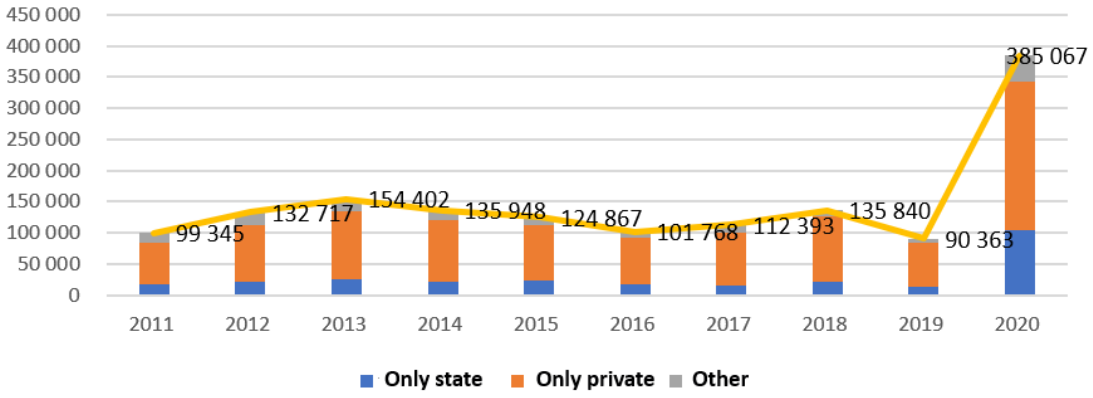
Figure 12: Share of teleworkers by sector (2011-2020)



Source: CSO, Századvég edit

The most common type of workplace ownership is clearly in the competitive sector, where remote working is most common.

Figure 13: Number of teleworkers in Hungary by type of employer ownership (2011-2020, % of total employment)



Source: CSO, Századvég edit

Expected trends in the expansion of teleworking

A survey on the future of teleworking[19] suggests that, as with the economic recovery, there are several possible scenarios for possible trends in the expansion of teleworking: "pipe" shaped upslope, "k-shaped" or "w-shaped" slower upslope, or inverted "u-shaped" downslope. The study analysed these four possible scenarios:

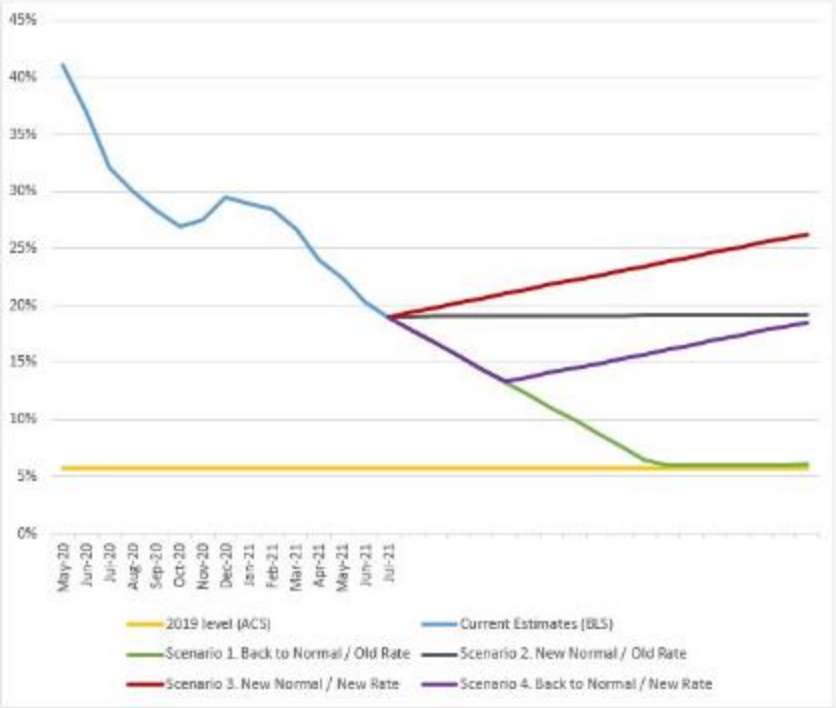
- the proportion of remote workers continues to fall back to "normal", i.e. pre-pandemic levels;
- while the proportion of remote workers is falling, it is rising to a higher "new normal" where flexible working is becoming the norm in some industries;
- the share of remote workers will increase at the same rate as before COVID, so a steady increase is expected;
- new technologies, economic and cultural changes imply higher growth rates in the post-epidemic period.

The cases primarily aim to highlight the divide identified by the US CEO survey: while 80% of CEOs intend to continue offering teleworking (either full-time or hybrid) to their employees post-pandemic, nearly a third are worried about the absence of a corporate culture that supports teleworking. This divide is anticipated to persist in the post-COVID era.

The following figure demonstrates the four possible scenarios using the United States as an example, with the curves after June 2021 depicting the potential future trends in the proportion of US workers working remotely.

[19] https://www.rdniehaus.com/trends-in-remote-work-will-we-still-work-from-home-after-the-pandemic/

Figure 14: Four possible outcomes for teleworking in the future



Source: Robert D. Niehaus Inc.

1. **Return to the old norm with the old growth rate**

The green line represents the scenario where the share of teleworking starts to decrease as the restrictions due to the epidemic are eased. This trend would continue until telework rates return to pre-COVID rates based on ACS data. However, with workers basically enjoying the benefits of teleworking and productivity still high, companies may find it difficult to attract workers back to the office. Thus, this scenario is not considered likely.

2. **New norm with the old growth rate**

The grey line assumes that the share of teleworkers will continue to grow at the pre-COVID rate of 0.16% per year in the future. This scenario therefore takes into account those who prefer full teleworking and those who prefer partial hybrid working. In this case, a more flexible approach on the part of employers, with more freedom to choose where to work.

3. **New norm, new growth rate**

The red line envisions a scenario where teleworking becomes the new standard in specific industries and regions, such as the ICT sector in the San Francisco - Bay Area (Silicon Valley), leading to a much higher annual growth rate in the number of people

opting to telework compared to the pre-COVID period. However, since nearly a third of business leaders are worried about the insufficient or non-existent corporate culture supporting telework, a modest rise in the number of people working fully remotely and a more substantial increase in those working in a hybrid model is more probable.

4. **Return to the old norm with a new growth rate**

The purple line represents the most likely outcome. This scenario assumes that businesses will remain adaptable to accommodate the demand for teleworking during the pandemic years. Once the threat of COVID has subsided, the rate of teleworking will decrease (as employees in industries dependent on face-to-face interaction return to office settings). However, the pre-pandemic growth rate of teleworking will experience a slight increase and stabilize at a higher level, as companies that benefit from teleworking continue to utilize it.

Lasting changes in workers' needs

In the KPMG CIO survey[20] , 43% of IT executives surveyed said that by the end of 2020, 50% of their employees will still predominantly prefer the home office after the pandemic. According to a sectoral comparison of the survey, the IT sector (62%), services (55%) and telecoms (54%) are the most likely to choose the home office after the pandemic. Construction (15%), car manufacturing (26%) and health care (30%) are the least likely to retain the home-working pattern.

The pandemic has significantly transformed recruitment for adaptable companies. The rise of teleworking (including digital nomadism) has made the recruitment process easier, substantially expanding the talent pool available to employers. However, this shift presents a challenge for employers. Surveys indicate that the home office will remain a dominant feature post-pandemic and will be among the top five priorities for younger generations. Managers must fundamentally rethink their strategies for attracting and retaining employees in a world where physical location is no longer a primary consideration. Notably, 27% of remote workers are Generation Z, despite this age group comprising only 6% of the global workforce.

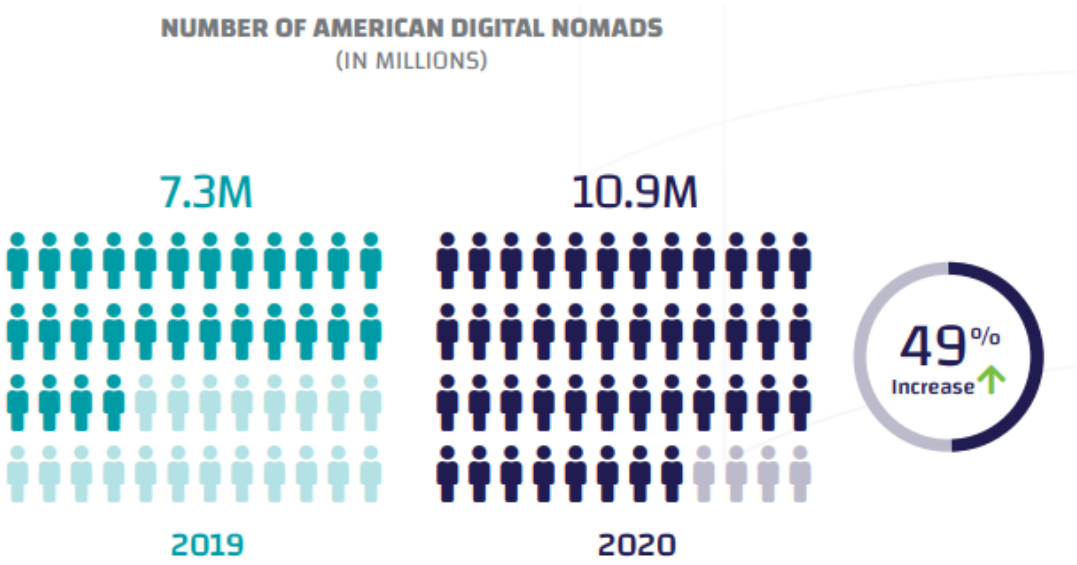
[20] https://assets.kpmg/content/dam/kpmg/xx/pdf/2020/10/harvey-nash-kpmg-cio-survey-2020.pdf

As remote working becomes more prevalent and travel restrictions lift, the appeal of working as a digital nomad is likely to persist. A study by a US market research firm[21] looks at the growth of digital nomads from two perspectives:

- Firstly, it considers how many individuals who were freelancers and remote workers before the pandemic transitioned to digital nomadism during the pandemic.
- Secondly, it examines the proportion of traditional workers (40 hours a week) who, having started teleworking due to the pandemic, choose to adopt a digital nomad lifestyle.

According to a survey published two years ago, 10.9 million US workers claimed to be digital nomads in 2020, a 49 percent increase from 2019.

Figure 15: The number of digital nomads in the US labour market

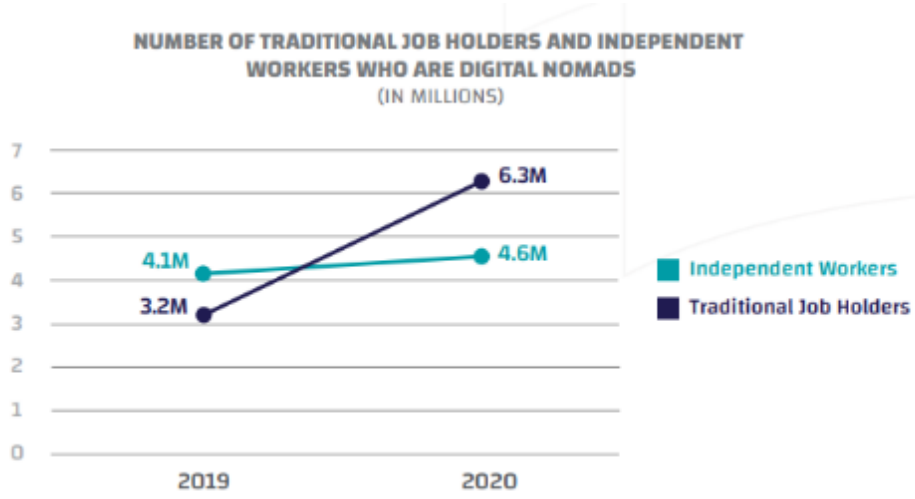


Source: MBO

According to the research, the number of self-employed digital nomads before the pandemic increased by 12% in 2020 (4.1 million in 2019, 4.6 million in 2020). For digital nomads working in traditional 40-hour jobs, there was a more significant increase (96%), with 6.3 million people working as digital nomads in 2020, up from 3.2 million in 2019.

[21] MBO survey: https://s29814.pcdn.co/wp-content/uploads/2021/05/MBO-Partners-Digital-Nomad-Report-2020.pdf

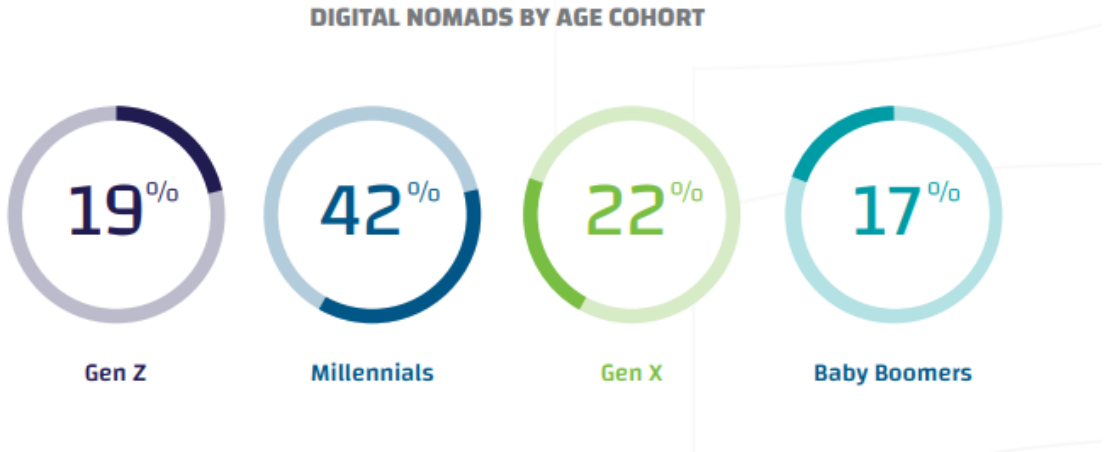
Figure 16: Change in the number of digital nomads (employed/self-employed) between 2019 and 2020



Source: MBO

According to the survey, 19% of digital nomads are Generation Z (18-24 year olds), 42% are Generation Y (25-39 year olds), 22% are Generation X (40-54 year olds) and 17% are Baby Boomers.

Figure 17: Distribution of digital nomads by age



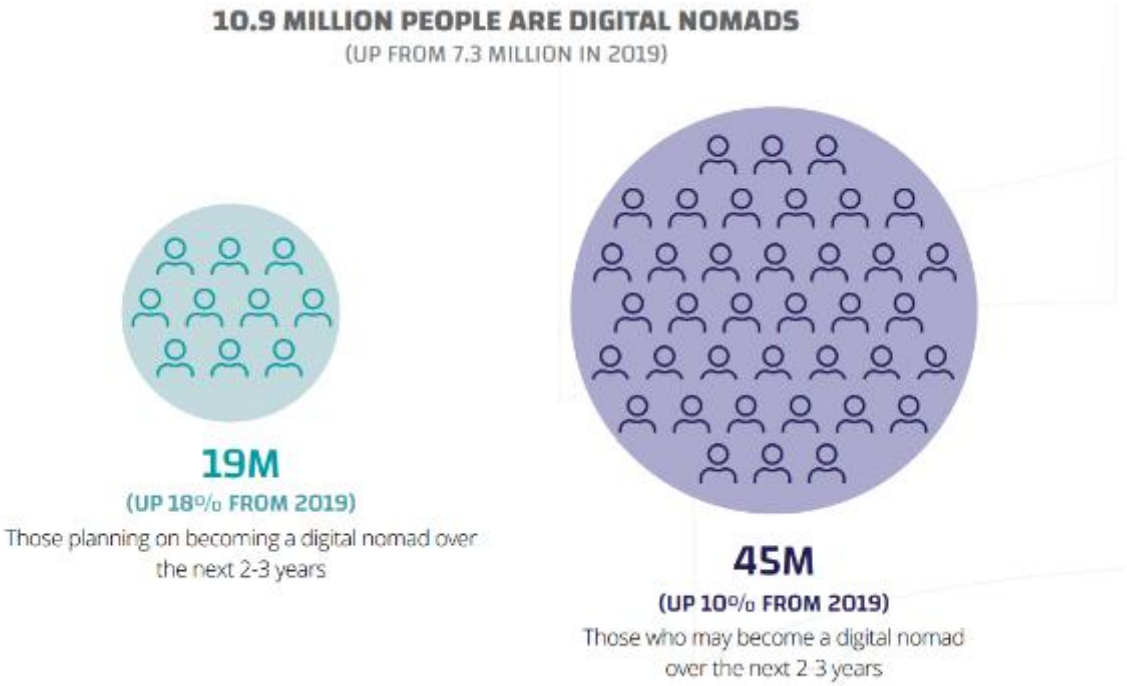
Source: MBO

Among those who **adopted the digital nomad lifestyle following the pandemic**, not everyone intends to maintain this way of life long-term: **34% of respondents indicated they plan to work as digital nomads for only the next year, while an additional 53% aim to continue for no more than 2-3** years. Conversely, **90% of individuals who were digital nomads before the pandemic wish to persist with this lifestyle.**

Interestingly, the survey revealed that while 90% of digital nomads were satisfied with their lifestyle and 76% were content with their salary, many did not intend to maintain this way of life long-term.

The survey also tracked the growing interest in the digital nomad lifestyle. Among those currently working in office settings, the interest in becoming digital nomads increased in 2020 compared to 2019.
In 2019, approximately 15.5 million people expressed plans to adopt a digital nomad lifestyle within the next 2-3 years, a number that rose to 19 million a year later—an 18 percentage point increase—due to the pandemic. Additionally, in 2019, about 40 million people indicated they were considering this lifestyle. The proportion of people who think this way increased by a smaller 10% to 45 million in 2020.

Figure 18: Change in the proportion of people interested in the digital nomad lifestyle



Source: MBO

General characteristics of digital nomads

Our research indicates that digital nomads are employed across a variety of sectors, with the most prevalent being IT (12%), education and training (11%), consultancy, coaching and research (11%), sales, marketing and PR (9%), and creative services (8%), with other sectors having relatively equal representation.

A global survey by US market research firm MBO[22] also looks at the location habits of digital nomads. In the pre-pandemic period, nomads most often spent 60-70 consecutive days in a foreign environment and then moved to a different location by air. The pandemic has led many people to switch to "van life", so that they can avoid the uncertainties of airport and tourism regulations. Airbnb's 2020 survey[23] shows that the most common form of booking among digital nomads is 28 days or slightly longer.

For digital nomads, the primary challenges include establishing local contacts (32%), obtaining a visa (23%), dealing with taxes and healthcare (22%), and finding accommodation (19%). Health insurance remains a sensitive issue depending on nationality. 56% of teleworkers would prefer company-sponsored health insurance to higher pay. These figures increased for respondents in the US and Canada, as well as for respondents aged 55 and over, as a result of the pandemic.

Destinations preferred by digital nomads

Remote, a worldwide labour market platform, continuously gathers and assesses the location preferences and evaluations of digital nomads based on feedback from job seekers and employers on its platform. The interface is regularly updated with information on how digital nomads (both employed and self-employed) rate cities or countries according to the seven criteria outlined below:

Table 3: 7 criteria that digital nomads use to choose a destination:

1.	**Infrastructure: based on broadband internet coverage and download speed**
2.	How attractive is the city - local attractions, culture, proximity to the sea, etc
3.	Public safety
4.	Quality of life
5.	Openness and tolerance and transparency in government
6.	Housing costs
7.	Incentives for digital nomads (financial and tax incentives, special residence permits, etc.)

Source: Remote

In the ranking, the top 10 destinations are located in 6 European countries and two cities in the Oceania region.

[22] Source: MBO Partners: The Rise of The Digital Nomad: https://s29814.pcdn.co/wp-content/uploads/2021/05/MBO-Partners-Digital-Nomad-Report-2020.pdf

[23] https://news.airbnb.com/work-from-anywhere-how-airbnb-guests-are-approaching-remote-working/

Figure 19: Cities most preferred by digital nomads

Source: Remote, Századvég edit

The research indicates that 44 countries and 24 US states currently have specific teleworking regulations designed to encourage digital nomads to move there. These regulations offer various incentives, including nomadic visas, tax advantages, housing and relocation support, and healthcare benefits. A summary of some of these incentive programmes is provided in the table below:

Table 4: Incentive programmes for digital nomads

Country/Location	Incentives for digital nomads
Ecuador	The country in South America has the lowest monthly earnings ($400) for a digital nomad visa.
Aruba	Digital nomads can live and work in Aruba for up to 90 days under the "One Happy Workstation" programme. This provides package deals and discounted rates on local accommodation. However, the programme is only available to citizens of certain countries, such as the United States, the United Kingdom and the Netherlands.
Antigua and Barbuda	To be eligible for the Local Digital Nomads programme, you must spend at least 30 days a year in the country and have an annual income of at least $100,000. In return, there is no

	personal income tax, capital gains tax, inheritance tax and a flat tax of $20,000 per year for the relocatees.
Belize	The programme here is aimed at people aged 45 and over. Those with the right qualifications receive a monthly allowance of $2,000 (or $24,000 per year), are not taxed on their earnings and are exempt from paying tax on the transport of their personal belongings.
Colorado (USA)	Employers receive a cash grant if they hire a worker who lives outside the county where the project is based.
Topeka (USA)	The city will provide a maximum of $5,000 to help people move in to pay their first year's rent, or $10,000 to buy a home.
Mishima (Japan)	Those who move in will receive a monthly grant of $775 for three years, or they can choose to receive a one-off grant of $2,730 or a calf.

Source: Remote

5. Presentation of the results of the primary quantitative research

5.1. Introduction

Based on the research and sampling plan provided for the first milestone, we utilized primary quantitative research to analyse the phenomenon of digital nomadism and its labour market attributes, alongside publicly available international and domestic secondary data sources. The summarised findings of this research were delivered to the client as a brief report (1 xlsx + 1 pptx) in accordance with their specifications. The next chapter offers a thorough analysis and interpretation of the results from the primary quantitative research.

5.2. Detailed analysis of the primary quantitative research

The primary research questionnaire consisted of 5 blocks:

1. The first block (**demographics**) inquired about the demographic characteristics of the respondents (gender, date of birth, place of residence, education, etc.);
2. the second block (**perceptions of IT labour shortages**) explored various aspects of IT labour shortages;
3. the third block (**opinions and attitudes towards telework and digital nomadism**) solicited opinions on atypical forms of employment;
4. the fourth block (**personal plans, ambitions, motivations**) posed questions about respondents' personal future;
5. and the fifth block (**suggestions for solutions**) asked respondents for their suggestions to alleviate or eliminate the IT workforce shortage in their country.

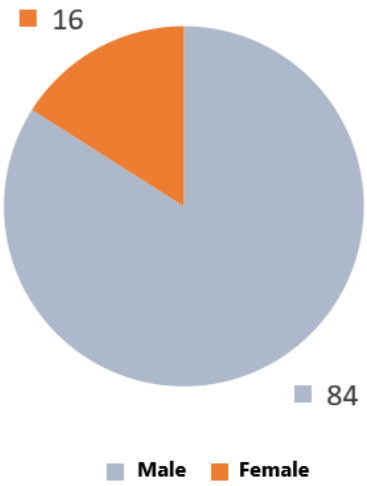
A detailed analysis of the primary research results was also conducted using the same structure.

5.2.1. Demography

The clear male dominance in the IT profession is evident in the gender distribution of respondents: 84% were male. Nevertheless, the 16% proportion of female

respondents is still higher than the 12% share of female ICT professionals recorded by the DESI index in 2021 (compared to an EU average of 19%).

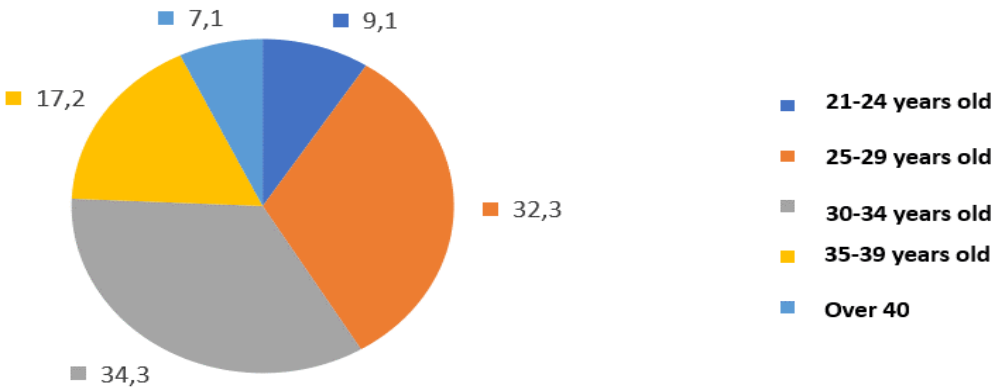
Figure 20: Distribution of respondents by gender (%)



Source: Századvég (N=622)

Consistent with the demographics of the DPR and FIR databases, the majority of respondents are from younger age groups: 10% are between 21 and 24 years old, two-thirds are aged 25-29 and 30-34, while only 7% are over 40 years old. (For reference, the FIR and DPR databases used in this research encompass IT graduates from tertiary IT studies starting from 2006.)

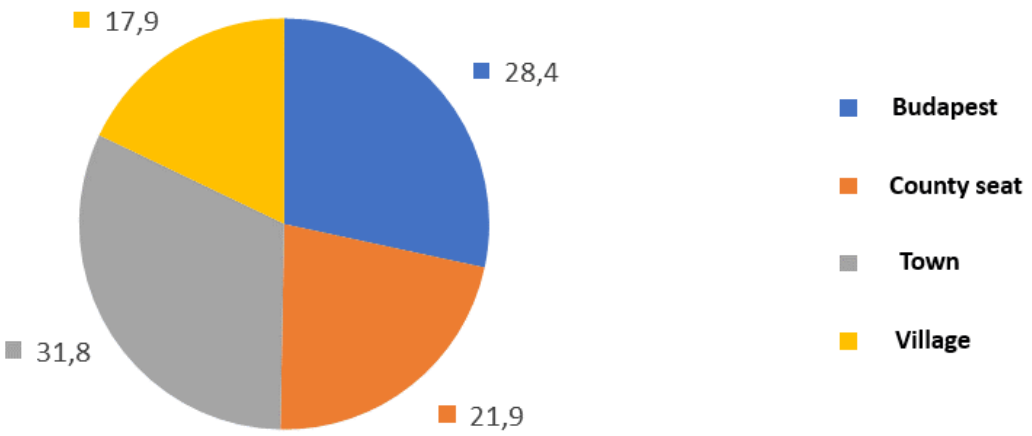
Figure 21: Distribution of respondents by age (%)



Source: Századvég (N=622)

The majority of respondents live in the capital (28%), a county seat (23%) or another city (32%), while only 18% of IT professionals live in villages.

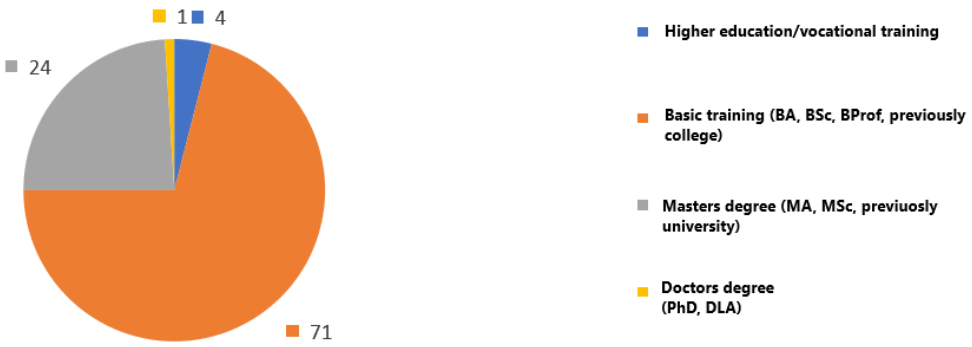
Figure 22: Distribution of respondents by place of residence (%)



Source: Századvég (N=622)

Almost 75% of respondents (71%) held a bachelor's degree (BA, BSc, BProf, or the equivalent of a former bachelor's degree), while 25% had a master's degree (or its predecessor, a postgraduate degree). Only 4% had completed higher vocational education, and just 1% had pursued doctoral studies.

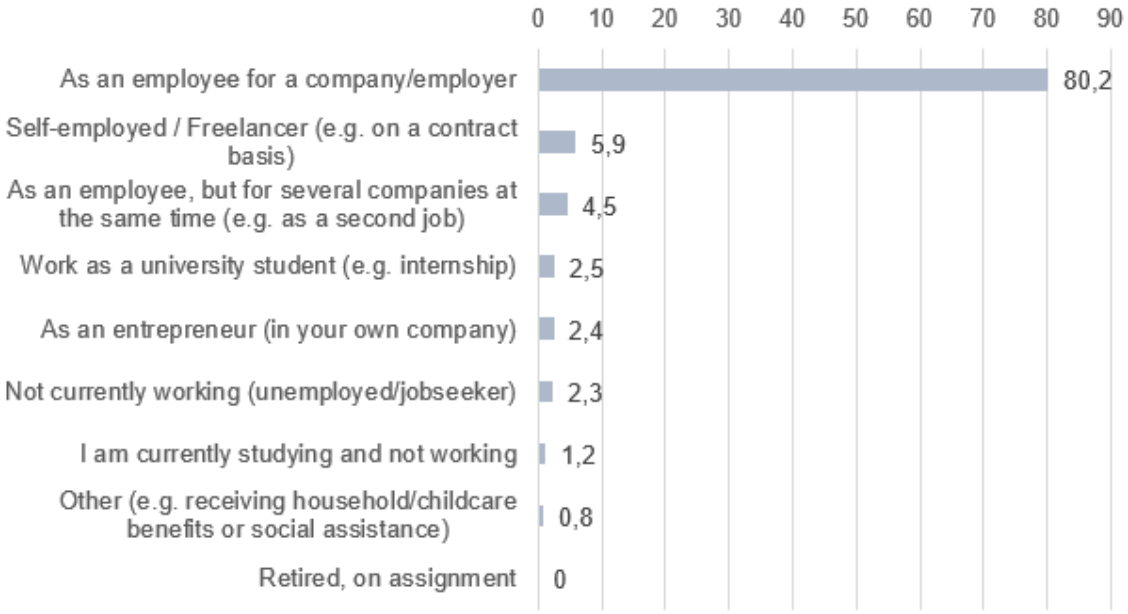
Figure 23: Distribution of respondents by highest level of education completed (%)



Source: Századvég (N=622)

Four-fifths of respondents are employed by a single employer, with an additional 4.5% working for multiple employers simultaneously. Self-employed or freelance workers make up 6% of the respondents, 5% are university students or entrepreneurs, and an equivalent percentage are not formally engaged in gainful employment.

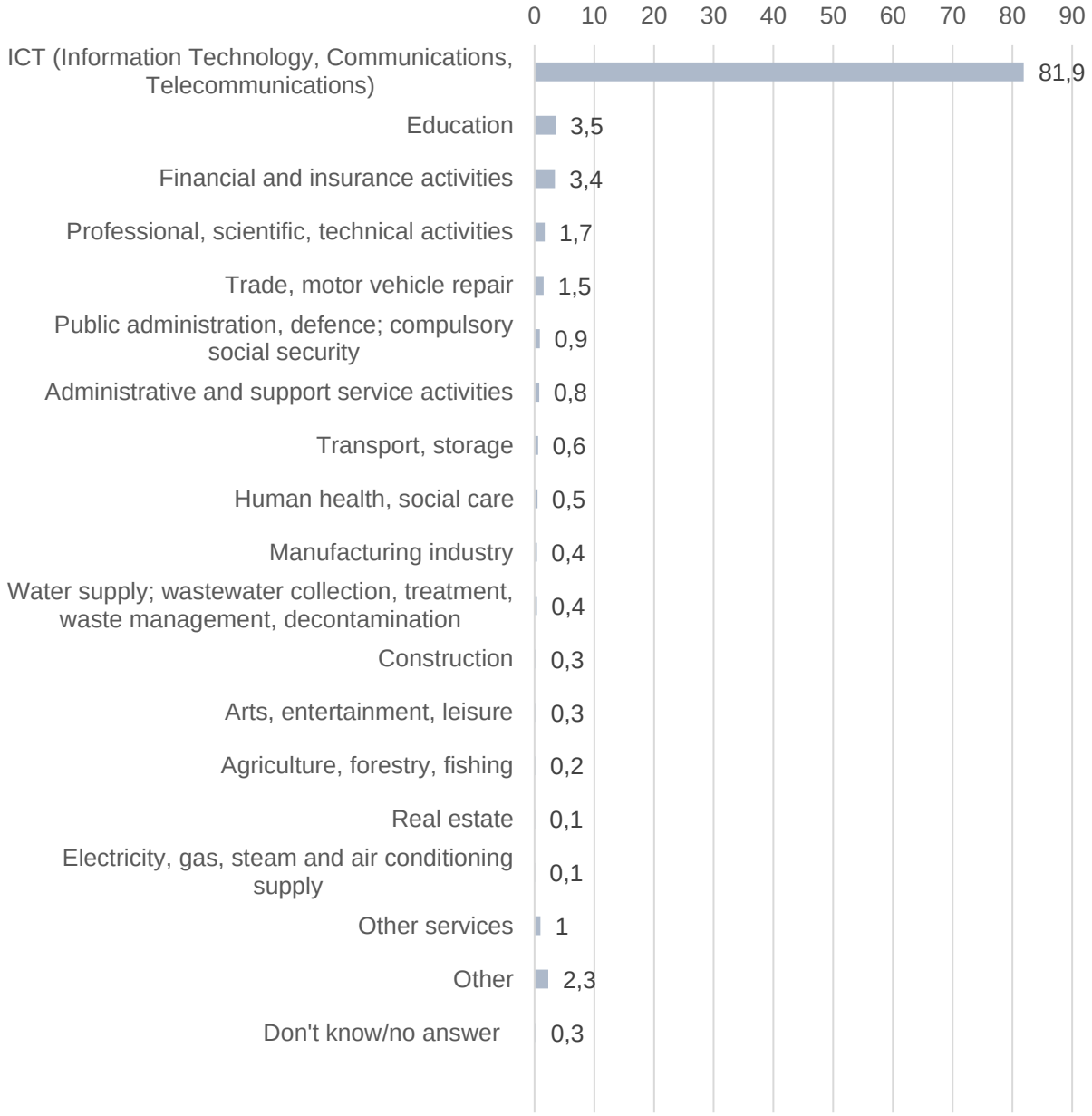
Figure 24: Distribution of respondents by employment status (%)



Source: Századvég (N=622)

A significant majority of respondents (81.9%) are active in the ICT sector, while the next most cited sectors are education (3.5%) and finance and insurance (3.4%), with less than 4% of respondents.

Figure 25: Distribution of respondents by sector (%)



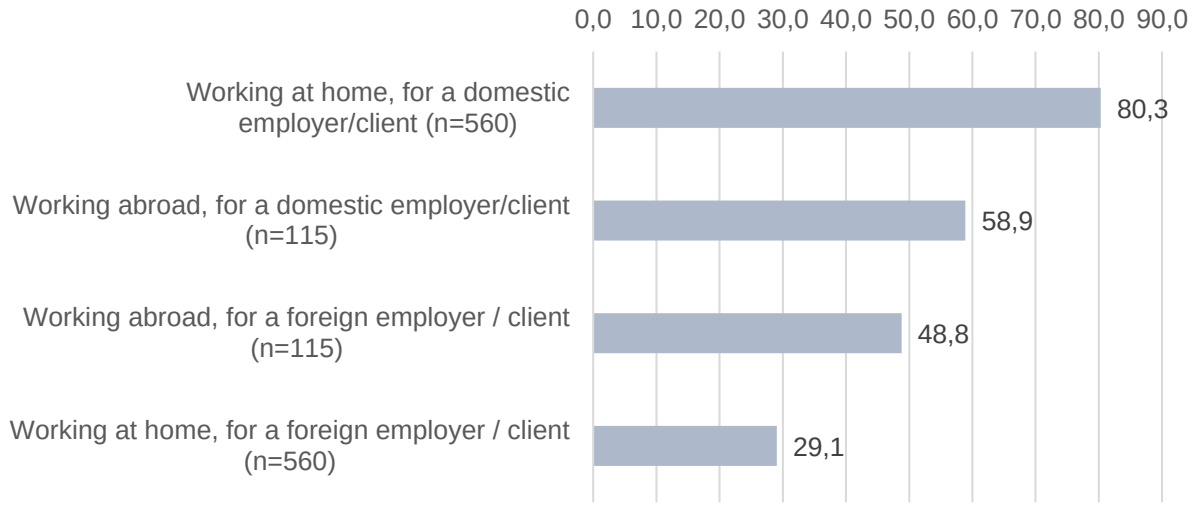
Source: Századvég (N=594)

Among the 560 respondents working domestically, 80% are employed by a domestic employer/agent. However, nearly 30% of respondents work remotely for a foreign employer, which explains why many are employed by both domestic and foreign employers/agents.

Of the 115 respondents working abroad, nearly 60% are employed by a domestic employer and almost 50% by a foreign employer. The total percentage exceeds 100% due to some individuals working for both types of employers while abroad.

Overall, approximately 44% of respondents are either working from home for a foreign employer/client (24%, representing one-third of the 80% working domestically) or working abroad for either a foreign or domestic client (20% of those working abroad).

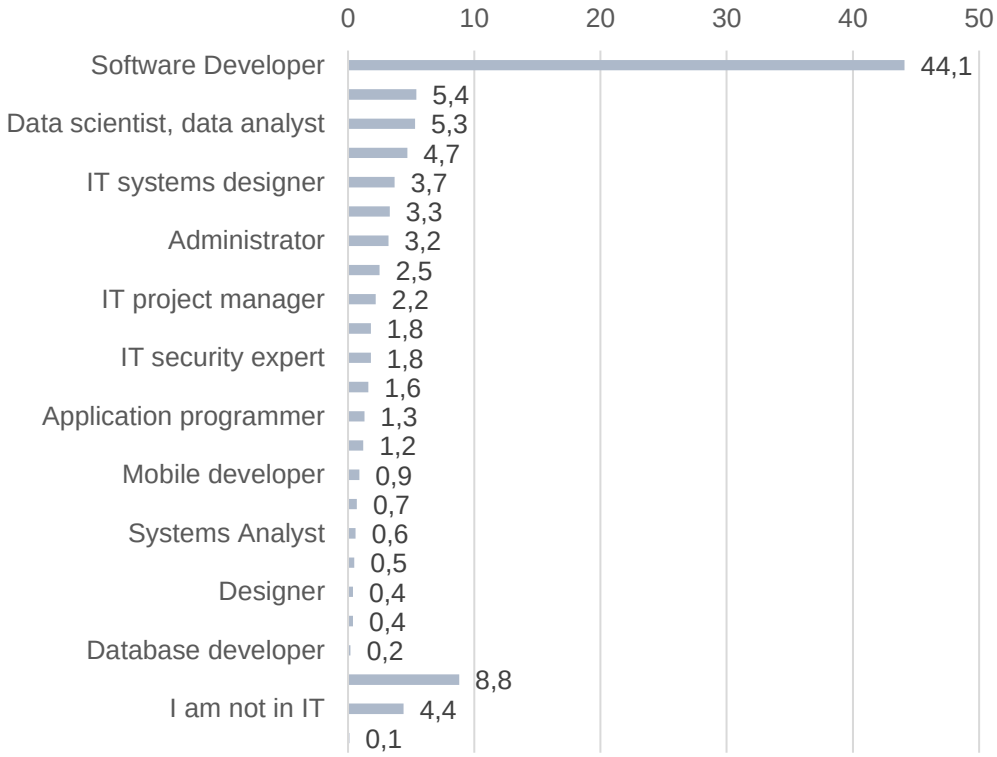
Figure 26: Distribution of respondents by place of work and origin of employer/client (%)



Source: Századvég

44% of respondents work as software developers. In addition, only DevOps engineers and data scientists and analysts accounted for more than 5% of respondents. Only 4.4% said they no longer work in IT.

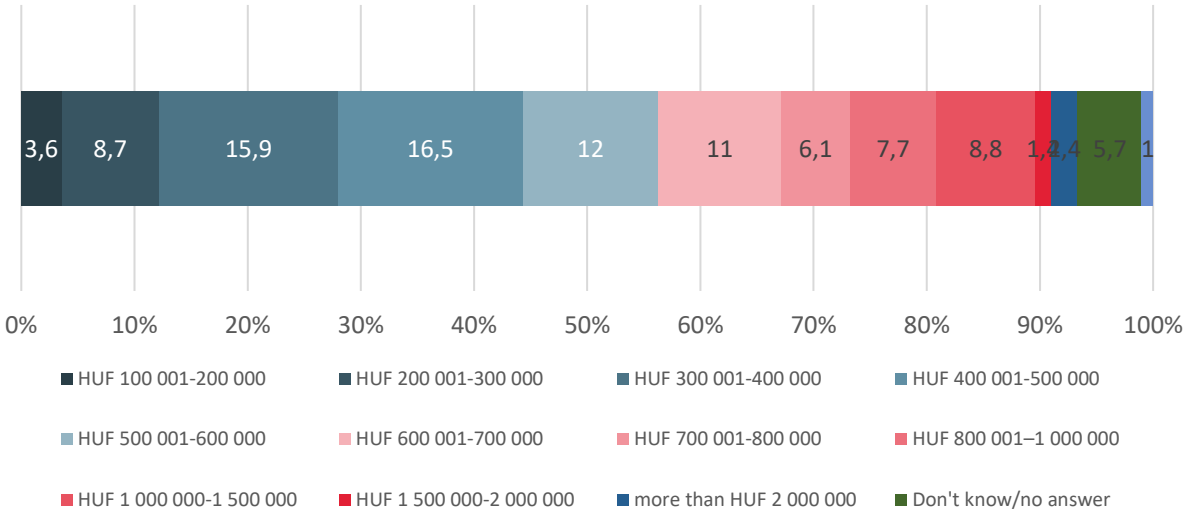
Figure 27: Distribution of respondents by job/professional field (%)



Source: Századvég (N=622)

Respondents reported roughly equal proportions of net income below HUF 300,000 and above HUF 1 million, with more than half of them earning between HUF 300,000 and HUF 700,000.

Figure 28: Distribution of respondents by net income (%)

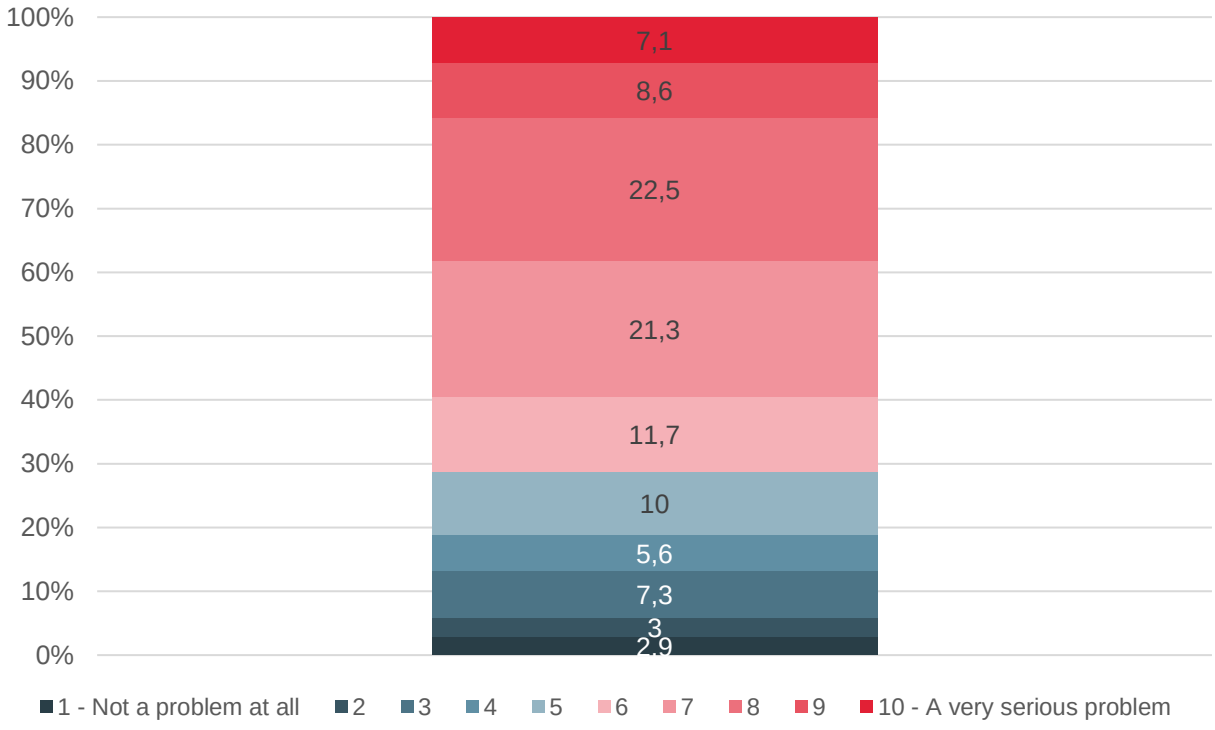


Source: Századvég (N=591)

5.2.2. Perception of IT labour shortages

Based on their personal experience, two-thirds of respondents view the shortage of IT professionals in their sector as serious or severe (rating 7 or above on a 10-point scale), while only 29% consider it a minor issue (rating 5 or below).

Figure 29: Based on your personal experience, how big a problem is the IT skills shortage in the sector in which you work? (%)



Source: Századvég (N=573)

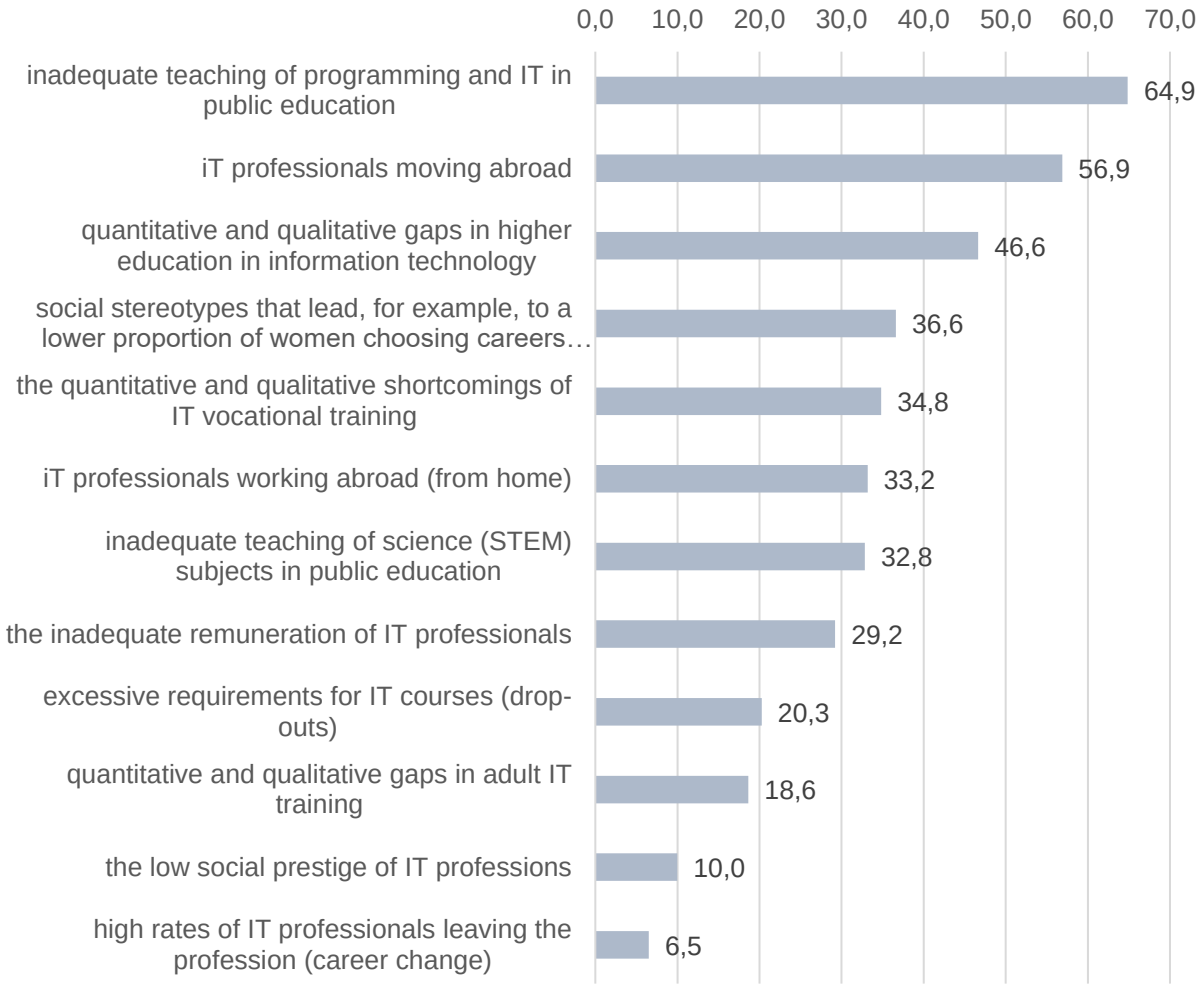
Respondents primarily attribute the shortage of IT professionals to deficiencies in public education (65%), particularly the insufficient teaching of programming and IT. Additionally, many pointed to both qualitative and quantitative issues in higher IT education (47%) and IT vocational training (35%). There was also notable criticism of the inadequate teaching of science subjects in public education (33%).

The idea of relocating IT professionals abroad was frequently mentioned (57%), as was the concept of working from home while abroad (33%),

Furthermore, 29.2% of responses indicated that IT professionals are not adequately valued financially, while 20.3% cited excessively high requirements for IT professions

as a reason, contributing to significant drop-out rates among prospective IT professionals. (Respondents could select up to five factors from the list provided.)

Figure 30: Which of the following factors do you believe most explains the IT skills shortage? (%)

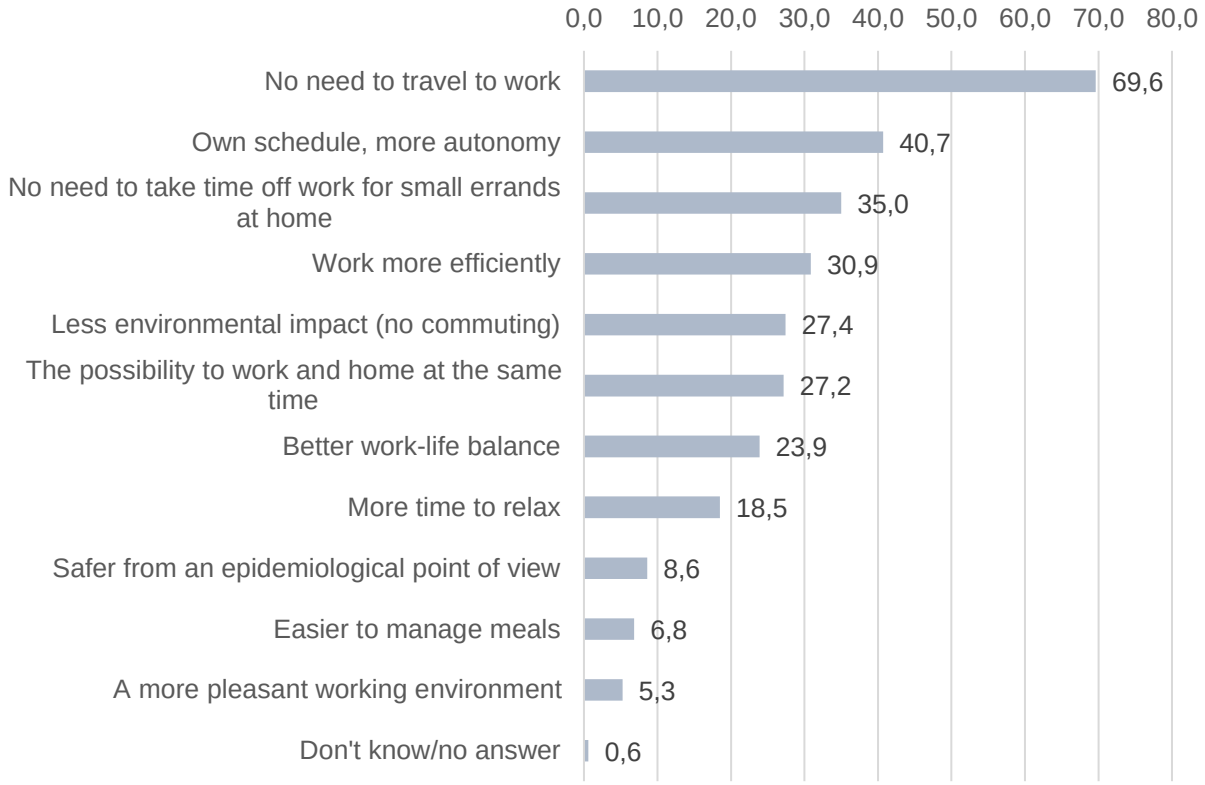


Source: Századvég (N=561), up to 5 items could be selected

5.2.3. Opinions and attitudes towards teleworking and digital nomadism

Among the advantages of working from home, two thirds of respondents mainly mentioned the option "I don't have to travel to work". High percentages were also reported for having greater autonomy and flexibility in managing time off, with nearly a third of respondents stating they worked more efficiently. Additionally, over 20% highlighted the lower environmental impact of not commuting, the ability to balance work and home responsibilities, and a better work-life balance. (Respondents could select up to three factors for this question).

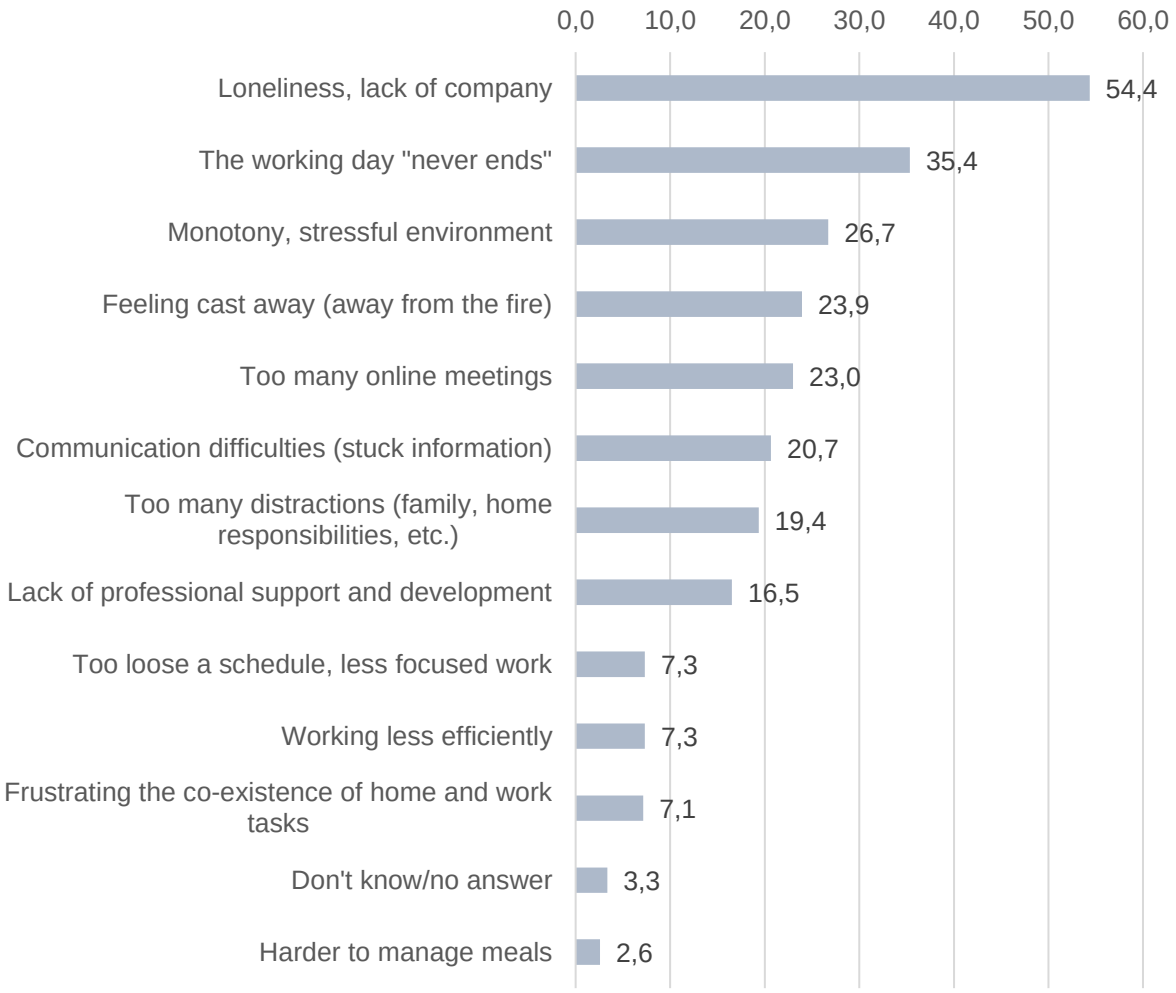
Figure 31: What do you consider to be the advantages of working from home (home office) for employees? (%)



Source: Századvég (N=514), up to 3 options could be selected

Regarding working from home, the primary challenges identified by respondents were lack of company (54%), continuous work (35%), and a monotonous, stressful environment (27%), Many respondents also highlighted social isolation, excessive online meetings, communication challenges, and various distractions (such as family, children, and household responsibilities) as drawbacks of working from home.

Figure 32: What do you consider to be the disadvantages of working from home (home office) for employees? (%)

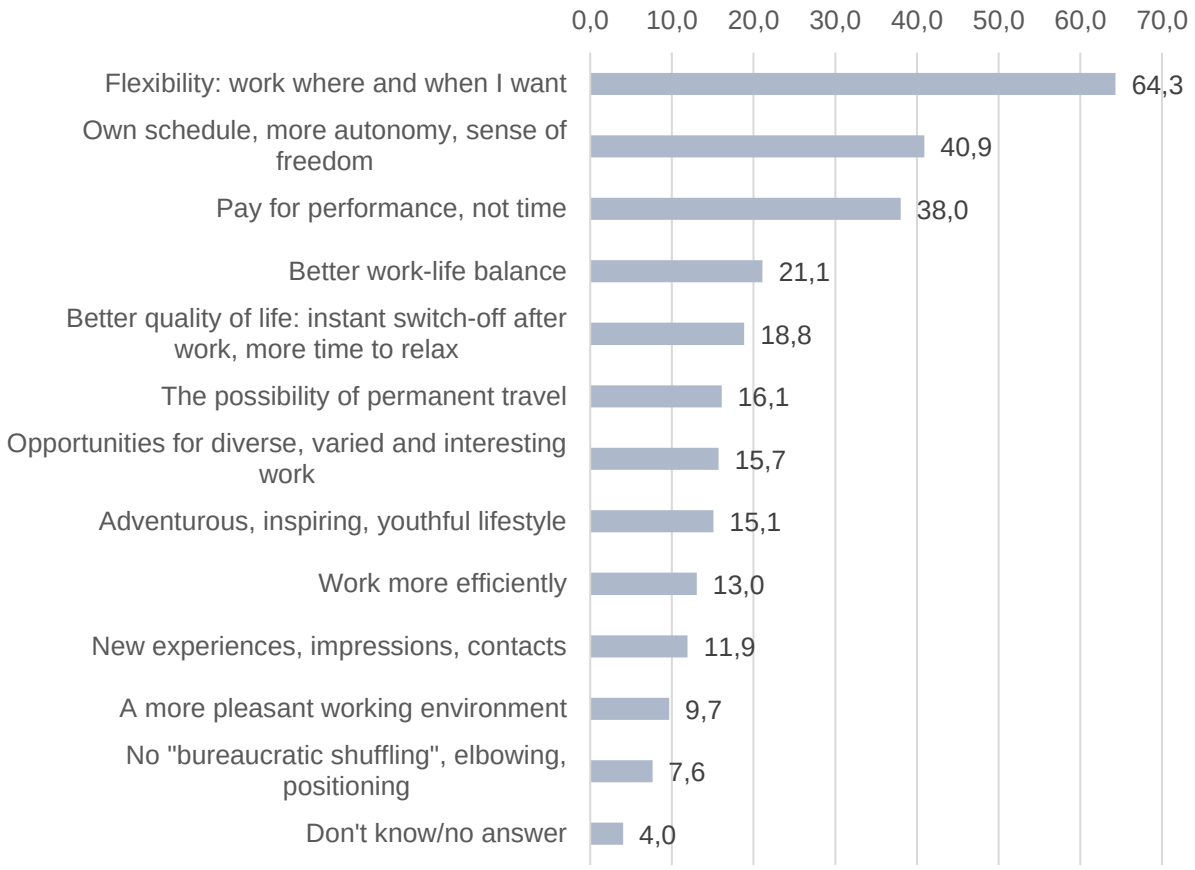


Source: Századvég (N=497), up to 3 options could be selected

As for the benefits of working as a digital nomad, the most frequently mentioned were flexibility (64%) and the ability to work on one's own schedule/greater autonomy (41%). Additionally, a significant number of respondents (38%) highlighted the benefit of being paid for performance rather than time.

One in five respondents noted that this type of employment offers advantages such as enhanced work-life balance, improved quality of life, the opportunity for continuous travel, a varied and dynamic work experience, and a sense of adventure and youthful living.

Figure 33: What benefits do you perceive (for the employee) from working as a digital nomad? (%)



Source: Századvég (N=517), up to 3 options could be selected

The most frequently mentioned disadvantages of working as a digital nomad, similar to teleworking from home, were loneliness (31%), constant working (29%), work pressure (29%), lack of a sense of belonging (26%), and communication difficulties (22%).

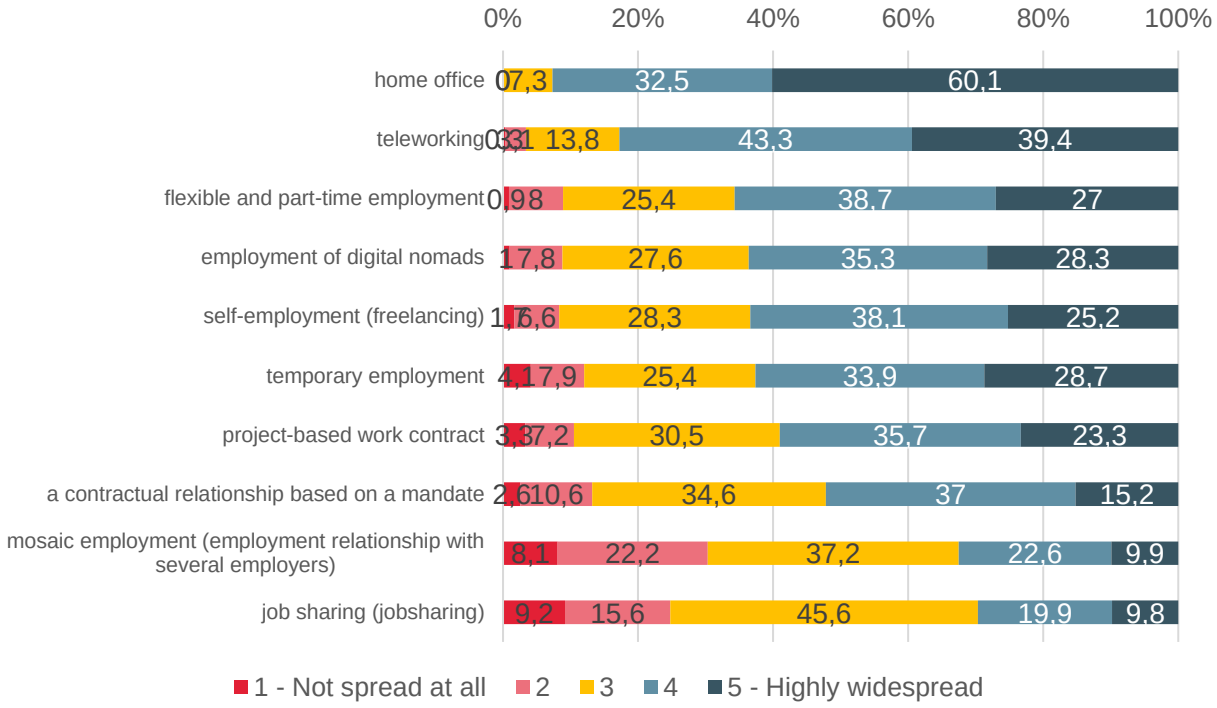
Figure 34: What disadvantages do you perceive (for the employee) from working as a digital nomad? (%)

Source: Századvég (N=499), up to 3 options could be selected

Furthermore, the vast majority of respondents (93%) anticipate a strong global increase in atypical forms of employment over the next 10 years, particularly home office (working from home). Additionally, a high proportion (83%) foresee a rapid expansion of teleworking, and many (66%) expect growth in flexible and part-time work (rated 4 or 5 on a five-point scale). Nearly two-thirds of respondents also consider the global expansion of digital nomadism and freelancing to be likely.

Respondents are least optimistic about the global adoption of job sharing (30%) and mosaic employment (33%) over the next decade.

Figure 35: To what extent do you think the following atypical forms of work in IT will become more widespread globally in the next 8-10 years, regardless of the pandemic (%)?



Source: Századvég (N=511)

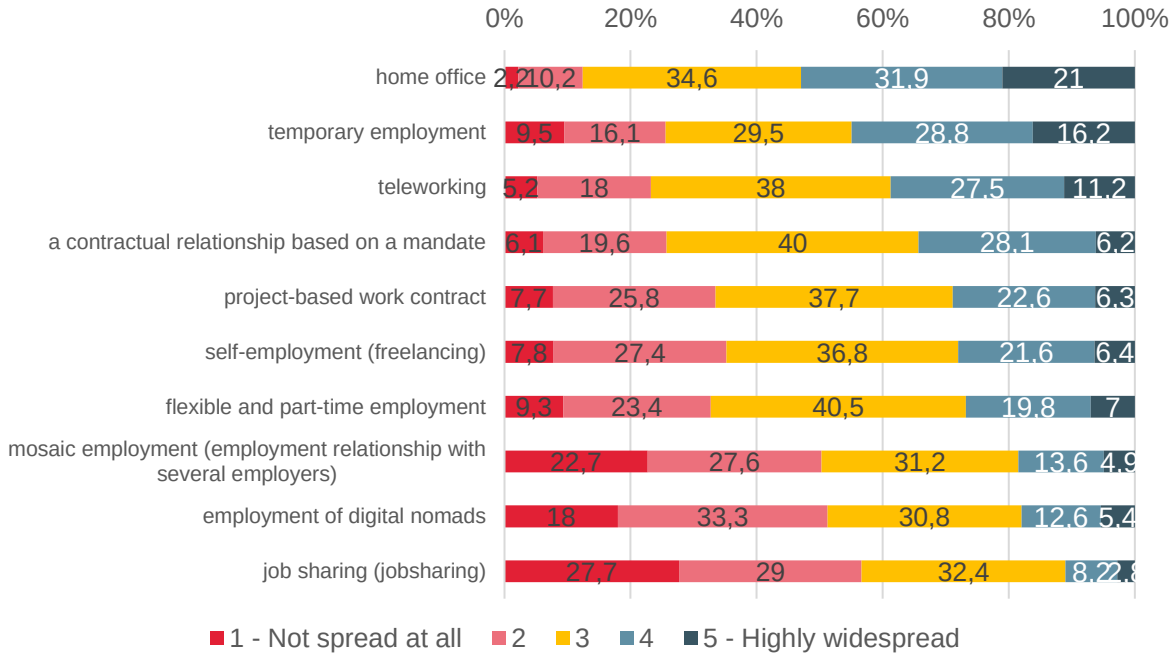
However, respondents are notably more pessimistic about the adoption of atypical forms of employment in Hungary. Although domestic expectations for teleworking and home office align with global trends, far fewer anticipate the widespread adoption of the employment forms under investigation. Furthermore, not only is the proportion of respondents rating a 4 or 5 on a five-point scale (indicating expectation of widespread adoption) much lower, but also the proportion giving a rating of 1 or 2 (indicating no expectation of widespread adoption) is significantly higher. Only 53% of respondents recognized the home office (global expectation: 93%), 45% (63%) acknowledged temporary agency work, and 39% (83%) identified teleworking as a trend anticipated to become widespread in Hungary over the next decade.

Respondents least expect job sharing (11% compared to 30% globally) and digital nomadism to take hold at home (18% compared to 63% globally) in 10 years'.

In this domain, the disparity between expectations for global and domestic labour market trends is also striking. Only 8% of respondents believe this form of employment

is unlikely to spread internationally, while 57% think it is unlikely to gain traction in the domestic market (i.e., ratings of 1 and 2 on a five-point scale).

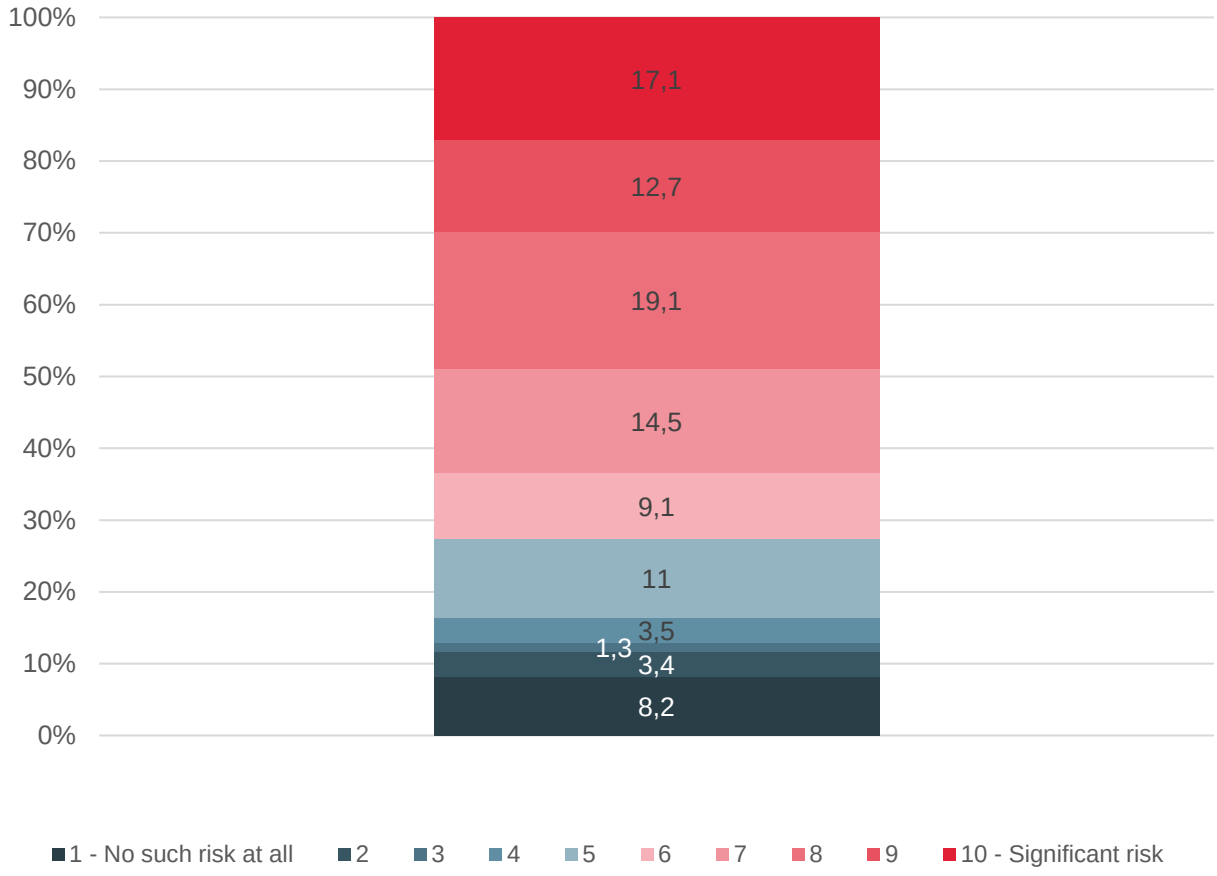
Figure 36: To what extent do you think the following atypical forms of work in the IT sector will develop in Hungary over the next 8-10 years, regardless of the pandemic (in %)?



Source: Századvég (N=512)

From the standpoint of the domestic IT skills shortage, respondents perceive a considerable risk if a greater number of Hungarian IT professionals choose to work abroad or remotely compared to before: 72.5% of respondents rated this risk as 6 or higher on a scale of 1 to 10.

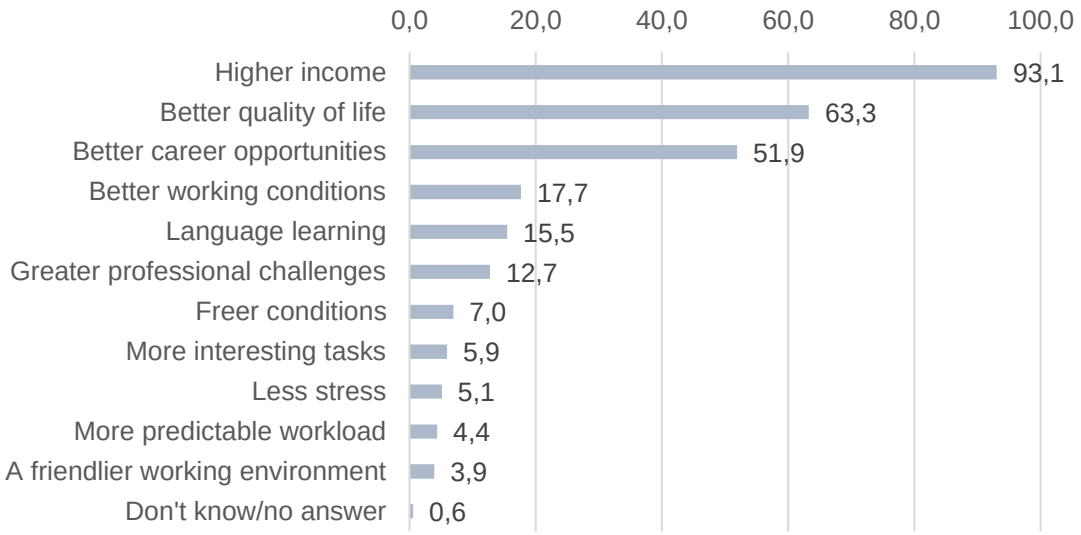
Figure 37: How significant do you believe the risk is that more Hungarian IT professionals are taking jobs abroad, either by relocating or working remotely? (%)



Source: Századvég (N=447)

Higher income (93%) was the most common reason for working abroad, but better quality of life (63%) and improved career opportunities (52%) also received significant mentions. However, fewer than 10% of respondents cited friendlier, more predictable, less stressful, interesting, and freer conditions. (We asked for three aspects to be highlighted, so these were likely included under the umbrella terms "better quality of life" and "better career opportunities.")

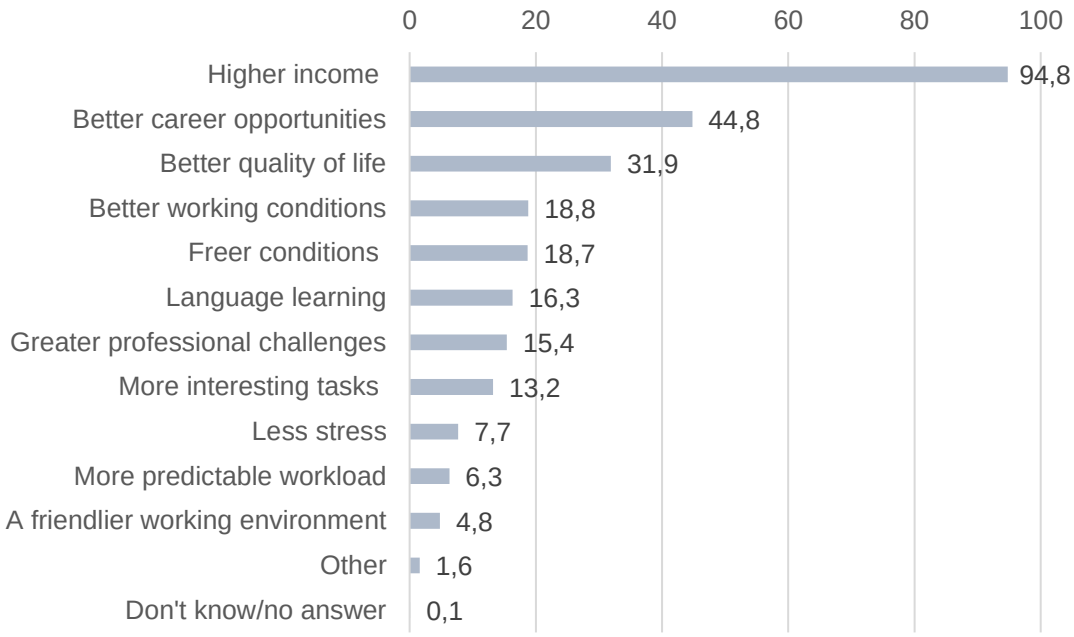
Figure 38: What do you think are the criteria for IT professionals working abroad? (%)



Source: Századvég (N=448), up to 3 criteria could be selected

Responses for working remotely from home for a foreign employer also reflected a similar trend: most respondents favoured higher income (95%), better career prospects (45%), and better quality of life (32%), while language learning, more challenging careers, or more interesting tasks were much less significant in their decision to work abroad. (Here again, we asked for three aspects to be highlighted, so these were likely included under the umbrella terms "better quality of life" and "better career prospects.")

Figure 39: What do you think are the criteria for IT professionals choosing to work from home (telecommuting) for a foreign employer? (%)



Source: Századvég (N=448), up to 3 criteria could be selected

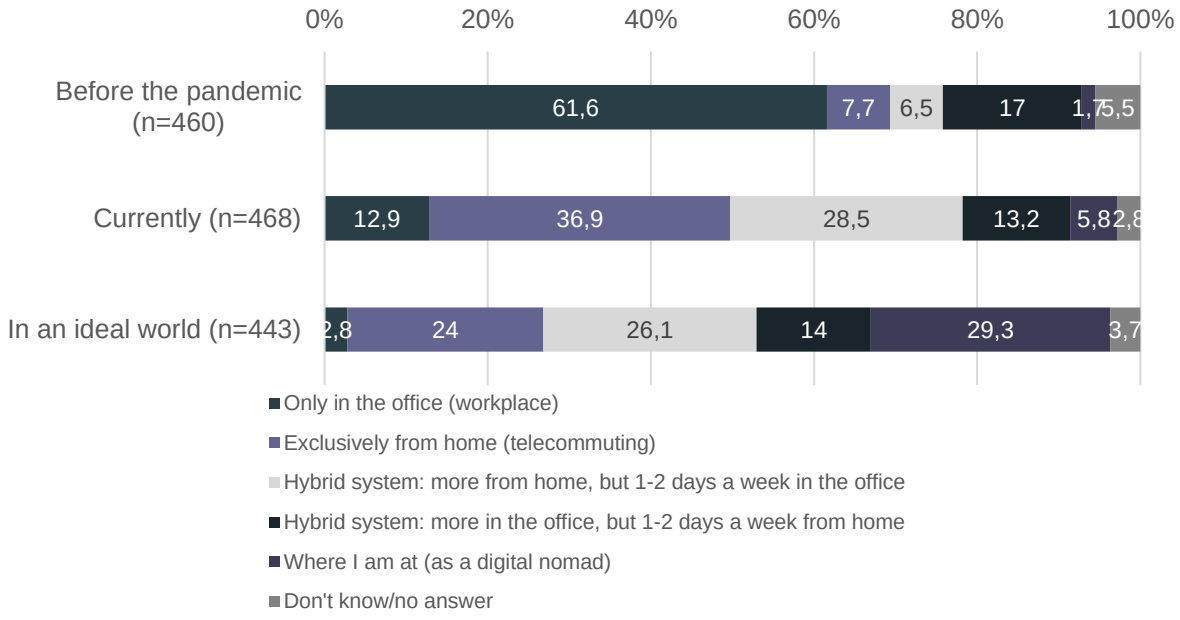
5.2.4. Personal plans, ambitions, motivations

The pandemic led to a notable shift in the use of atypical employment forms: prior to the pandemic, 62% of respondents worked exclusively in the office, but by the time of the research in spring 2022, this percentage had fallen to 13%. Simultaneously, the proportion of individuals working solely from home has nearly quintupled (rising from 8% to 37%). Working as a digital nomad has also grown more than threefold from a low base, from 1.7% before the pandemic to 5.8%. Additionally, there was a fourfold increase (28.5%) in the prevalence of hybrid home-office working arrangements, where employees predominantly work from home but spend one or two days per week in the office. However, hybrid working (where staff prefer to work in the office but spend 1-2 days a week in a home office), which is predominantly office-based, has lost popularity: from 17% before the pandemic to 13% now,)

When asked about their ideal work arrangements, a significant majority (93%) preferred some form of teleworking, with only 3% wanting to work exclusively in an office setting. Although a substantial but lower proportion (24%) would like to work entirely from home compared to the current 37%, nearly a third of respondents are interested in working as digital nomads, a fivefold increase from the current opportunity

and 17 times more than before the pandemic. Both hybrid work models have similar levels of popularity to current rates: nearly twice as many people (26%) prefer occasional office visits while primarily working from home compared to those who would like to work from home occasionally while primarily working from the office (14%).

Figure 40: What kind of working hours did you have before the pandemic, do you have now, or would you like to have in the future (in an ideal world)? (%)



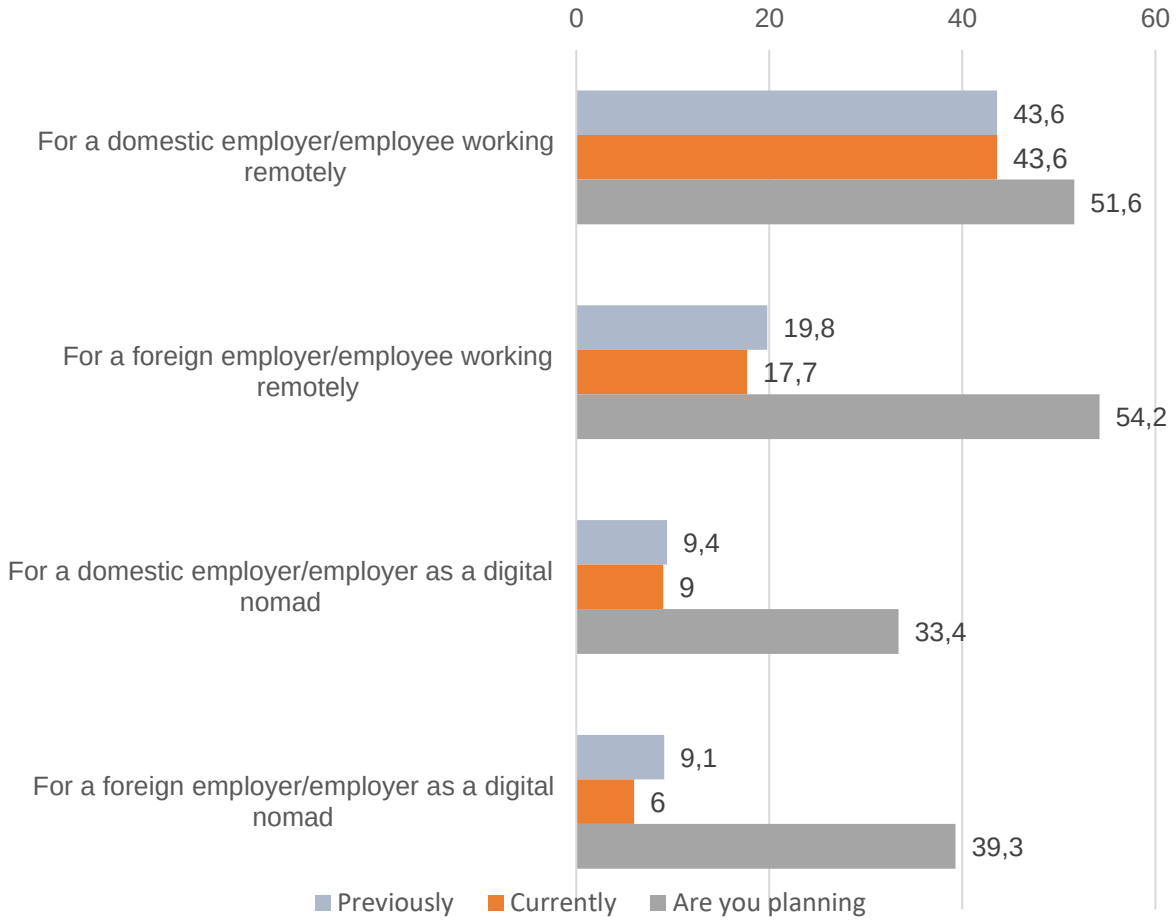
Source: Századvég

The responses indicating a preference for non-traditional employment are supported by the fact that most respondents have worked or are currently engaged in some form of atypical employment for an employer either at home or abroad.

Of concern for this research topic is the observation that a significantly higher proportion of respondents plan to work for a foreign employer as a teleworker or digital nomad in their personal future, compared to those planning to work for a domestic employer. This correlation is not surprising given the earlier responses, which reveal a notable gap between personal aspirations and expectations regarding domestic labour market trends. For instance, about a third of respondents would prefer to work as a digital nomad in an ideal scenario or plan to do so for a domestic employer/client, but only 18% believe it is likely to become widespread in Hungary over the next decade (see Figure 17).

The fact that more than two and a half times as many people intend to work abroad as telecommuters and six and a half times as many as digital nomads compared to the current situation highlights the rigidity of the domestic labour market.

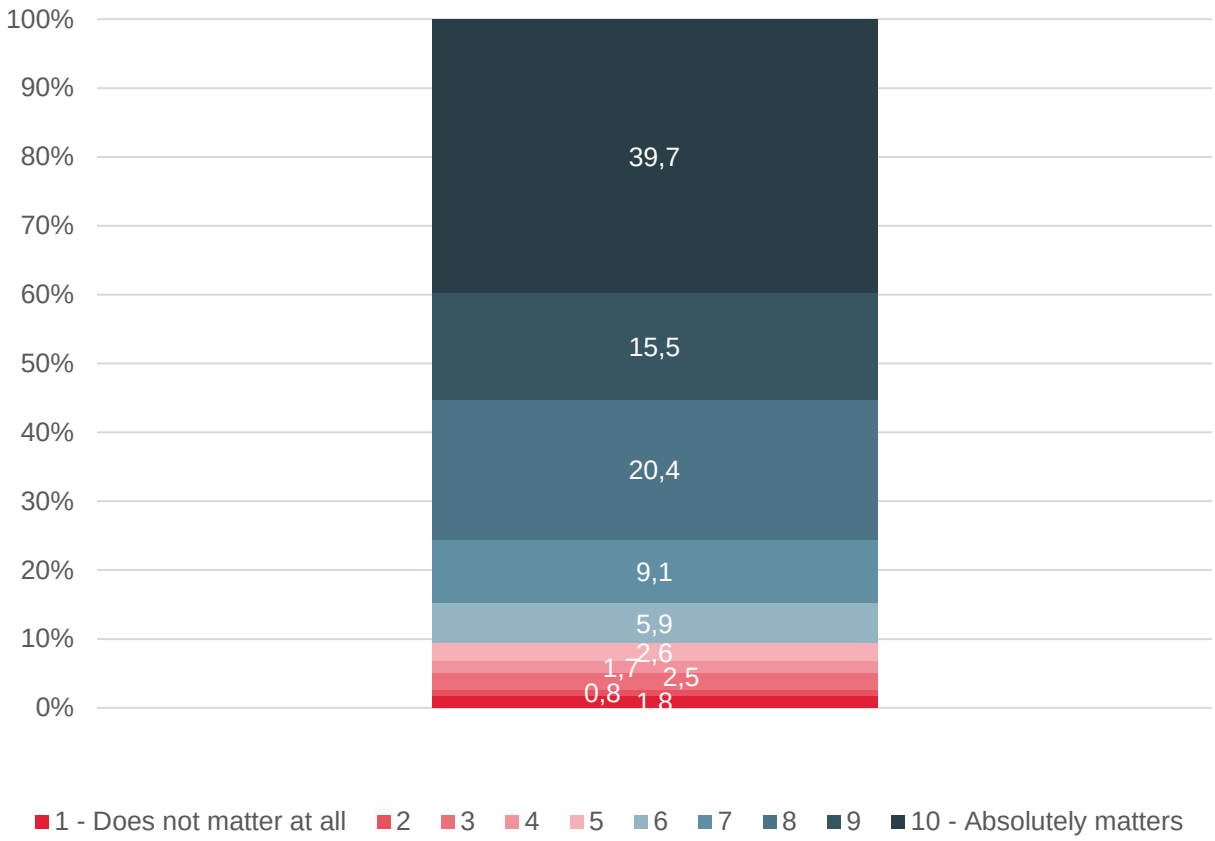
Figure 41: Have you previously worked, are you currently working, or do you plan to work as a telecommuter or digital nomad for a domestic or foreign employer/agent? (%)



Source: Századvég (N=467)

The significance of various forms of teleworking is evident from the fact that 90.6% of respondents considered the ability to work remotely as important or very important when looking for a job (rating it above 5 on a scale of 10). This is in line with the answers to the previous question on the "ideal world", where 93.4% of respondents mentioned some form of teleworking as their ideal form of work.

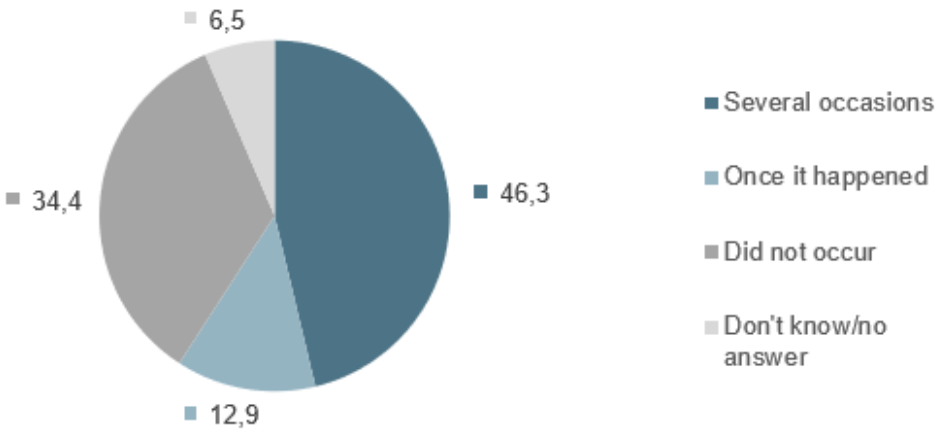
Figure 42: When looking for a job, how important is the proportion of home/remote (home office/teleworking/digital nomad) work for the employer? (%)



Source: Századvég (N=469)

The determination of respondents is demonstrated by the fact that a majority (59.2%) have declined a job offer that did not offer some form of teleworking, with 46.3% doing so more than once.

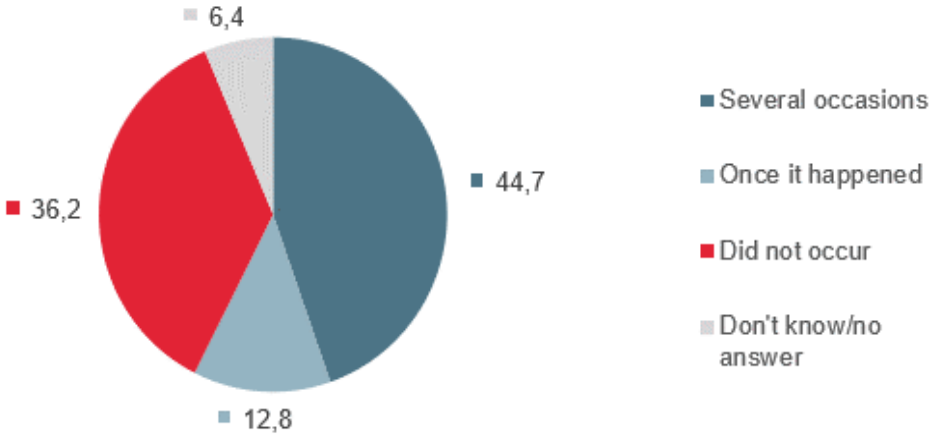
Figure 43: Have you ever refused to apply for a job or accept a job offer because it didn't offer you the opportunity to work from home or telework? (%)



Source: Századvég (N=437)

57.5% of respondents had received at least one job offer from a foreign employer or contractor (44.7% of them more than once), for which professional and other tasks could be performed remotely.

Figure 44: Have you ever been offered a work-from-home/telecommuting/digital nomad job/assignment by a foreign employer/agent? (%)

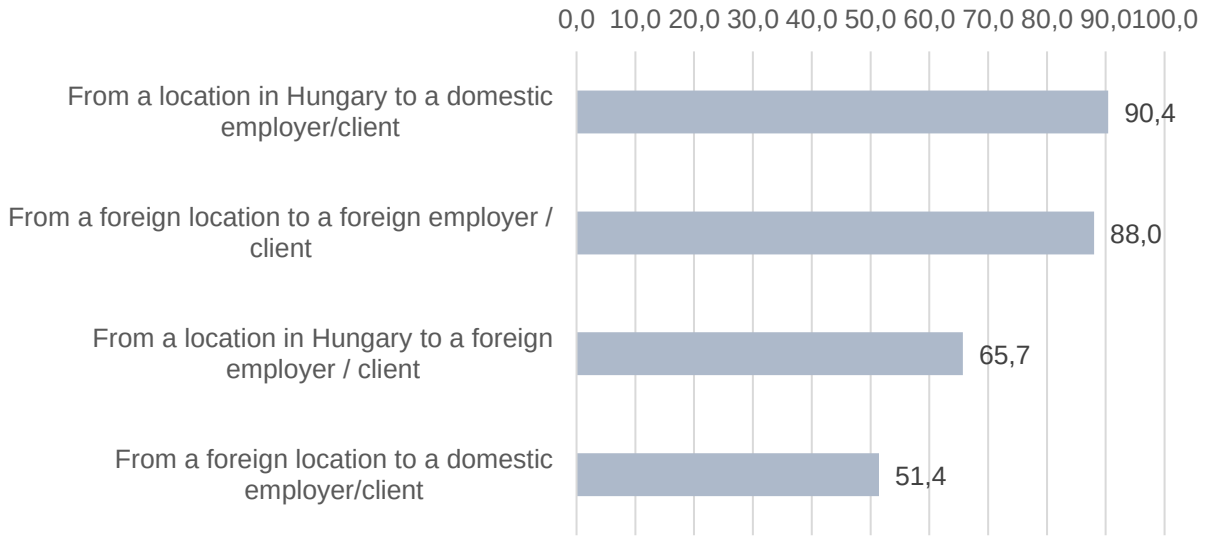


Source: Századvég (N=470)

Although only a third of participants selected digital nomadism as their most preferred employment option, if their living conditions and family situations were not a concern, nine out of ten would choose to work this way for either a domestic or international employer from any location.

Two-thirds of respondents would work for a foreign employer from within their home country, and slightly more than half would work for a domestic employer from abroad if their personal circumstances permitted. Given that the question referenced both "home location" and "foreign location," it's likely that respondents considered not just the traditional digital nomadic lifestyle but also various forms of teleworking.

Figure 45: If you could, given your family situation and living conditions, would you choose to work as a digital nomad? (%)



Source: Századvég (N=379)

5.2.5. Proposals for solutions

The main questionnaire was designed using relevant policy proposals from prior years and sought the target group's opinions on potential government measures to address the IT skills shortage in Hungary. Participants were asked to evaluate the statements using a five-point scale, where 1 indicated "Not warranted" and 5 signified "Immediate action needed."

More than three quarters of the responses

- (ratings 4 and 5) say that immediate action is needed to make university courses more relevant to market demand;
- 70% of respondents see an immediate need for intervention in public education to promote programming and algorithmic thinking alongside digital culture;
- 70% of respondents also identified a significant improvement in the quality of IT vocational training as an urgent intervention;

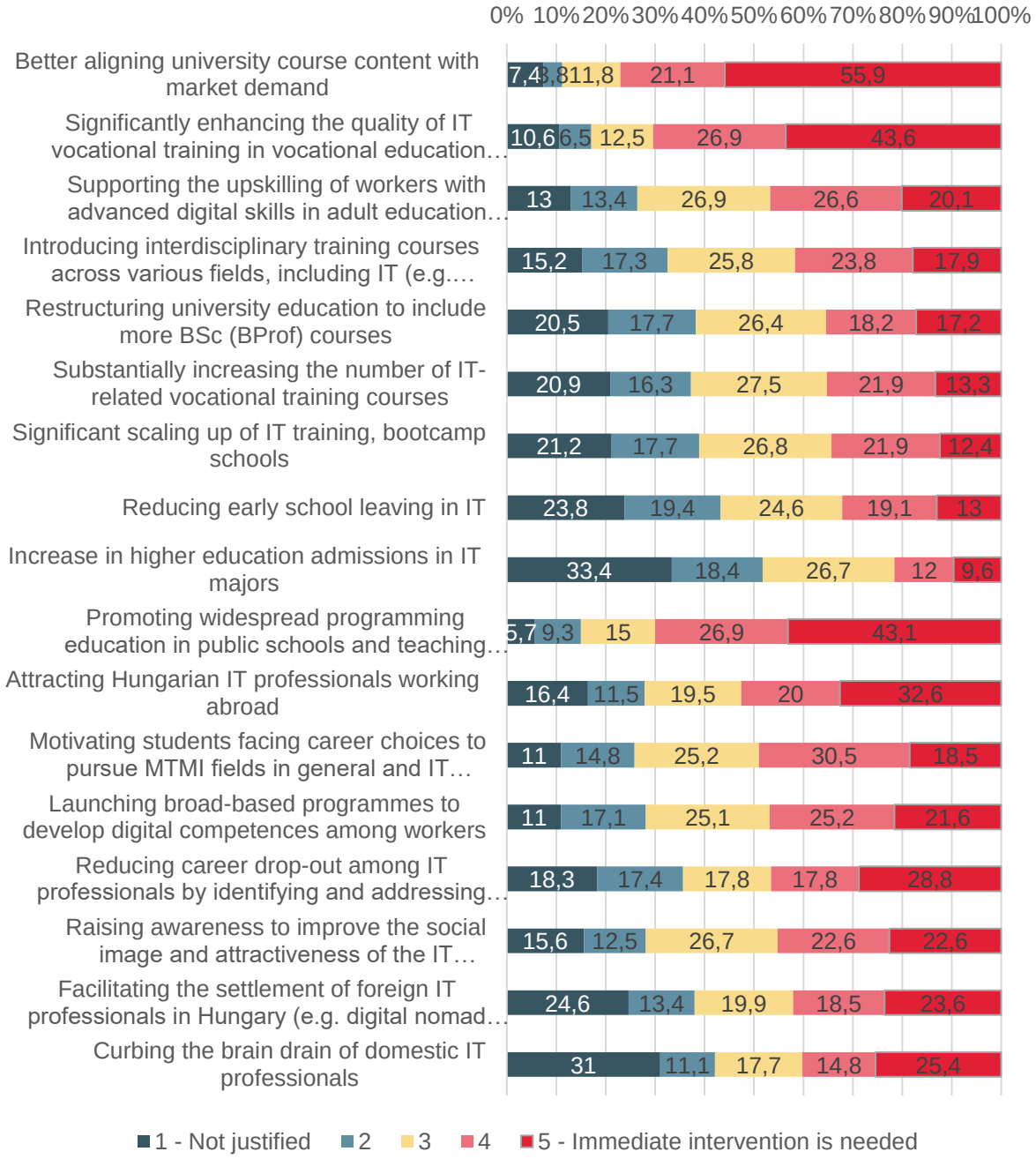
- around half of the respondents believe immediate action is justified to:
    - attract Hungarian IT professionals working abroad;
    - support the upskilling of workers with high digital competences in adult education;
    - guide students facing career choices towards MTMI in general and IT courses in particular;
    - identify and address the causes of IT professionals leaving the labour market (career change);
    - improve the social image and attractiveness of the IT profession and digitalisation in general;
    - launch broad-based programmes to develop digital competences among workers.

Other intervention options also garnered relatively high levels of support, but there was also a significant number of sceptics. The most divisive suggestions were the following (with similar proportions of 4 and 5 for those advocating immediate action and 1 and 2 for those deeming action unjustified):

- a significant increase in the number of IT-related vocational training courses
- facilitating the settlement of foreign IT professionals in Hungary
- restructuring the university training structure (more BSc and BProf courses)
- a significant scaling up of IT training, bootcamp schools.

Surprisingly, most respondents deemed the increase in admission thresholds for higher education IT courses to be **unjustified** (with more than half of the responses rated 1 or 2). There was also a significant level of opposition to measures aimed at reducing drop-out rates in IT professions (44%) and to the idea of curbing the emigration of domestic IT professionals (42%).

Figure 46: To address the IT skills shortage in Hungary, which of the following areas of intervention do you believe would require government action? (%)



Source: Századvég (N=445)

6. Conclusions

6.1. Introduction

One of the major barriers to the rapid growth of the digital economy in Hungary is the persistent shortage of digitally skilled workers and IT professionals. This situation is further exacerbated by the fact that the gap between the supply and demand for IT professionals is not anticipated to close soon. According to recent surveys, including those from the GINOP 3.1.1 project "Program Your Future," which also informed this research, the shortage of IT engineers and professionals could reach 26,000 in the near future.

Despite various efforts to address this gap, such as increasing the number of science graduates and introducing bootcamp training, the labour shortage has not significantly improved. Digital nomadism, which is the subject of this study, could partially alleviate the shortage as a transitional measure. It allows domestic professionals to work for multiple employers simultaneously and opens up the global job market for domestic employers, although it also presents a risk of losing highly skilled domestic workers to international opportunities.

6.2. Conclusions

Internationally, different forms of remote work have been steadily increasing over the 5-10 years leading up to the pandemic. The COVID-19 crisis caused a dramatic shift in the labour market in early 2020, with teleworking rapidly becoming a dominant form of employment for certain roles.

Based on expert predictions and the results from this research, it is unlikely that the proportion of office work in suitable jobs will revert to pre-pandemic levels. Both employees and employers have recognized the advantages of partial (hybrid) or full teleworking, including home office arrangements and digital nomadism.

International trends are clearly supported by the results of the primary data survey conducted in Hungary for this research.

- the proportion of IT professionals engaged in some form of telework (such as home office or digital nomadism) has risen significantly, several times more than before, due to COVID-19. Furthermore, the vast majority of these professionals

intend to increase their teleworking hours (including as digital nomads) in the future, whether working for domestic or international employers;

- the most frequently cited advantages of various forms of teleworking included savings on commuting time, increased autonomy and flexibility, and improved work efficiency, while the main drawbacks were social isolation and the necessity of constant work;
- respondents generally perceive more benefits than drawbacks for employees from different forms of teleworking. Thus, it is unsurprising that most expect a significant global increase in atypical forms of employment, particularly home office and digital nomadism, over the next decade;
- in stark contrast, their expectations for the spread of these employment models within their own countries are much lower. For instance, only half as many people anticipate the expansion of home office arrangements and a third as many foresee the growth of digital nomadism in their domestic job markets compared to their global expectations;
- this discrepancy is notable because, for the majority of respondents, the option of teleworking is now considered a fundamental requirement when seeking employment. Many have even declined job offers (sometimes multiple times) due to the absence of this option;
- currently, higher incomes, improved quality of life, and better career prospects are not the primary reasons given for working abroad or working remotely from abroad;
- meanwhile, three-quarters of respondents believe that working abroad, whether permanently or remotely, could further exacerbate the shortage of IT professionals in their country, with many IT professionals already recognising the shortage of domestic IT skills as a significant issue;
- the primary factors contributing to the shortage of IT professionals include insufficient teaching of programming and IT in public education, deficiencies in both the quality and quantity of higher education and IT vocational training, and the migration of domestic IT professionals to work abroad;

- this latter factor has not been emphasised as much in our previous research, possibly because working abroad is more prevalent among respondents. Additionally, the labour market situation is rapidly evolving, with teleworking (including digital nomadism) becoming increasingly prominent among atypical employment forms;
- respondents' pessimism about the domestic market does not seem entirely justified given their current personal circumstances. The proportion of people working exclusively in offices has decreased by 13% since before the pandemic, while those working exclusively from home has nearly quintupled to 37%. Hybrid working with a home office has increased fourfold to 29%, and digital nomadism has more than tripled to 6%;
- however, when asked about their ideal working arrangement, an even higher percentage (93%) preferred some form of teleworking, with only 3% favouring an exclusive office environment;
- although a substantial but lower proportion (24%) would like to work entirely from home compared to the current 37%, nearly a third of respondents are interested in working as digital nomads, a fivefold increase from the current opportunity and 17 times more than before the pandemic;
- of concern for this research topic is the observation that a significantly higher proportion of respondents plan to work for a foreign employer as a teleworker or digital nomad in their personal future, compared to those planning to work for a domestic employer;
- this may be due to a notable gap between personal aspirations and expectations of domestic labour market trends. For instance, while around a third of respondents would like to work as a digital nomad for a domestic employer, only 18% believe it is likely to become widespread in Hungary over the next decade;
- although only a third of respondents selected digital nomadism as their most desired form of employment, nine out of ten would choose this lifestyle in the future if their living situation and family circumstances were not a factor. Two-thirds would work for a foreign employer or agent from a domestic location, and

just over half would work for a domestic employer from a foreign location if their circumstances allowed;

- respondents were also asked about potential policy interventions to address the IT skills shortage in the country. While the majority of respondents pointed to better alignment of university programs with market needs as a key solution, over two-thirds believe that public education should focus on widespread programming instruction, teaching algorithmic thinking, and significantly enhancing the quality of IT vocational training.

7. Proposals

7.1. Introduction

The rise of non-traditional employment models, particularly digital nomadism, and its anticipated substantial growth poses a challenge for IT employers, as many workers now expect the ability to telework and are increasingly seeking remote or digital nomad roles, both domestically and internationally. This trend also presents an opportunity for domestic employers to hire foreign workers in similar roles. However, Hungarian IT professionals surveyed are more pessimistic about the growth of non-traditional employment within Hungary compared to its expansion abroad.

If domestic employers and the government do not make these alternative work arrangements viable and appealing, IT professionals dedicated to teleworking may increasingly choose to work abroad or from home—especially given the lure of higher salaries, career advancement, and enhanced job opportunities.

To ensure that domestic employers of IT professionals—and consequently the national labour market and competitiveness at both company and national economy levels—benefit from the teleworking revolution accelerated by the pandemic closures, prompt government intervention is essential, even in the short term.

Therefore, our recommendations extend beyond merely supporting teleworking and promoting digital nomadism in Hungary. While such measures would help retain a larger proportion of Hungarian IT professionals and attract more foreign professionals to work in Hungary, they would not address the long-term shortage of IT professionals. Therefore, we have categorized our proposals based on whether they aim to generally reduce the domestic IT skills shortage or specifically promote digital nomadism. (see table summarising the proposals at the end of this chapter).

Our proposals were grouped into three categories according to the agreed research design:

- **technical proposals** that affect both the education system and the labour market;
- **suggestions for further research** to better understand employers' expectations and attitudes towards digital nomadism, and to investigate the combination of factors required to work as a digital nomad in Hungary;

- **communication proposals** to promote the use of communication tools to encourage domestic and foreign workers to work in Hungary or to Hungary as digital nomads.

The proposals are presented in a **coherent structure** using the template below:

Title of the measure	{name}
The aim of the measure	{proposed target(s)}
Content of the measure	{short summary}
Proposed responsible person(s)	{responsible (department/background institution)

7.2. Professional proposals

While our recommendations primarily focus on enhancing both the quantity and quality of IT professionals available to domestic employers, it is important to recognize that efforts to develop digital skills are needed at every level of the system. This includes individuals in the education sector, those currently not active in the workforce, and existing workers. There is no social group where ongoing learning is unnecessary or where significant gaps—compared to the EU average and labour market expectations—are not evident. We cannot anticipate an increased societal openness to IT careers without a much broader and deeper level of digital literacy across all societal groups, given that the coming years and decades will bring significant changes to the labour market. Digital renewal in education is therefore a key focus of our proposals.

Title of the measure	**Digital renewal of the education system**
The aim of the measure	To develop an educational system and teaching environment where students independently and collaboratively address problems using technology-driven tools, with the teacher serving as a mentor throughout the process of acquiring knowledge and developing skills, while incorporating empirical and practical reinforcement.

Content of the measure	Revising the DOS to encompass public education, vocational training, adult education, and higher education systems, including a thorough evaluation of the current state, establishing the desired target status, identifying development needs, and specifying the resources needed for improvements in at least the following areas: • digital infrastructure of educational institutions; • digital devices in educational institutions; • learners use their own tools; • digital competences for teachers; • digital pedagogical methodologies; • review of NAT from a digitisation perspective; • digital learning materials and other content used in digital education; • training digital teaching assistants; • introducing digital education (EdTech) solutions; • digital platforms for education administration and parental contact; • the traceability of educational careers.
Proposed responsible person(s)	Ministry of Interior, Ministry for Innovation and Technology, MK, OH, IT professional organisations (IVSZ), teachers' professional organisations

Title of the measure	**Wide-scale introduction of topics/subjects related to programming and algorithmic thinking in public education/vocational training**
The aim of the measure	Widespread dissemination of IT, programming and related problem-solving thinking in public education.

Content of the measure	In addition to traditional IT and digital culture instruction, integrating algorithmic thinking, analytical methods, and problem-solving into the curriculum would not only enhance interest in IT but also equip students aiming for further studies in other fields with a solid conceptual foundation for interdisciplinary processes anticipated due to digitalization across various sectors.
Proposed responsible person(s)	Ministry of Interior, MK, Educational Authority, IT professional organisations (IVSZ), teachers' professional organisations

Title of the measure	**Transforming the structure of higher education and better matching it to labour market demand**
The aim of the measure	Develop a higher education training structure that better matches the needs of employers to the output of future workers
Content of the measure	Alongside the rise in higher education graduates, establishing a regulatory framework that enables a flexible approach to better align the output of IT graduates with labour market demand on an annual basis (informed by medium- and long-term labour market forecasts)
Proposed responsible person(s)	Inclusion of Ministry of Public Administration and Justice, MK, Hungarian Chamber of Commerce and Industry, employers' representative organisations, IT professional organisations (IVSZ, VISZ, etc.) and higher education institutions

Title of the measure	**Increase in higher education admissions in IT and science**
The aim of the measure	Reducing the long-term shortage of IT specialists in Hungary by increasing the number of graduates in the relevant higher education fields

Content of the measure	Preparation and adoption by the government of a proposal to increase the number of higher education courses concerned
Proposed responsible person(s)	Ministry of Public Administration and Justice, MK, Hungarian Chamber of Commerce and Industry, employers' representative organisations, IT professional organisations (IVSZ) and higher education institutions

Title of the measure	**Measures to increase the supply of market training (e.g. bootcamp schools)**
The aim of the measure	Short-term alleviation of the domestic IT labour shortage in jobs requiring skills that can be acquired through short-cycle (adult) training
Content of the measure	To provide domestic enterprises that initiate bootcamp-type training or enrol their employees in such training in an organised manner with a legal environment (e.g. corporate tax credit, training credit, training voucher covering part or all of the tuition fees for the trainees, etc.) and other conditions (e.g. university computer rooms) that enable these training institutions to recruit and train a significantly larger number of interested individuals than today.
Proposed responsible person(s)	Ministry of Public Administration and Justice, Ministry for Innovation and Technology, MK, Hungarian Chamber of Commerce and Industry, employers' representative organisations, IT professional organisations (IVSZ, VISZ, etc.)

Title of the measure	Training loan scheme for professionals with high level IT and digitalisation skills
The aim of the measure	Supporting the training and retraining of (non-IT) professionals with above-average digital competence and interest in IT to address the shortage of IT and digitalisation professionals.
Content of the measure	Increasing the number of digitally literate workers through flexible training funding solutions. The target group of the measure includes workers who have acquired (or are acquiring) a high level of digital competence and have the desire and ability to learn (or are perceived by their employer as having the desire and ability to learn) entry-level IT skills (e.g. junior programmer, tester, scrum master, etc.). The scheme would essentially support upskilling and reskilling training for companies and individuals, typically through financial instruments (loan products), with the participation of bootcamp schools and adult education institutions.
Proposed responsible person(s)	Ministry for Innovation and Technology, MK, Hungarian Chamber of Commerce and Industry, employers' representative organisations, IT professional organisations (IVSZ VISZ, etc.)

Title of the measure	Continuation of the "Program your future" programme
The aim of the measure	Increasing the number of enrolments in IT and digital vocational training, adult education, and higher education, reducing drop-out rates, and raising the quality of training by expanding cooperation between trainers and businesses (as a continuation of the GINOP 3.1.1. "Program Your Future" flagship project, which also provides the framework for this research).

Content of the measure	To boost demand for IT training, enhance its relevance to the labour market, and reduce drop-out rates, it is essential to foster collaboration between training institutions and ICT companies. • this could include initiatives such as apprenticeship programmes, dual training schemes, the development of interdisciplinary training, training packages, and mentoring programmes. • to boost interest in mathematics, science, technology, and information technology among students, parents, teachers, and trainers, with a specific emphasis on raising the proportion of female IT specialists in both secondary and higher education; • implement an awareness-raising and career guidance programme that involves parents, peer groups, teachers, students in education and training, and the broader community. This programme should utilise communication and motivational strategies to encourage more students to view science, engineering, and IT as viable career options; • enhance the appeal of IT careers, increase the number of applicants, and reduce drop-out rates; • improving the content and methodology of IT training in vocational education and adult education • support for digital workshops, programming courses (tool vouchers, travel support, preparation for competitions) • motivational and communication activities to support the project's objectives • support for the development of experience centres / digital community spaces
Proposed responsible person(s)	Ministry for Innovation and Technology, MK, IT professional organisation (IVSZ)

Title of the measure	Increasing the number of IT and digital professionals available to domestic businesses
The aim of the measure	Attracting and retaining IT and digital workers in Hungary, and strengthening the retention capacity of domestic businesses.
Content of the measure	• Encouraging Hungarian and foreign digital professionals working abroad to work in Hungary (physically or nomadically); • A targeted programme or support to help retain domestic talent for domestic ICT businesses; • Facilitating the employment of foreign nationals (e.g. visa and/or tax facilitation) • Hybrid working, mosaic employment, self-employment, new generation organisational culture, atypical employer solutions, support for attracting and retaining professionals; • Strengthening the labour retention capacity of domestic employers to reduce the leverage of global telework intermediaries;
Proposed responsible person(s)	Ministry of Public Administration and Justice, MK, Hungarian Chamber of Commerce and Industry, employers' representative organisations, IT professional organisations (IVSZ VISZ, etc.)

Title of the measure	Developing the legal environment to promote digital nomadism ("digital nomad visa")
The aim of the measure	Following the establishment of regulations for the settlement of digital nomads[24], the aim is to create a legislative environment that will position Hungary as a preferred destination for these professionals.
Content of the measure	Developing a legislative environment supportive of digital nomadism, including support • for improving housing opportunities for digital nomads (e.g. through housing contributions) • provide them with travel discounts for tourism purposes to discover their home destinations • preferential access to the offer of domestic cultural institutions • provides more favourable income tax conditions when working for a domestic employee/agent
Proposed responsible person(s)	Ministry of Public Administration and Justice, MK, Hungarian Chamber of Commerce and Industry, employers' representative organisations, IT professional organisations (IVSZ VISZ, etc.)

7.3. Proposals for further research

Given that the current research focused on the experiences, perceptions, and attitudes of IT professionals towards teleworking and digital nomadism, it would be highly beneficial to undertake at least the following three studies promptly. These studies would offer decision-makers a deeper and more comprehensive understanding of this enduring and irreversible labour market trend, aiding in the formulation of policy, regulatory, or developmental measures.

Title of the measure	Perceptions and attitudes towards teleworking and digital nomadism among non-IT teleworkers

[24] The White Card provides the framework for settlement and residency for third-country nationals under Chapter 11 of Act CXX of 2021. This act complements Act II of 2007 concerning the Entry and Residence of Third-Country Nationals, with the goal of facilitating settlement as digital nomads in Hungary.

The aim of the measure	Investigate whether there is a similar level of demand and employee expectation for atypical forms of employment in teleworking and digital nomad roles as observed among IT professionals.
Content of the measure	The research would address, among others, the following priority themes: • examining international trends in employee habits and attitudes towards digital nomadism (using secondary sources) • identifying the jobs most affected by teleworking and digital nomadism • to examine how employees in the identified roles perceive teleworking, including digital nomadism, using primary research methods • to survey and analyse the views, opinions, and attitudes of workers who are already experienced in teleworking and digital nomadism through primary research • to develop recommendations based on the findings of the research
Proposed responsible person(s)	Ministry for Innovation and Technology, MK, IM, Hungarian Chamber of Commerce and Industry

Title of the measure	Conducting primary research to understand the attitudes and opinions of domestic employers on teleworking and digital nomadism
The aim of the measure	Find out the views/attitudes of relevant domestic employers on digital nomadism
Content of the measure	The research would address, among others, the following priority themes: • an analysis of global trends regarding employers' attitudes and practices towards teleworking and digital nomadism (using secondary sources) • identification of the domestic industries and sectors most impacted by teleworking and digital nomadism • identification of key and prevalent jobs that can be performed remotely or as a digital nomad • an investigation into the prevalence and employers' perceptions of teleworking and digital nomadism in Hungary using primary research methods • a survey and analysis of opinions, biases, concerns, experiences, and attitudes related to this phenomenon among businesses that do or do not employ digital nomads through a primary research questionnaire • based on the research findings, to provide recommendations for promoting digital nomadism among domestic employers
Proposed responsible person(s)	MK, IM, IT professional organisations (IVSZ, VISZ, etc.)

Title of the measure	Identify potential barriers to the spread of teleworking and digital nomadism in the country and make proposals to overcome them
The aim of the measure	Identifying potential barriers to the expansion of teleworking and digital nomadism in the home country

Content of the measure	To conduct an analysis, including a primary research component, that identifies the obstacles to working as a digital nomad in Hungary. The research will focus on: • Examining international and domestic trends in teleworking and digital nomadism, as well as the factors that limit their adoption • Reviewing the practices of countries that are leaders in teleworking and digital nomad employment, and assessing their applicability to domestic needs • Identifying the main barriers to the expansion of teleworking and digital nomadism, such as the regulatory environment, employer attitudes, tax conditions, living standards, and political climate • Formulating regulatory and public policy proposals to address these identified barriers
Proposed responsible person(s)	MK, IM, IT professional organisations (IVSZ, VISZ, etc.)

7.4. Communication proposals

The **objective of the communication proposals** is to promote the concept of working as a digital nomad in Hungary among both domestic and foreign workers, and to make domestic employers aware of the importance of increasing flexibility in teleworking and digital nomad roles. This aims to retain existing employees and address labour shortages by attracting foreign professionals.

Title of the measure	**Launching communication campaigns to promote working as a digital nomad from a location in Hungary on international online and offline platforms, mainly for digital nomads**
The aim of the measure	Promoting working as a digital nomad in Hungary among foreign workers

Content of the measure	Launching international online and offline communication campaigns (e.g. online advertisements, print business press, TV and radio spots, social media ads) in the EU and other relevant countries to promote digital nomadic working in Hungary among stakeholders.
Proposed responsible person(s)	MK, NKOH, IT professional organisations (IVSZ, VISZ, etc.)

Title of the measure	**Development of a website in English and Hungarian to present the conditions and opportunities of working as a digital nomad in Hungary, to promote working here and to present other informative content**
The aim of the measure	Promoting working as a digital nomad in Hungary among foreign workers

Content of the measure	To create and run an international communication portal that offers a wide range of content for current digital nomads in Hungary and those interested in becoming digital nomads, providing at least the following content: • A comprehensive overview of the legislation, government decrees, and regulations governing digital nomadism in Hungary • An introduction to the tax and contribution rules associated with working as a digital nomad • An informative guide covering the history, culture, domestic politics, foreign policy, and other relevant aspects • A description of the telecommunications and IT infrastructure available in the country • An overview of cultural and entertainment opportunities • A summary of dining and gastronomic options • A presentation of public transport options • Information on public education institutions and further training opportunities • An informative overview of the key and popular tourist destinations • etc.
Proposed responsible person(s)	MK, NKOH, IT professional organisations (IVSZ, VISZ, etc.)

Title of the measure	**Sensitising domestic employers to teleworking and digital nomadism**

The aim of the measure	To make domestic employers aware of the importance of increasing flexibility in teleworking and digital nomad roles, both to retain existing employees and to address labour shortages with foreign professionals.
Content of the measure	To disseminate the results of this research and international trends more widely among domestic enterprises (primarily, but not exclusively, those employing IT professionals). To present national and international good practices, interviews, podcasts, and analyses to demonstrate that this is a labour market phenomenon that will persist and should not be ignored, as rejecting it may lead to increased emigration, while embracing it may help alleviate labour shortages in the short term.
Proposed responsible person(s)	MK, NKOH, IT professional organisations (IVSZ, VISZ, etc.)

The table below summarises each of the proposals, indicating in each case whether they support the reduction of the IT labour shortage and/or the spread of digital nomadism.

Table 5: Summary of the proposals

Title of proposal	Reducing the IT workforce shortage	Supporting the spread of digital nomadism
1. Professional proposals		
Digital renewal of the education system	X	
Wide-scale introduction of topics/subjects related to programming and algorithmic thinking in public education/vocational training	X	
Transforming the structure of higher education and better matching it to labour market demand	X	
Increase in higher education admissions in IT and science	X	
Measures to increase the supply of market training (e.g. bootcamp schools)	X	

Training loan scheme for professionals with high level IT and digitalisation skills	X	
Continuation of the "Program your future" programme	X	
Increasing the number of IT and digital professionals available to domestic businesses	X	X
Developing the legislative environment to promote working as a digital nomad	X	X
2. Proposals for further research		
Perceptions and attitudes towards teleworking and digital nomadism among non-IT teleworkers		X
Conducting primary research to understand the attitudes and opinions of domestic employers on teleworking and digital nomadism	X	X
Identify potential barriers to the spread of teleworking and digital nomadism in the country and make proposals to overcome them		X
3. Communication proposals		
Launching communication campaigns to promote working as a digital nomad from a location in Hungary on international online and offline platforms, mainly for digital nomads	X	X
Development of a website in English and Hungarian to present the conditions and opportunities of working as a digital nomad in Hungary, to promote working here and to present other informative content	X	X
Sensitising domestic employers to teleworking and digital nomadism	X	X

8. List of sources

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9. Annexes

9.1. A partial presentation of national and international research

KPMG CIO Survey 2020

1. Document summary

Author of the document	Bev White, Steve Bates (KPMG)
Document title	**KPMG CIO Survey 2020**
Language of the document	English
Country of publication	na
Organisation producing/contracting the document	KPMG
Document publication year	2020
Type of document (e.g. study, research, strategy, legislation, index-based analysis, etc.)	research
Source (URL)	https://assets.kpmg/content/dam/kpmg/xx/pdf/2020/10/harvey-nash-kpmg-cio-survey-2020.pdf

2. Content analysis of the document

2.1. Purpose of the document

The KPMG CIO (Chief Information Officer) Survey, the largest survey of IT executives worldwide, includes over 4,200 IT leaders from 83 countries, representing organisations with a combined technology budget exceeding $250 billion.

Conducted regularly over the past 22 years, this research has accurately identified future technology trends. Unusually, due to the pandemic, the research was conducted in two phases: the first starting on 17 December 2019, before COVID-19, and the second between 5 June and 10 August 2020, during the pandemic.

2.2. Content findings relevant to the research

The results of the research are summarised in 8 findings:

1. Technology investment is a priority: in 2020, 55% of technology leaders received budget increases to enhance efficiency, customer experience, and product and service offerings. Additionally, leaders reported an average 5% rise in IT spending to address

the pandemic crisis, mainly on cloud infrastructure, cybersecurity, and support for remote work.

2. Crisis management varies by sector: unlike previous economic crises, the pandemic's impact has been uneven across sectors. Some industries faced challenges in developing new business models, while others struggled to meet soaring demand. Utilities, public service providers, healthcare institutions, and technology companies are making substantial investments post-epidemic, whereas entertainment, education, and manufacturing sectors have had to scale back.

3. A widening digital gap exists between businesses that have embraced digital technology and those that have not: very few companies were prepared with a plan for the pandemic. Only three out of ten IT managers had both a digital strategy and the necessary tools for remote digital operations. During the crisis, those leaders who had invested in technology were able to enhance their business performance, while others experienced budget cuts. Over time, the latter group is expected to see a decline in performance.

For nearly half of IT leaders (47%), COVID-19 has significantly accelerated digital transformation and the adoption of emerging technologies such as AI, blockchain, and automation. The adoption of artificial intelligence (AI) and machine learning (ML) has increased from 21% before COVID-19 to 24% now, marking a notable rise in just a few months.

4. Rise in Cyber-Attacks: The shift to home networks has led to a significant increase in cyber-attacks. Since the pre-crisis period, 41% of managers have encountered cybersecurity incidents, highlighting the need for prioritizing investment in cyber technology. (The sectors most frequently targeted are automotive, energy, and technology).

5. Evolving employee preferences: 43% of managers anticipate that 50[25]% of their employees will continue to prefer working from home even after the pandemic. Sectoral analysis of the survey reveals that the IT sector (62%), services (55%), and telecommunications (54%) are most likely to see home office as the preferred option for employees post-pandemic. Conversely, sectors such as construction (15%), manufacturing, automotive (26%), and healthcare (30%) are least likely to maintain home-based work arrangements.

[25] Note: in relation to total employees

However, this shift also intensifies the challenge of recruitment: managers must reconsider their strategies for attracting and retaining employees in a landscape where physical location is no longer a key factor (telecommuting ranks among the top five employee expectations). Additionally, 84% of managers expressed concern for their teams, prompting more companies to implement mental health awareness training.

As a result of telecommuting, 70% of IT leaders noted improved collaboration between business and technology teams, and over half (52%) reported that it has also enhanced a culture of inclusion within their organization.

6. Aim for diversity: the number of female IT managers is still very low. Some improvement is particularly visible in Latin America, thanks to awareness-raising programmes launched earlier.

7. Technology-driven crisis - the role of IT managers has been enhanced: 6 out of 10 IT managers felt that their influence within the company increased during the global crisis.

8. Everything has transformed, or has it?: the pandemic has undeniably impacted every sector of the business world significantly. However, company priorities remain largely the same: enhancing customer satisfaction and boosting efficiency are still key areas where IT managers play a crucial role. The major shift from the past is the increased availability of necessary budgets: there have been more innovations in the past six months than in the previous decade combined.

2.3. Conclusions

The survey also reveals a clear trend that remote work will continue to be a major option for employees in technology sector[26], particularly IT, even after the pandemic, and will become a top 5 priority for younger generations. However, for adaptable companies, this expansion of teleworking may make recruitment easier than before. On the other hand, employers will need to embrace a new approach to employee retention and development in a context where the physical company headquarters is less appealing. It is no surprise that for Generation Z, corporate culture is more crucial than the location of a company's offices.

Consequently, conditions for utilizing digital nomads[27] are expected to further improve in the medium to long term.

[26] Note: Most technology managers anticipate that their IT teams will generally work 2-3 days remotely and spend another 2-3 days in the office.

[27] Note: This observation is naturally confined to sectors where remote work is practical, such as those requiring a highly intellectual workforce or involving digitalization.

OECD: Teleworking in the COVID-19 Pandemic: Trends and Prospects

1. Document summary

Author of the document	Daniel Ker, Pierre Montagnier, Vincenzo Spiezia
Document title	**Teleworking in the COVID-19 Pandemic: Trends and Prospects**
Language of the document	English
Country of publication	–
Organisation producing/contracting the document	OECD (Secretary-General)
Document publication year	2021
Type of document (e.g. study, research, strategy, legislation, index-based analysis, etc.)	study
Source (URL)	Teleworking in the COVID-19 pandemic: Trends and prospects (oecd.org)

2. Content analysis of the document

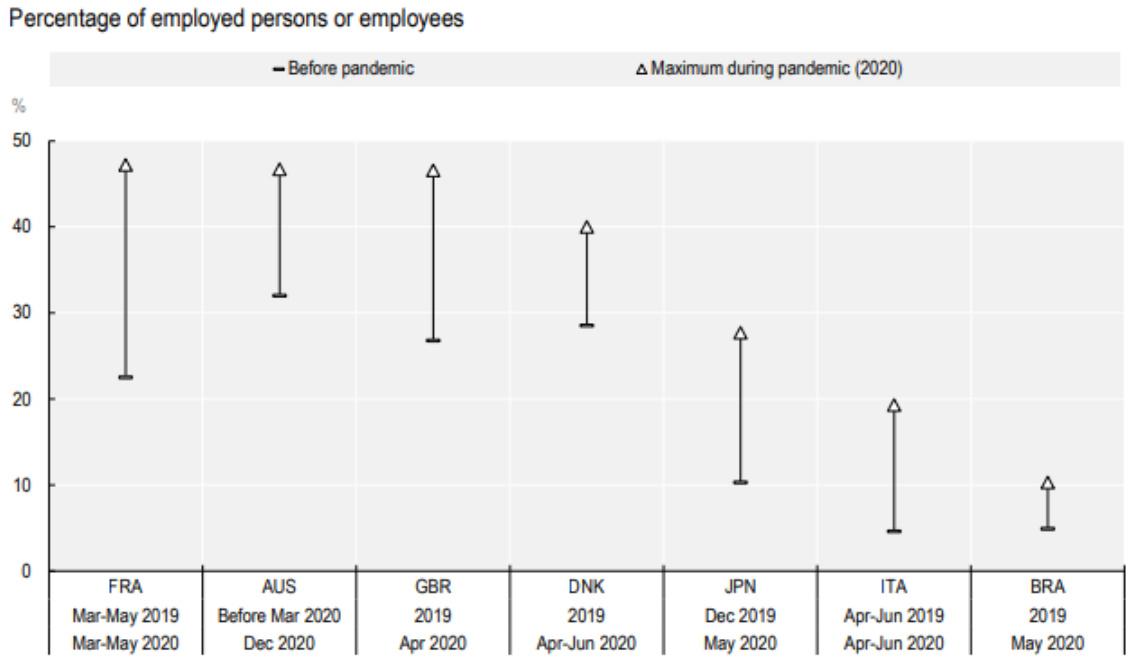
2.1. Purpose of the document

The study outlines trends and changes in teleworking during the first year of the pandemic (2020) and projects future developments in teleworking. The analysis uses data from the U.S. Census Bureau, the Australian and U.S. Bureau of Labor Statistics (BLS), as well as other national statistical agencies and local surveys.

2.2. Content findings relevant to the research

Teleworking before and after the epidemic

Figure 47: Comparison of the share of teleworkers before and after the epidemic.



Source: OECD

Comparing the **period before the epidemic with the peak of the first wave**, the following changes in the share of teleworking have occurred in the countries measured by the OECD:

- **France**: from just over 20% (22%) in March-May 2019 to 47% in March-May 2020, the share of teleworkers more than doubled (+25%).
- **Australia**: from 32% in March 2020 to 47% in December 2020, the share of remote workers has increased one and a half times (+15%).
- **Great Britain**: 25% of employees worked telework in the pre-Covid period (2019), rising to 47% by the first wave (April 2020), a nearly twofold (1.8-fold) increase (+22%) compared to pre-povid levels.
- **Denmark**: the rate has risen from under 30% in 2019 (high teleworking) to over 40% in April-June 2020.
- **Japan**: from 10% in December 2019, teleworking increased to 28% in May 2020[28] (+18%).
- **Italy**: Teleworking incidence increased from around 5% in April-June 2019 to 20% in April-June 2020. This represents a more than fourfold increase (+15%) from a low base.

[28] Comment: Japan did not impose any nationwide closures in 2020.

- **Brazil**: in 2019, 5% worked remotely, doubling to over 10% by May 2020.

Teleworking peaks during the first wave of the epidemic

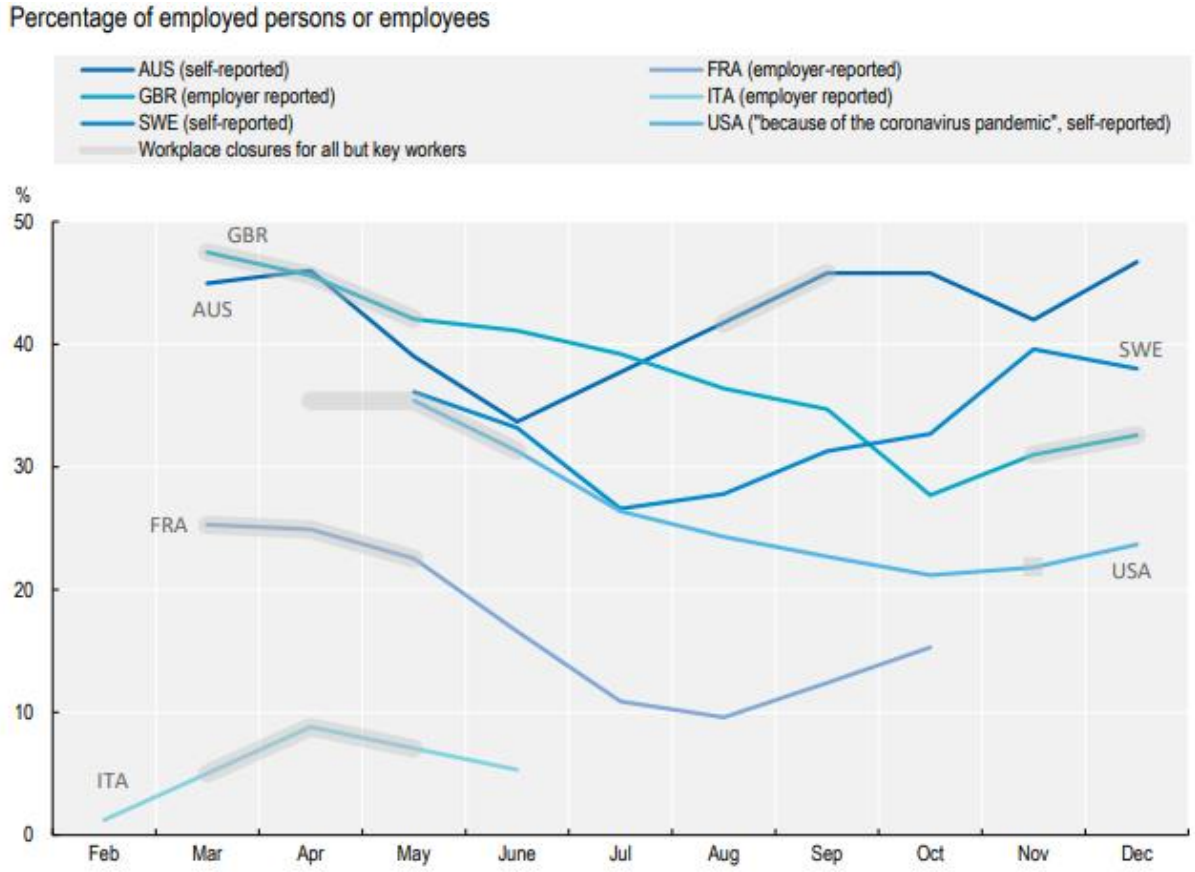
- In all the countries in the study, **teleworking increased significantly in response to the pandemic** , although the extent of this varies considerably between countries (given the different practices of governments in dealing with the epidemic). A detailed analysis of the countries included in the study shows the following in 2020[29] (no data available for the pre-Covid period):
  - **Italy**: the relevant data cover the period February-June 2020. The share of people working remotely peaked in April 2020, but was still just under 10%.
  - **France**: from a peak in March 2020 (25% telework rate), the share of teleworkers gradually decreased until August (10%). From there, it started to grow again, but the last available data (October 2020) showed that the share of teleworkers in the country was still below 20%.
  - **United States**: as in the other countries surveyed, the peak is expected to occur between April and May 2020 (but only estimates are available for the US for this period): the share of teleworkers was 35%. The gradual decline from the peak saw the share of teleworking in total employment fall to 20% by October 2020, followed by a gradual increase towards the end of the year to just under 25% at the end of 2020.
  - **Sweden**: the Nordic country also showed a similar trend in the share of teleworking between May and July 2020. From a peak of 35%, there was a gradual decline in the first part of the summer, falling to around 25% by July (no data available for the pre-covid period). However, Sweden has subsequently experienced significantly earlier and higher growth than other countries, resulting in a share of teleworking in the country approaching 40% in November 2020. From this peak towards the end of the year, there was a slight decline, but still close to 40%.
  - **Australia**: in 2020, Australia had the highest share of teleworking among the countries surveyed. From a peak of around 45% in April, the share of remote workers fell to 35% in June, from where it rose sharply to reach

[29] The significant differences in the two sets of data are due to the fact that the time series observations are based on company statistics/data, while the data comparing the peak period with the pre-epidemic period are based on self-reporting.

around 45% again in September-October and remained at that level until the end of 2020.

- **Great Britain**: the country had seen a gradual decline from its peak in the spring (48%), with the share of teleworking falling below 30% by October. Then, in the third wave, a phase of new closures led to an upward phase, resulting in a telework rate of just under 35% in the UK at the end of 2020.

Figure 48: Trends in the proportion of teleworkers during the epidemic

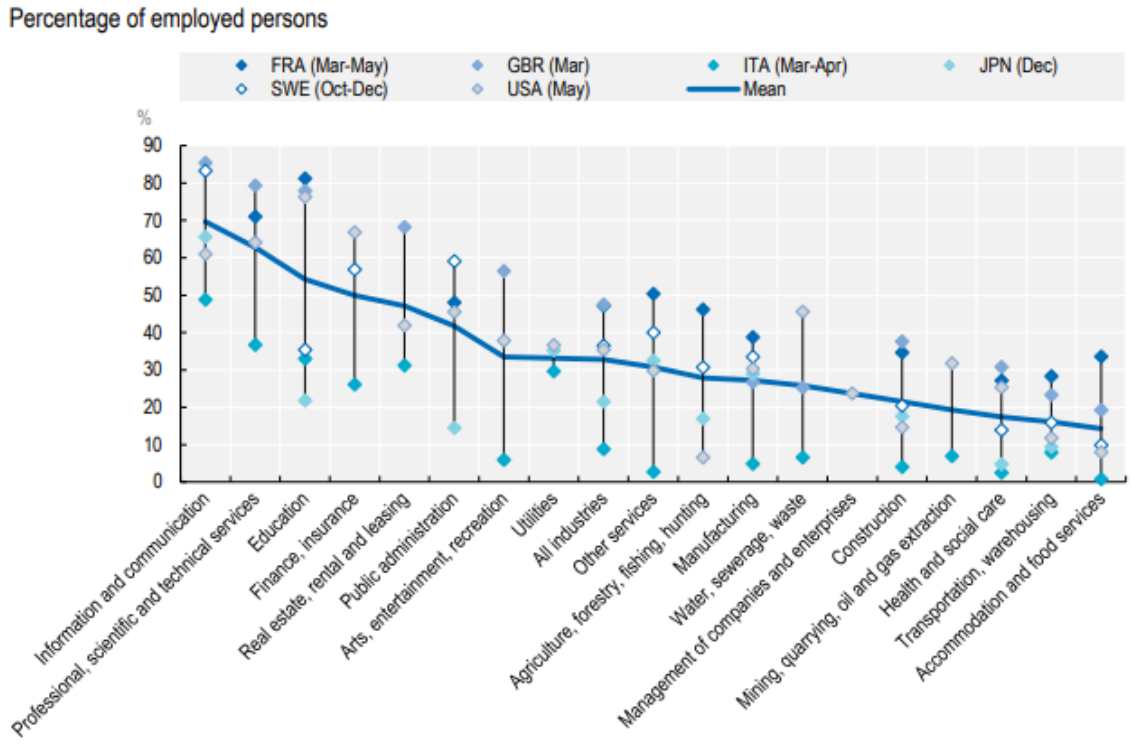


Source: OECD

Share of teleworking in each sector (time-series data not available):

- Teleworking reached its highest levels in the more digitally intensive sectors, exceeding 50%. Among the countries surveyed, the ICT sector saw the largest proportion of workers transitioning to remote work at the onset of the pandemic. In Italy, teleworking in the ICT sector peaked at around 50%, while in the US and Japan, it reached approximately 60-65%. In Sweden and the UK, teleworking in the sector soared to 85-90%.

Figure 49: Peak share of teleworkers during the epidemic (by sector)



Source: OECD

Relationship between company size and teleworking rates

- The OECD survey also indicates a correlation between company size and the extent of teleworking: presumably due to infrastructure factors, telecommuting is more prevalent in larger companies.

The impact of teleworking on productivity

- Most respondents believe they perform their tasks more efficiently when working remotely. However, it is important to note that there is a strong link between the preference for teleworking and the perception of increased productivity. Therefore, individuals who enjoy working from home generally feel more productive in that setting.

Prospects for teleworking

Developed economies experienced a higher rate of transition to remote work, with countries such as France, Australia, and the UK enabling nearly half of all workers to work from home during the first wave of the pandemic, at the height of the lockdowns.

The 2020 Population Survey conducted by the Australian Bureau of Statistics[30] inquired about which aspects of life during COVID-19 respondents would most like to see continue after the pandemic. In July 2020, 25% of respondents expressed a desire to continue working or studying from home. By November 2020, this proportion had risen to 30%, with a higher percentage of women (36%) than men (26%) still wanting to work or study from home.

According to a survey of 15,000 people in the United States[31], the proportion of individuals working from home could rise from an average of 5% before the pandemic to 22% afterwards.

In Japan[32] in December 2020, 20% of teleworkers said they would like to telework full-time in the future, and a further 33% said they would like to "telecommute" in the future. Only 18% said they rarely want to telework.

The surveys indicate that businesses must be ready to adjust their working practices concerning teleworking to align with employees' expectations.

2.3. Conclusions

There are also notable differences in the prevalence of teleworking across various industries. The ICT sector is particularly distinguished by the fact that most jobs can be done remotely, showing the highest proportion of teleworking among all industries in the countries surveyed during the peak of the epidemic. In some countries (e.g., the UK, Sweden), the proportion of teleworkers approached 90%.

The surveys indicate that businesses must be ready to adjust their working practices concerning teleworking to align with employees' expectations.

[30] Australian Bureau of Statistics (2020), Household Impacts of COVID-19 Survey, November 2020 https://www.abs.gov.au/statistics/people/people-and-communities/household-impacts-covid19-survey/nov-2020

[31] Barrero, J., N. Bloom and S. Davis (2020), Why Working From Home Will Stick, ttp://dx.doi.org/10.2139/ssrn.3741644.

[32] Japan Cabinet Office (2021), Under the influence of the new coronavirus infection: Under the influence of the new coronavirus infection, https://www5.cao.go.jp/keizai2/manzoku/pdf/result2_covid.pdf.

Trends in Remote Work: Will We Still Work from Home After the Pandemic?

1. Document summary

Author of the document	Robert D. Niehaus, Inc.
Document title	**Trends in Remote Work: Will We Still Work from Home After the Pandemic?**
Language of the document	English
Country of publication	NA
Organisation producing/contracting the document	Robert D. Niehaus, Inc.
Document publication year	2021.
Type of document (e.g. study, research, strategy, legislation, index-based analysis, etc.)	quick analysis
Source (URL)	https://www.rdniehaus.com/trends-in-remote-work-will-we-still-work-from-home-after-the-pandemic/

2. Content analysis of the document

2.1. Purpose of the document

The analysis aims to determine whether the abrupt rise in remote work following the pandemic was a temporary shift or if this unusual form of employment is set to become the new standard.

The analysis relies on data from the US Census Bureau and the Bureau of Labor Statistics (BLS).

2.2. Content findings relevant to the research

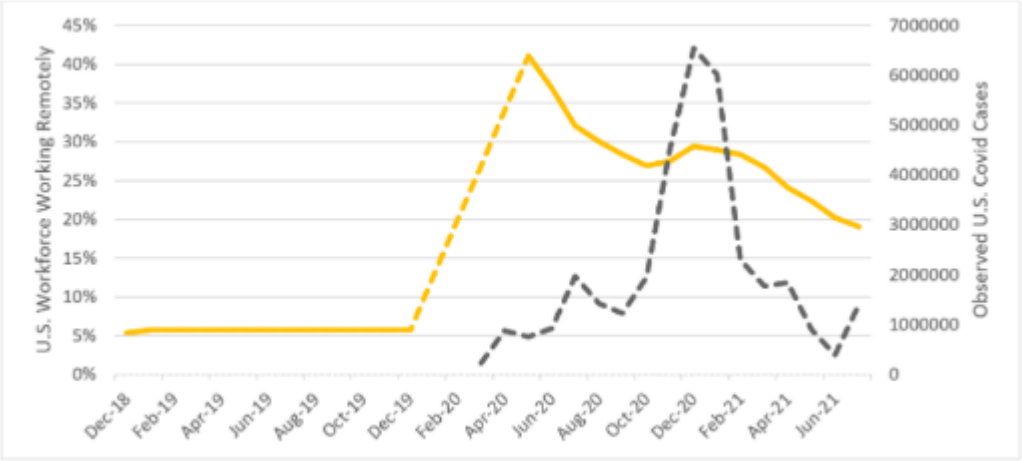
In the first half of 2020, teleworking emerged as a prevalent solution for companies striving to maintain productivity while reducing employees' exposure to COVID-19. With the increase in vaccination coverage, the proportion of home-based workers is expected to return to pre-pandemic levels by the end of 2021.

Current situation

The American Community Survey (ACS), conducted before COVID, indicated that teleworking had grown in the US over the past decade. Between 2010 and 2019, the share of teleworkers increased by an average of 0.16% per year, reaching 5.7% of the workforce in 2019.

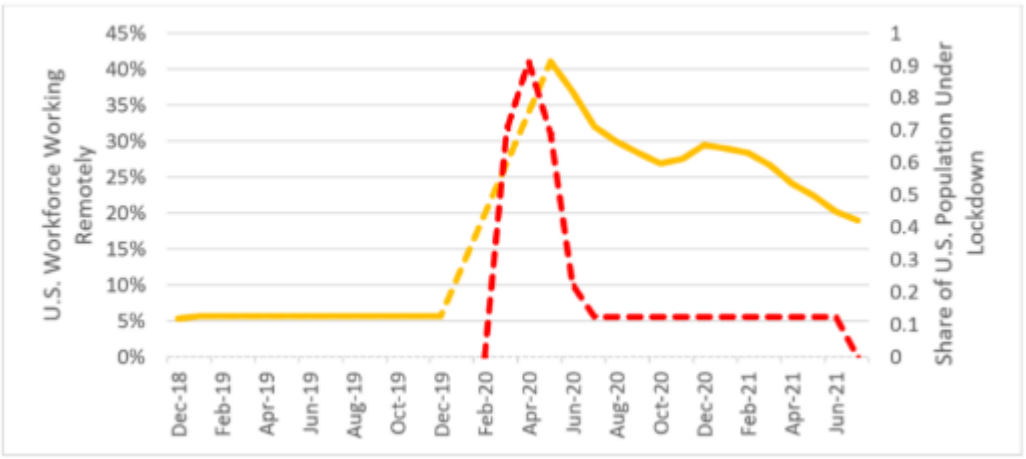
The graph below illustrates the percentage of remote workers relative to the total workforce and the number of COVID-19 cases reported in the United States from November 2018 to June 2021. Monthly data for 2018 and 2019 are based on the ACS. (Since the survey is conducted annually, the estimated rate for each month of the year remains constant.) In contrast, data from May 2020 to June 2021 are sourced from BLS records, which began monitoring the effects of COVID-19 on teleworking starting in May 2020. To align the two datasets, data from January to March 2020 have been interpolated using a constant monthly growth rate. Despite some notable differences in how the ACS and BLS define telework, the datasets are comparable for evaluating overall trends. Figure 2 presents a similar data series for teleworking, showing the proportion of areas where curfews were implemented compared to the total population to curb the spread of the virus.

Figure 50: Percentage of teleworkers in the United States and number of COVID infections observed (November 2018 to June 2021 of employees)



Source: American Community Survey (ACS), Bureau of Labor Statistics (BLS); Center for Disease and Control and Prevention (CDC), Robert D. Niehaus Inc.

Figure 51: Proportion of people in the US working remotely and living in an area affected by closures between November 2018 and June 2021.



Source: American Community Survey (ACS), Bureau of Labor Statistics (BLS); Center for Disease and Control and Prevention (CDC), Robert D. Niehaus Inc.

In early 2020, with the onset of the COVID-19 pandemic and the implementation of curfew restrictions, the proportion of telecommuting workers surged dramatically compared to the annual average, with over 40% of US employees working remotely in May 2020, compared to a 5.7% average in 2019. This represents more than a sevenfold increase in the share of remote workers from 2019. However, this substantial rise was influenced by several factors. While many office workers transitioned to teleworking, those in jobs that could not be performed remotely, such as in food service and hospitality, were pushed out of the labour market during the restrictions. Consequently, the share of teleworkers grew because the number of remote workers increased while the total number of employees decreased.

By October 2020, the percentage of US remote workers had dropped to 27% as COVID-19 cases declined, more unemployed individuals returned to the workforce, and parts of the economy shifted back to a more "normal" work schedule, though COVID-19 safety measures like masks and frequent hand washing continued. During the second wave of the pandemic, from October to December 2020, the proportion of remote workers rose slightly again but has since decreased further. These figures indicate a direct but fluctuating relationship between public health risks and the proportion of remote workers. Government and private sector policies related to telework continue to evolve in response to uncertainties such as future vaccination rates and the effects of the more transmissible Delta variant. Currently, the proportion

of teleworkers is decreasing, but expectations among workers suggest that the pandemic will accelerate a long-term shift towards remote work, a trend that was already in progress.

Looking ahead

The study cites Gartner's July 2020 survey, which found that 80% of US business leaders plan to expand remote working (either full-time or hybrid) for their employees after the pandemic. Additionally, a survey conducted by HR consultancy Mercer in July-August 2020 found that 94% of managers reported that productivity remained stable or increased compared to pre-pandemic levels. Conversely, a Gartner survey revealed that nearly one-third of executives expressed concerns about the lack of corporate culture in teleworking arrangements. This disparity underscores the uncertain future of telework post-COVID, as indicated by the study.

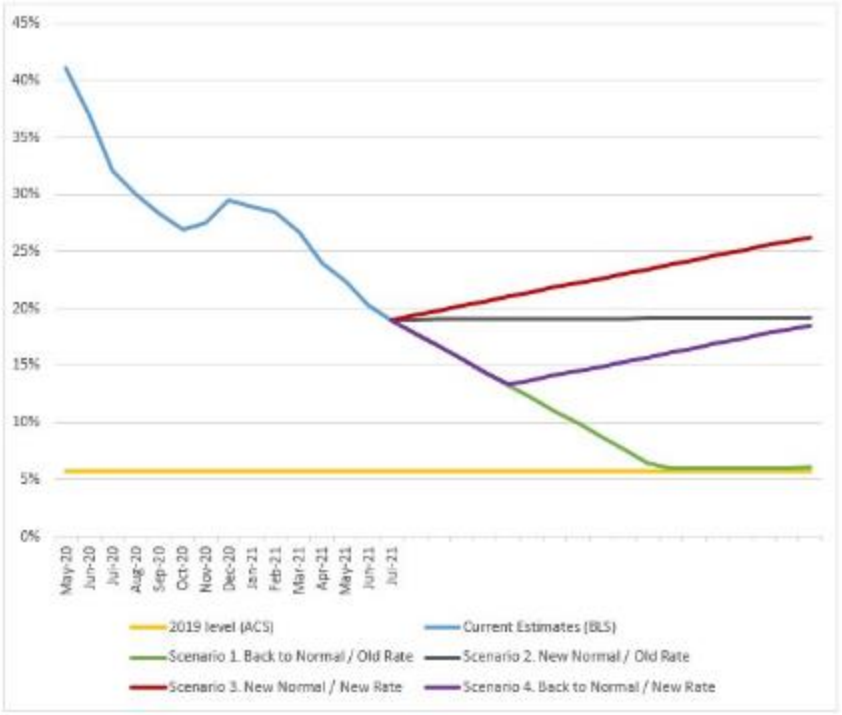
Several potential scenarios for the future of telework exist, similar to the economic recovery, and the study examines four possible scenarios: "pipe" shaped upslope, "k-shaped" or "w-shaped" slower upslope, or inverted "u-shaped" downslope. The study analyses 4 possible scenarios:

- the proportion of remote workers continues to fall back to "normal", i.e. pre-pandemic levels;
- while the proportion of remote workers is falling, it is rising to a higher "new normal" where flexible working is becoming the norm in some industries
- the share of remote workers will increase at the same rate as before COVID, so a steady increase is witnessed;
- new technologies, economic and cultural changes imply higher growth rates in the post-epidemic period.

The following figure shows these four possible scenarios for the future of telework in the United States.

The curves after June 2021 illustrate the potential future trends in the proportion of US workers telecommuting:

Figure 52: Four possible outcomes for teleworking in the future



Source: Robert D. Niehaus Inc.

1. **Return to the old norm with the old growth rate**

The green line represents the scenario where the share of teleworking starts to decrease as the restrictions due to the epidemic are eased. This trend would continue until telework rates return to pre-COVID rates based on ACS data. However, with workers basically enjoying the benefits of teleworking and productivity still high, companies may find it difficult to attract workers back to the office. Thus, this scenario is not considered likely.

2. **New norm with the old growth rate**

The grey line assumes that the share of teleworkers will continue to grow at the pre-COVID rate of 0.16% per year in the future. This scenario therefore takes into account those who prefer full teleworking and those who prefer partial hybrid working. In this scenario, employers exhibit more flexibility in choosing work locations.

3. **New norm, new growth rate**

The red line envisions a scenario where teleworking becomes the new standard in specific industries and regions, such as the ICT sector in the San Francisco - Bay Area (Silicon Valley), leading to a much higher annual growth rate in the number of people opting to telework compared to the pre-COVID period. However, since nearly a third of

business leaders are concerned about preserving company culture, it is more likely that there will be a slight rise in fully remote workers and a more substantial rise in those working hybrid. The downward trend in 2021 indicates that the equilibrium between maintaining corporate culture and adapting to teleworking has yet to be achieved.

4. Return to the old norm with a new growth rate

The purple line represents the most likely outcome. This scenario assumes that businesses will remain adaptable to accommodate the demand for teleworking during the pandemic years. Once the threat of COVID has subsided, the rate of teleworking will decrease (as employees in industries dependent on face-to-face interaction return to office settings). However, the pre-pandemic growth rate of teleworking will experience a slight increase and stabilize at a higher level, as companies that benefit from teleworking continue to utilize it.

3. Conclusions

The long-term effects of the changes introduced by COVID remain challenging to evaluate, and multiple scenarios are conceivable.

Nevertheless, consistent worker expectations and productivity levels indicate that the proportion of teleworkers is likely to keep increasing in the post-pandemic era, though the pace of this growth remains uncertain.

The Future of Work: Productive anywhere

1. Document summary

Author of the document	Accenture (H. Parker, C. Yiannakis, K. Saverino, S. Berger, T. Seward, M. Arnold, M. Wehmeyer, I. Omoruyi, H. Spring, N. Kimura, J. Chatigny, C. Flora, G. Burlacu, T. Nazari)
Document title	**The Future of Work: Productive anywhere**
Language of the document	English
Country of publication	USA
Organisation producing/contracting the document	Accenture
Document publication year	2021
Type of document (e.g. study, research, strategy, legislation, index-based analysis, etc.)	research
Source (URL)	https://www.accenture.com/_acnmedia/PDF-155/Accenture-Future-Of-Work-Global-Report.pdf#zoom=40

2. Content analysis of the document

2.1. Purpose of the document

The Accenture study examines the future of work, and was conducted with a global sample of 9,000 workers in 2021. The research finds that hybrid work arrangements are the way forward, emphasizing that the location of work is less important than the support provided to employees.

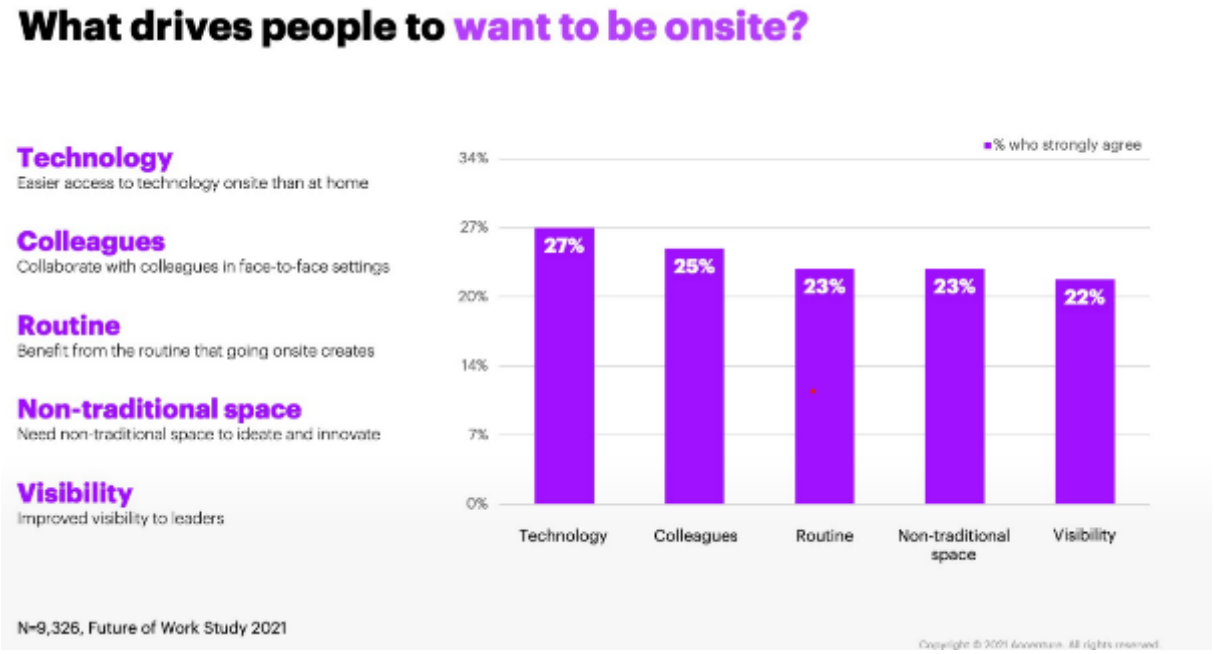
2.2. Content findings relevant to the research

To explore the advantages of remote work, the study first aimed to understand what drives employees to prefer on-site or remote work and how they perceive the differences between these two work modes.

According to the study, 27% of respondents believe that on-site work facilitates access to technology, while 25% value on-site work for its face-to-face meetings and collaboration opportunities. For 23%, the importance of on-site work lies in maintaining a daily routine, and another 23% appreciate the brainstorming and creative work that

occurs in an office setting. Additionally, 22% of respondents find the on-site work environment important due to the visibility it provides to managers.

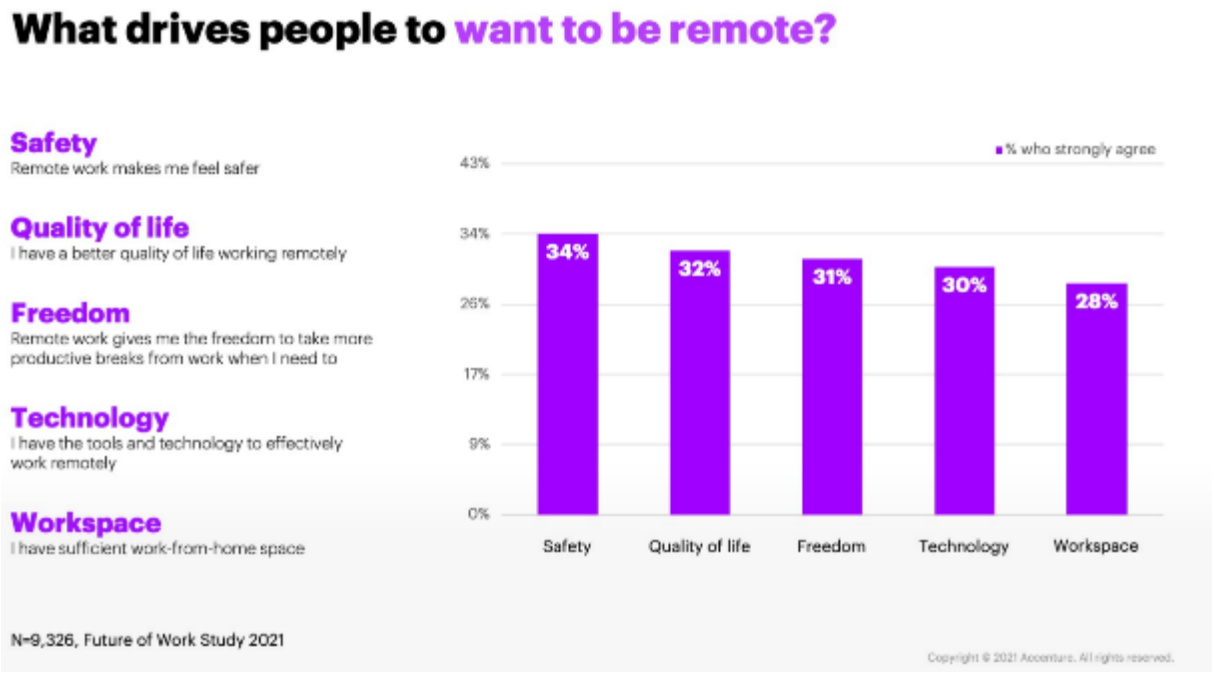
Figure 53: The advantages of working on site



Source: Accenture

Respondents identified five key reasons for preferring teleworking for their daily tasks: safety at work (34%), improved quality of life (32%), a sense of freedom (31%), access to technology (30%), and sufficient workspace (28%).

Figure 54: The benefits of remote working



Source: Accenture

The study mainly examines hybrid working and the 12 efficiency incentives identified by employees. Workers who maintain the same performance from any location essentially have greater personal and organisational resources:

Table 6: 12 efficiency drivers identified by employees

Personal resources	Organisational resources
1. Working independently: the more realistic the job expectations, the greater the freedom an employee feels to independently assign tasks, and the more consistent the feedback, the more likely they are to be highly effective and develop	7. Agile organisational functioning: the degree to which employees and teams understand their role and its significance within the broader context, and their readiness to handle unexpected situations
2. Favourable mental health: the level of job satisfaction experienced by employees and how the support from colleagues and the workplace contributes to their well-being	8. Intelligent organisation the extent to which employees feel that their organisation ensures their safety at work
3. The desire to learn/progress the willingness of employees to engage in internal training, mentor others, and improve performance through learning	9. The organisation has health and safety regulations how crucial employees perceive their physical and mental health to be for their organisation
4. High level digital skills increasing employer demands in emerging technologies such as cloud computing, robotics, VR, and digital collaboration tools	10. The organisation supports vaccination the organisation’s ability to support employees with objective, data-driven information during crises like Covid-19
5. Bonding, social relationships at work the prevalence of informal interactions and networking among colleagues within the workplace	11. Digitally mature organisation how effectively the organisation supports its employees' digital readiness and communicates its expectations regarding digitalisation
6. Work-life balance the growing importance of work-life balance and the extent to which employees feel their work enhances their self-esteem	12. Supporting management the capacity of management to support employee welfare

Source: Századvég editing

83% of respondents indicated that they consider the hybrid model[33] to be the most suitable approach for the future. There is a crucial need to update previous management and HR strategies that were focused solely on face-to-face, on-site work. With appropriate support, employees can maintain efficiency, effectiveness, and well-being whether working on-site, remotely, or in a hybrid setup.

The success of a business relies on having healthy and productive employees, and the location of their work has become less critical. This is why 63% of high-growth companies have already allowed their employees to choose their work location. During the pandemic, 58% of respondents worked in a hybrid model, which helped them manage their mental well-being better and build a stronger connection with their workplace. This improvement is not due to reduced stress, but rather because of the sufficient resources provided by employers. On the other hand, 25% of respondents reported that they were required to be at work throughout the pandemic and may not be able to continue working remotely. These individuals are predominantly employed in the health, retail, and hospitality sectors, usually within smaller, local businesses.

2.3. Conclusions

One of the key findings of the paper is that "*Where should workers work*?" is no longer a relevant question for the future of work, but rather the more appropriate question "*What enables workers to realise their potential and perform their job in a healthy and efficient manner, regardless of where they do it*?" This approach aligns well with the lifestyle and working methods of digital nomads. The current research indicates that work cannot simply be classified as either on-site or remote; instead, the rise of hybrid work requires managers to adapt to new scenarios.

The study provides key recommendations for employers regarding the future of employee work arrangements It is essential for employers to address four key areas to support their workers:

- **modernise HR operations** (by tracking new workspaces, new teams and roles)
- **shaping the working environment** and organisation **around workers** (creating mental and physical safety)
- **developing digital skills** (digitalisation of the organisation, personal and position-specific training)

[33] Hybrid model: workers can work from remote access 25%-75% of the time.

- **supportive leadership** (responsible leadership, ensuring appropriate supportive background)

Covid-19 and the Rise of the Digital Nomad

1. Document summary

Author of the document	NA
Document title	**Covid-19 and the Rise of the Digital Nomad**
Language of the document	English
Country of publication	USA, VA
Organisation producing/contracting the document	MBO Partners
Document publication year	2020
Type of document (e.g. study, research, strategy, legislation, index-based analysis, etc.)	study
Source (URL)	https://s29814.pcdn.co/wp-content/uploads/2021/05/MBO-Partners-Digital-Nomad-Report-2020.pdf

2. Content analysis of the document

2.1. Purpose of the document

In 2020, the global transition to teleworking was accelerated by the COVID-19 pandemic. This shift is expected to have led to a lasting increase in the number of people working as digital nomads. The purpose of the survey is to illustrate the rise in remote working both before and after the pandemic, as well as to measure the proportion of remote workers who also identify as digital nomads.

2.2. Content findings relevant to the research

The research offers a distinctive definition[34] of the digital nomadic work style. Consequently, based on the methodological constraints of statistical surveys and the interpretation developed in the study, we have formulated our own definition of the digital nomadic lifestyle (refer to the chapter on concept definition and delimitation).

The study examined digital nomads from two perspectives:

1. Increase in the number of digital nomads

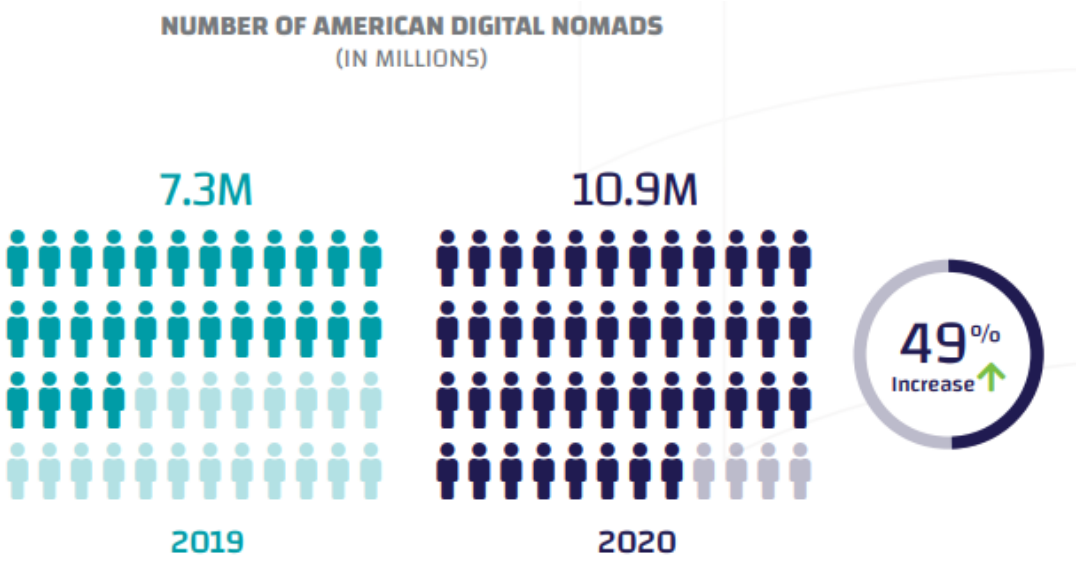
The research

[34] MBO Research defines a digital nomad as an individual, typically holding a university degree, who chooses a location-independent lifestyle enabled by digital technology, allowing them to work from any location with an internet connection. Unlike traditional teleworkers, who generally remain in a single geographical area, digital nomads travel and explore while working.

- examines the number of individuals who were freelancing remotely before the pandemic and transitioned to being digital nomads during the pandemic.
- It also investigates the percentage of those who began remote work in conventional jobs due to the pandemic and subsequently opted to become digital nomads.

A survey published in 2020 revealed that 10.9 million US workers identified as digital nomads in 2020, marking a 49 percent rise from 2019 (including the effects of the pandemic).

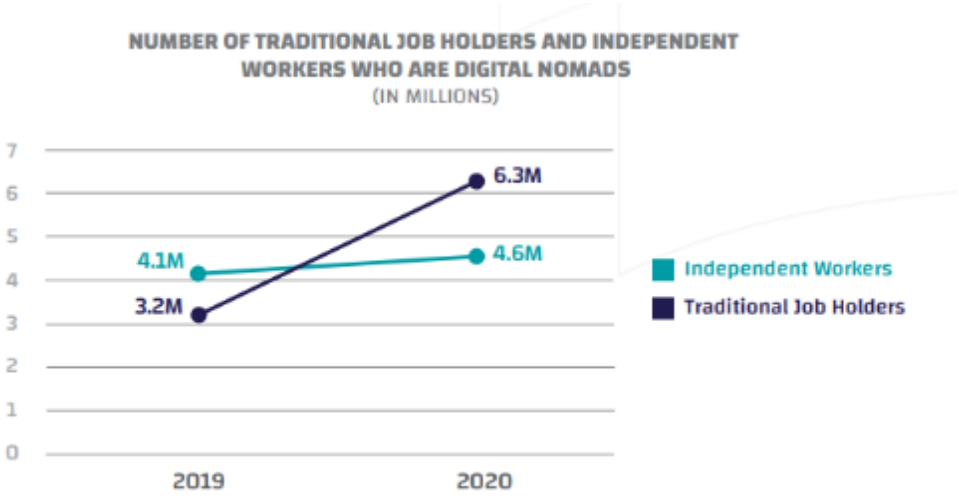
Figure 55: The number of digital nomads in the US labour market



Source: MBO

The research predicts that the number of digital nomads previously self-employed will grow by 12% by 2020, increasing from 4.1 million in 2019 to 4.6 million in 2020. There was a more substantial increase (96%) in the number of traditional 40-hour employees working as digital nomads, rising to 6.3 million in 2020 from 3.2 million in 2019.

Figure 56: Change in the number of digital nomads (employed/self-employed) between 2019 and 2020



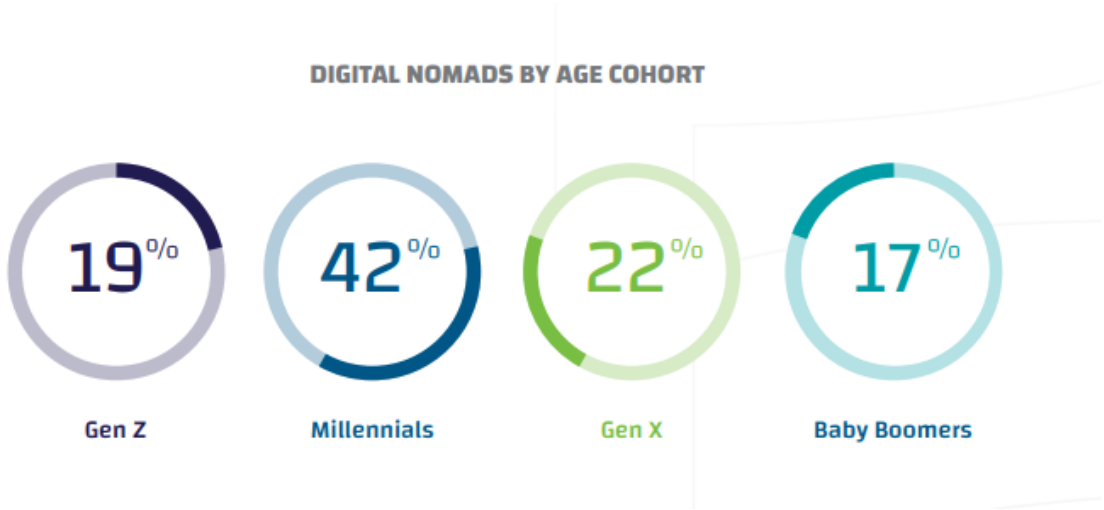
Source: MBO

2. Regarding the demographic profile of digital nomads

The proportion of older generations among them decreased following the pandemic, as health concerns prompted many to return to their home environments and work from home offices.

According to the survey, 19% of digital nomads are Generation Z (18-24 year olds), 42% are Generation Y (25-39 year olds), 22% are Generation X (40-54 year olds) and 17% are Baby Boomers.

Figure 57: Distribution of digital nomads by age



Source: MBO

3. Typical occupations of digital nomads

Digital nomads are employed across a variety of sectors, with the most prevalent being IT (12%), education and training (11%), consultancy, coaching and research (11%), sales, marketing and PR (9%), and creative services (8%), with other sectors having relatively equal representation.

4. Where do digital nomads work from?

The survey also looks at digital nomads' habits of relocation. In the pre-pandemic period, nomads most often spent 60-70 consecutive days in a foreign environment and then moved to a different location by air. The pandemic has led many people to switch to "van life", so that they can avoid the uncertainties of airport and tourism regulations. Airbnb's 2020 survey[35] shows that the most common form of booking among digital nomads is 28 days or slightly longer.

5. How sustainable will the digital nomad lifestyle be?

Among those who adopted the digital nomad lifestyle following the pandemic, not everyone intends to maintain this way of life long-term: 34% of respondents indicated they plan to work as digital nomads for only the next year, while an additional 53% aim to continue for no more than 2-3 years. Conversely, 90% of individuals who were digital nomads before the pandemic wish to persist with this lifestyle. Additionally, 19% of those currently working remotely from a home office are considering transitioning to a digital nomad lifestyle within the next 2-3 years, though they remain uncertain.

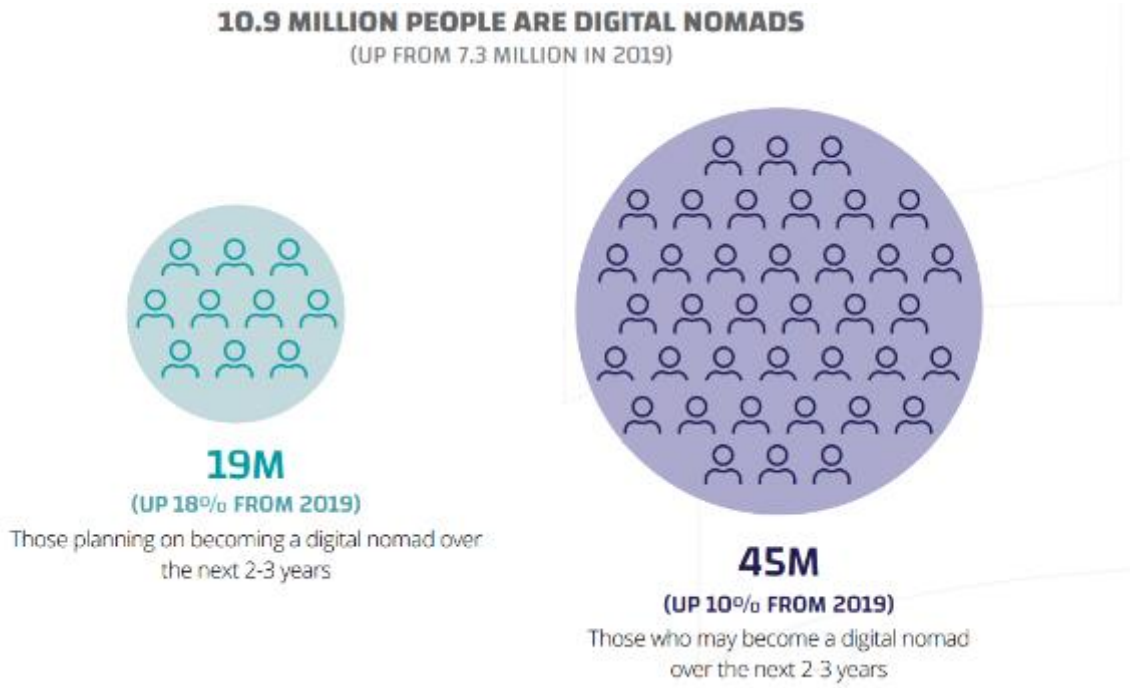
Interestingly, the survey revealed that 90% of digital nomads were satisfied with their lifestyle and 76% with their salary, although they conceded that they were not necessarily planning for the long term.

The survey also tracked the growing interest in the digital nomad lifestyle. Among those currently working in office settings, the interest in becoming digital nomads increased in 2020 compared to 2019. In 2019, approximately 15.5 million people intended to try the digital nomad lifestyle within the next 2-3 years. By the following year, this figure had risen to 19 million, marking an 18 percentage point increase.

Additionally, in 2019, about 40 million people indicated they were considering this lifestyle. The proportion of people who think this way increased by a smaller 10% to 45 million in 2020.

[35] https://news.airbnb.com/work-from-anywhere-how-airbnb-guests-are-approaching-remote-working/

Figure 58: Change in the proportion of people interested in the digital nomad lifestyle



Source: MBO

2.3. Conclusions

The study found that about 7.3 million US citizens worked as digital nomads in 2019, with this number rising by 49% to 10.9 million in 2020. The digital nomads surveyed were predominantly young (aged 18-39), highly educated, and often employed in the IT sector[36].

[36] see more statistics: https://nomadlist.com/

The Best Destinations for Remote Work

1. Document summary

Author of the document	NA
Document title	**The Best Destinations for Remote Work**
Language of the document	English
Country of publication	USA
Organisation producing/contracting the document	Remote Technology Inc.
Document publication year	2022 (ongoing)
Type of document (e.g. study, research, strategy, legislation, index-based analysis, etc.)	research
Source (URL)	https://remote.com/best-destinations-remote-work

1. Content analysis of the document

2.1. Purpose of the document

Remote, a worldwide labour market platform, continuously gathers and assesses the location preferences and evaluations of remote workers based on feedback from job seekers and employers on its platform. The interface is regularly updated with information on how remote workers (both employed and self-employed) rate cities or countries according to the seven criteria outlined.

2.2. Content findings relevant to the research

The study ranks potential destinations that could be attractive to digital nomads, based on a weighted average of scores across 7 criteria. The aspects taken into account:

1.	Infrastructure: based on broadband internet coverage and download speed
2.	How attractive is the city - local attractions, culture, proximity to the sea, etc.
3.	Public safety
4.	Quality of life
5.	Openness and tolerance and transparency in government
6.	Housing costs
7.	Incentives for digital nomads (financial and tax incentives, special residence permits, etc.)

Source: Remote

In the ranking, the top 10 destinations are located in 6 European countries and two cities in the Oceania region:

1. Toronto (Canada)
2. Madrid (Spain)
3. Auckland (New Zealand)
4. Madeira (Portugal)
5. Helsinki (Finland)
6. Svalbard (Norway)
7. Berlin (Germany)
8. Valparaiso (Chile)
9. Dublin (Ireland)
10. Sydney (Australia)

Budapest came 79th, with Bucharest (14th), Vienna (16th), Prague (29th), Ljubljana (48th) and Zagreb (49th) in the top 50. Also on the list, but ranked lower than Budapest, are Bratislava (87th) and Warsaw (93rd).

Among the top 20, the cities with the lowest housing costs are Madeira (Portugal), Valparaiso (Chile) and Bucharest (Romania).

The best quality of life is in Auckland, New Zealand, Honolulu, Hawaii, Sydney, Australia and Reykjavík, Iceland.

The most open-minded places are Stockholm (Sweden), Toronto (Canada) and Amsterdam (Netherlands).

In terms of local attractions, Honolulu (Hawaii), Vienna (Austria), Madrid (Spain) and Athens (Greece) top the rankings.

The research indicates that 44 countries and 24 US states currently have specific teleworking regulations designed to encourage digital nomads to move there. These regulations offer various incentives, including nomadic visas, tax advantages, housing and relocation support. Some examples worth mentioning:

Table 7: Incentive programmes for digital nomads

Country/Location	Incentives for digital nomads

Ecuador	The country in South America has the lowest monthly earnings ($400) for a digital nomad visa.
Aruba	Digital nomads can live and work in Aruba for up to 90 days under the "One Happy Workstation" programme. This provides package deals and discounted rates on local accommodation. However, the programme is only available to citizens of certain countries, such as the United States, the United Kingdom and the Netherlands.
Antigua and Barbuda	To be eligible for the Local Digital Nomads programme, you must spend at least 30 days a year in the country and have an annual income of at least $100,000. In return, there is no personal income tax, capital gains tax, inheritance tax and a flat tax of $20,000 per year for the relocatees.
Belize	The programme here is aimed at people aged 45 and over. Those with the right qualifications receive a monthly allowance of $2,000 (or $24,000 per year), are not taxed on their earnings and are exempt from paying tax on the transport of their personal belongings.
Colorado (USA)	Employers receive a cash grant if they hire a worker who lives outside the county where the project is based.
Topeka (USA)	The city will provide a maximum of $5,000 to help people move in to pay their first year's rent, or $10,000 to buy a home.
Mishima (Japan)	Those who move in will receive a monthly grant of $775 for three years, or they can choose to receive a one-off grant of $2,730 or a calf.

Source: Remote

Table 8: Top 5 destinations based on a single priority

Openness and tolerance	1. Toronto 2. Stockholm 3. Auckland 4. Madrid 5. Amsterdam
Internet connection quality	1. Bucharest 2. Copenhagen 3. Madrid 4. Bangkok 5. Paris
Local Attractions	1. Granada 2. Vienna 3. Orlando 4. Honolulu 5. Lisbon
Security	1. Reykjavík 2. Bern 3. Vienna 4. Mishima 5. Helsinki
Quality of life	1. Auckland 2. Reykjavík 3. Svalbard 4. Helsinki 5. Sydney
Housing costs	1. Bishkek (Kyrgyzstan) 2. Kathmandu (Nepal) 3. Tbilisi (Georgia) 4. Tunis (Tunisia) 5. Ulaanbaatar (Mongolia)
Incentives	1. Toronto 2. Madrid 3. Auckland 4. Madeira 5. Helsinki

Source: Remote

Remote Freelancing Across Industries

1. Document summary

Author of the document	Adam Ozimek
Document title	**Remote Freelancing Across Industries**
Language of the document	English
Country of publication	na
Organisation producing/contracting the document	Upwork Global Inc.
Document publication year	2021
Type of document (e.g. study, research, strategy, legislation, index-based analysis, etc.)	study
Source (URL)	https://www.upwork.com/research/not-just-tech-remote-freelancing-across-industries

2. Content analysis of the document

2.1. Purpose of the document

Upwork, a labour market platform based in California, was established 20 years ago with the goal of bridging the gap between workforce supply and demand in the digital realm. The platform assists both small enterprises and large global corporations in finding digital freelancers for short-term projects or long-term engagements.

The Upwork research stands out as it examines both the perspectives of employees and employers, focusing primarily on the utilisation of digital freelancers in more traditional industries such as construction, manufacturing, and agriculture.

2.2. Content findings relevant to the research

Here are 5 key findings from the research:

1. The pandemic has significantly expanded the opportunities for professional teleworking across nearly all sectors. By January 2021, even in traditional industries like construction, manufacturing, and agriculture, an average of 22.9% of workers were engaged in remote work. Although the survey does not include pre-Covid historical data, BLS figures[37] indicate that the proportion of the U.S. workforce working remotely was 5% between April 2018 and April 2019. By May 2020, 35.4% of all US workers

[37] Bureau of Labor Staistics: https://www.bls.gov/cps/effects-of-the-coronavirus-covid-19-pandemic.htm

were working remotely due to pandemic-related restrictions, reflecting a 30 percentage point increase in the proportion of workers who adopted remote work as a result of the pandemic.

The research indicates that the economy is increasingly focused on services, leading to the creation of service roles and positions even in primarily non-service industries. Many of these roles can typically be performed remotely.

2. The use of digital freelancers in non-ICT sectors has also seen a significant rise following the pandemic. Estimates suggest that 37% of jobs in non-tech industries in the US, equating to approximately 25.7 million jobs, could be filled by freelancers. Examining Upwork's client base (which does not represent the entire US economy), companies in non-tech sectors (25%) were already employing digital freelancers at a notable rate in 2020.

By January 2021, the highest proportion of teleworkers was found in technical services[38] (53%) and financial and insurance activities (50.4%). This was closely followed by ICT (45.9%), education (42.6%), and public administration (36.9%). The sectors least inclined towards teleworking, according to the survey, are transport and storage (7.5%), agriculture (5.1%), and accommodation and food services (4.1%).

3. Upwork's top 100 non-tech clients (by expenditure) engage digital freelancers across various fields: 35% of these companies hire freelancers for software and web development, 12% for marketing and sales, and 11.7% for customer relations.

The research also examined which roles in traditional non-tech sectors (such as tourism and hospitality, agriculture, construction, mining and quarrying, transport and storage, manufacturing and assembly) are most suited to remote work. The most prevalent roles include programming system manager (76.1%), network maintenance (68.1%), development (64.8%), and engineering (63.4%), followed by communication and administration (54%) and marketing (51%).

4. In 2020, 80% of non-tech companies increased their expenditure on digital freelancing as a result of the pandemic, with more traditional sectors also recognising the advantages of this approach.

According to data from the Bureau of Labor Statistics (BLS), by January 2021, 20.1% of manufacturing workers, 29% of energy sector workers, and 22.2% of mining and quarrying workers were working remotely.

[38] Professional and technical services

5. Typically, IT-related roles have shown the most significant annual growth in demand for digital freelancers. Based on data from Upwork's platform, the largest increases in demand in 2021 compared to 2020 were for data scientists (115%), software and web developers (104%), web designers (91%), online architects (81%), and network developers (57%).

2.3. Conclusions

The research underscores that employing digital freelancers in non-tech sectors presents substantial opportunities for businesses across various jobs. It estimates that at least 37% of roles in these sectors could be performed remotely, which would have notable effects on the industries involved and the national economy as a whole.

The study identified that in the non-ICT sector, the most common roles for digital freelancers are software and web developer, sales and marketing, and account manager.

The Remote Work Report 2021

1. Document summary

Author of the document	Savanta Group
Document title	**The Remote Work Report 2021**
Language of the document	English
Country of publication	USA
Organisation producing/contracting the document	Gitlab Global Inc.
Document publication year	2021
Type of document (e.g. study, research, strategy, legislation, index-based analysis, etc.)	research
Source (URL)	https://about.gitlab.com/remote-work-report/

2. Content analysis of the document

2.1. Purpose of the document

GitLab's 2021 Telework Report seeks to document the pivotal moment when, following the pandemic, it became evident that the convergence of work and life would be permanently altered by the widespread adoption of remote working. The survey, which included 3,900 teleworkers from seven countries (the United States, the United Kingdom, Canada, Australia, South Africa, Brazil, and South Korea) across six continents, aims to address future challenges related to teleworking.

2.2. Content findings relevant to the research

The key findings of the study can be summarised as follows:

1. Talent Attraction of Flexibility: 52% of respondents who currently telework would consider changing jobs if remote working were no longer available.

If teleworking were eliminated at their present job, 60% of participants would be willing to return to commuting, while 26% would prefer to find a new job that offers teleworking options. There were notable differences between countries; for example, only 57% of Australians would return to commuting, compared to 72% of South Koreans.

2. Post-Pandemic Telework Prospects by Job Category:
IT (16% of all employees), Operations (11% of all employees), and Customer Relations (11% of all employees) are the fields where teleworking is most likely to be chosen by

a significant proportion of employees. In these roles, 68% of those who worked remotely during the pandemic would continue to do so post-pandemic, 16% would work abroad occasionally, 10% would work abroad for six months of the year, 4% would work abroad all year round, and 2% were undecided.

3. Major challenges for digital nomads:
For those teleworking from different locations, the main difficulties include making local connections (32%), obtaining visas (23%), dealing with taxes and healthcare (22%), and finding accommodation (19%).

Health insurance remains a sensitive issue depending on nationality. 56% of teleworkers would prefer company-sponsored health insurance to higher pay. These figures increased for respondents in the US and Canada, as well as for respondents aged 55 and over, as a result of the pandemic.

4. Who typically works remotely?
The number of remote workers has roughly doubled since March 2020 due to the pandemic, according to the survey. Globally, female employees account for 38% of the total labour market, while 58% of the telework market is female[39]. Notably, 27% of remote workers are Generation Z, despite this age group comprising only 6% of the global workforce.

2.3. Conclusions

GitLab's employee survey also reveals that 30% of individuals currently working from home can envision working remotely from abroad as digital nomads once the pandemic is over. However, for this to become feasible, employers must address challenges such as taxes, visas, and healthcare to appeal to digital nomads.

Notably, among those who favour teleworking, one in three is from Generation Z, indicating that this mode of work is becoming increasingly appealing to this group.

Work from Home & Productivity: Evidence from Personnel & Analytics Data on IT Professionals

1. Document summary

Author of the document	Michael Gibbs, Friederike Mengel, Christoph Siemroth

[39] World Bank statistics

Document title	**Work from Home & Productivity: Evidence from Personnel & Analytics Data on IT Professionals**
Language of the document	English
Country of publication	USA, IL
Organisation producing/contracting the document	University of Chicago
Document publication year	2021
Type of document (e.g. study, research, strategy, legislation, index-based analysis, etc.)	research
Source (URL)	https://bfi.uchicago.edu/working-paper/2021-56/

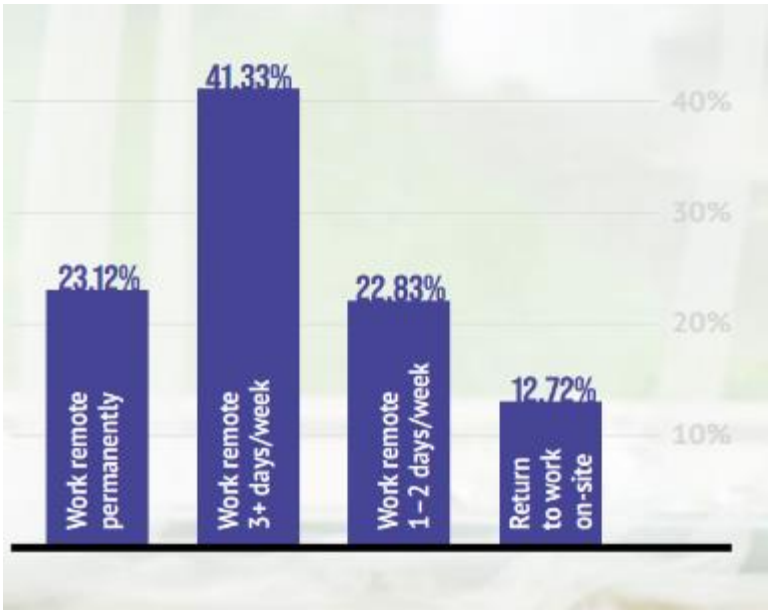
2. Content analysis of the document

2.1. Purpose of the document

The study examines and evaluates the effects of transitioning to home-based IT services at a US-based, Asian-owned IT company with thousands of employees. This shift was triggered by the COVID-19 pandemic in March 2020, which necessitated an abrupt move to remote work for all employees.

- The research involved monitoring 10,000 employees over 17 months (with voluntary participation) on working days.

Figure 59: Distribution of expectations for time spent teleworking in the post-pandemic period:



Source: Techstrong Research

- The percentage of software developers working remotely increased by 5.5%, with 29.1% of organisations reporting that remote work was in place five years ago or earlier. This figure has been steadily rising, reaching 34.6% of developers working remotely in 2020.
- With 87% of workers[40] finding teleworking advantageous in various ways, it is anticipated that it will remain popular post-pandemic. Consequently, incorporating agile methodologies and integrating developer and operations roles (DevOps) will be crucial for effective organisational development.

2.1. Conclusions

The study identifies the five key tools for supporting remote work as: online meetings, digital collaboration platforms, cloud applications, adequate infrastructure, and services that facilitate working from home. The research findings indicate that both employees and employers acknowledge the advantages of remote work. Consequently, most workers are expected to favor remote or hybrid (a combination of office and remote work) arrangements moving forward.

9.2. Primary research questionnaire

1 INTRODUCTION

The increasing shortage of digital skills poses a significant risk to competitiveness both at the national economic level and within individual companies, given that digitalization and technological innovations are now central to investment across all sectors. Without a skilled workforce, these advancements are falling behind, placing Hungarian businesses, particularly SMEs, and the national economy at a competitive disadvantage, and impeding the ability to fully capitalize on the growth potential of digitalization.

According to the 2020 labour market research[41] conducted as part of flagship project GINOP-3.1.1. "employers could recruit 44,000 digital professionals over the next two years if they were not hindered by the realities of the labour market, specifically the increasing skills shortage each year... The extensive research...revealed that the demand for IT specialists will surpass the supply from the education system for the

[40] 87,2= 41,3%+22,8%+23,1%
[41] https://programozdajovod.hu/informatikai-kutatas

foreseeable future: currently, around 9,000 IT positions remain unfilled, and the shortfall is growing. Based on current trends, the gap between market demand and educational output could reach 26,000 in two years' time."

The goal of this research is to examine the career opportunities available to IT professionals and determine which are currently the most common and appealing. We also aim to identify the factors influencing the choices of domestic IT professionals, which either contribute to or help bridge the digital workforce gap.

Through this questionnaire, we seek to gain insights into the professional and personal motivations behind career changes among IT professionals, the appeal of working abroad, and what it would take to encourage those working abroad to return to the Hungarian market. Additionally, we want to explore the extent of burnout and career drop-out among IT professionals.

Thank you for completing this questionnaire, which will help enhance the understanding of IT career paths in Hungary and provide valuable input to address and mitigate the IT skills shortage in the country.

2 CUSTOMER EXPECTATIONS FOR THE SAMPLE

Sample size: 1000 persons

Target group: The sample of 1,000 people to be interviewed in the Computer Assisted Web Interview (CAWI) will be a nationally representative sample of IT qualified workers.

Due to the limited size of the target population (IR), the research sample for the CAWI survey must be drawn from the DPR (Diploma Tracking System) and the FIR (Higher Education Information System). The research is therefore being carried out by the Office of Education (OH).

Questionnaire length: The length of the questionnaire is 20-30 minutes

3 DEMOGRAPHY

A. Which of the following do you consider your main activity?

a. Working as an employee in Hungary
b. Work as an employee and as a self-employed person or in your own partnership in Hungary
c. Working as a self-employed person or in your own partnership, typically **for a domestic client**
d. Working as a self-employed person or in your own partnership, typically **for several domestic clients**
e. Working as an employee, **abroad** (living in the country for most of the year)
f. Working **abroad** as an employee (from home to a foreign company)
g. Working **abroad** as self-employed or in a partnership (living in the country for most of the year)
h. Working **abroad** as a self-employed person or in your own partnership (from home to a foreign company)
i. A student
j. Receives household, childcare benefits (child benefit, child allowance, childcare allowance)
k. Unemployed or on benefits
l. Other, namely:

B. If you (also) work as an employee, please list your employer in the following categories

a.) domestically owned SMEs
b.) large, domestically owned company
c.) foreign-owned enterprise
d.) public sector (government, health, education, back office, etc.)
e.) civil society (professional and non-governmental organisations, foundations, etc.)
f.) other, namely:....
g.) DN/NA

C. If you (also) work as a contractor, please list your main/typical customer in the following categories *(multiple answers are possible)***:**

a.) domestically owned SMEs
b.) large, domestically owned company

c.) foreign-owned enterprise
d.) public sector (government, health, education, back office, etc.)
e.) civil society (professional and non-governmental organisations, foundations, etc.)
f.) other, namely:....
g.) DN/NA

D. What is your highest level of education?

a. Secondary school leaving certificate
b. Vocational school leaving certificate
c. OKJ, bootcamp or other adult education qualification
d. Bachelor's degree (BSc, BProf)
e. Master's degree (MSc)
f. PhD
g. Other, namely: .....
h. NA

E. Year of birth?

Answer: .....

F. Gender:

a. Male
b. Female

G. Place of residence:

a. Budapest
b. County seat
c. Other city
d. Village, farm

H. County:

a. Bács-Kiskun
b. Baranya
c. Békés
d. Borsod-Abaúj-Zemplén
e. Csongrád-Csanád
f. Fejér
g. Győr-Moson-Sopron
h. Hajdú-Bihar
i. Heves
j. Jász-Nagykun-Szolnok

k. Komárom-Esztergom
l. Nógrád
m. Pest
n. Somogy
o. Szabolcs-Szatmár-Bereg
p.Tolna
q. Vas
r. Veszprém
s. Zala

4 TECHNICAL BLOCKS

I. My career so far

In this section, we seek to understand the factors that have influenced your career decisions, choice of educational institutions, qualifications, and previous job roles.

1. **What considerations and criteria led you to choose a career in IT?** *(multiple answers are possible)*
   a) Family motivation
   b) Friends' influence
   c) Encouraged by teachers, friends
   d) Because of the interest in IT
   e) The attractive financial conditions offered by IT careers
   f) The ease of location in the IT field
   g) For the future of the IT profession
   h) The high prestige of the IT profession
   i) I was not admitted to the first place course, so I was left with IT
   j) For other reasons, namely: .....
   k) DN/NA

2. **Which national and/or foreign institution(s) did you graduate from?** *(only for those who answered d.), e.) or f.) in the Demography block of question D; more than one answer may be given)***:**

   Your own answer(s): *.....(university and specialisation required)*

3. **What were your reasons for choosing a higher edutaion institution?** *(only those receive it who have the previous one; multiple answers are possible)*
   a) Based on the professional, technical prestige of the institution
   b) Proximity to the place of residence

c) Based on a suggestion from family, friends, acquaintances
d) Information from the press, internet
e) Based on the number of admission points obtained
f) On other grounds, namely: .....
g) DN/NA

4. **From which institution(s) did you obtain your IT qualification** *(to be completed if you answered b), c), d), e) or f) in question D in the Demography block); more than one answer may be given)***:**

Your own answer(s): *.....(name of training institution and course required)*

5. **What were your reasons for choosing a vocational training institution?** *(to be completed if you answered b), c) or other to question D in the Demography block; more than one answer may be given)*

a) Based on the professional, technical prestige of the institution
b) Proximity to the place of residence
c) Based on a suggestion from family, friends, acquaintances
d) Information from the press, internet
e) Based on the secondary school entrance score obtained
f) On other grounds, namely: .....
g) DN/NA

6. **Please list the jobs you have held in your career so far** *(multiple answers are possible)*

a) Software Developer
b) System administrator, general network/hardware/software administrator, infrastructure manager
c) Web developer
d) Software Engineer
e) DevOps Engineer
f) Mobile developer
g) Software tester
h) Systems Designer
i) Project Manager
j) Customer service specialist, support

k) Data scientist, data analyst
l) Network Engineer
m) IT security specialist
n) IT sales representative, sales consultant
o) Consultant
p) Business analyst
q) Project Lead
r) Fitter, mechanic, maintenance, repairer
s) IT, telecommunications manager
t) Telecommunications expert
u) Other, namely: .....
v) DN/NA

7. **Please indicate what job you are currently doing** *(to be completed if you did not answer i, j, k or m to question A in the Demography block)*
   a) Software Developer
   b) System administrator, general network/hardware/software administrator, infrastructure manager
   c) Web developer
   d) Software Engineer
   e) DevOps Engineer
   f) Mobile developer
   g) Software tester
   h) Systems Designer
   i) Project Manager
   j) Customer service specialist, support
   k) Data scientist, data analyst
   l) Network Engineer
   m) IT security specialist
   n) IT sales representative, sales consultant
   o) Consultant
   p) Business analyst
   q) Project Lead
   r) Fitter, mechanic, maintenance, repairer
   s) IT, telecommunications manager
   t) Telecommunications expert

u) Other, namely: .....

v) DN/NA

II. Knowledge and perception of typical IT careers

In this section, we aim to explore the career opportunities available to IT graduates, including the advantages and disadvantages of each path. We also want to understand the challenges you encounter in your career and gather your insights on the state of IT education in Hungary.

8. **What do you think are the most typical career paths for IT graduates?** *(please indicate your opinion on a scale of 1 to 5, where 1 means that the career path is not at all typical and 5 means that it is very typical)*

Career path description	How typical (1=not at all, 5=very typical)
a) Throughout the career, **being an employee** has been the defining characteristic.	
b) Throughout the career, the **self-employed lifestyle**, (freelancer, digital nomad[42]) has been the dominant one.	
c) The **first half of the career is dominated by being an employee**, the second half by being self-employed (self-employed, freelancer, digital nomad).	
d) **Self-employment, (freelance, digital nomad) is the dominant lifestyle in the first half of the** career, and employment in the second half.	
e) Over the course of the career, **alternate** between periods of self-employment (self-employed, freelance, digital nomad) and periods of employment.	
f) Over the course of the career, working **exclusively for domestic employers/contractors, from home**.	
g) Over the course of the career, working both **for domestic and foreign employers/contractors**, but always **from home**.	
h) Over the course of the career, working for **domestic and foreign employers/employers**, with a **temporary** (up to a few years) **move abroad**.	
i) Over the course of the career, working for **domestic and foreign employers/employers**, with a **permanent** (more than 5 years) **move abroad**.	
j) Other, namely:	

9. **What impact do you think the COVID-19 pandemic has had on IT professionals' career decisions?** *(Please rate your opinion on a scale of 1 to 5, where 1 means the statement is not at all typical and 5 means it is very typical.)*

Career path description	How typical (1=not at all, 5=very typical)
a) The pandemic has increased the number of IT professionals opting for **traditional employment** (e.g. due to a need for job security).	
b) The pandemic has heightened the demand among IT professionals for **teleworking** options (e.g. because it is convenient during lockdowns).	
c) The pandemic has led to a rise in the number of IT professionals choosing **self-employment** (e.g. freelance work or digital nomadism) due to the increased freedom associated with working from home.	
d) The pandemic has resulted in a greater number of IT professionals **taking jobs abroad** (and relocating) due to higher salaries or improved living conditions.	
e) The pandemic has raised the number of IT professionals **working abroad remotely** (e.g. because they have realised they can earn more by telecommuting from overseas).	
f) The pandemic period did not significantly alter the existing career models.	
g) Other, namely:	
h) DN/NA	

10. **We will now outline some potential advantages and disadvantages of being employed versus self-employed (e.g. self-employed, freelance, digital nomad). Please indicate on a scale of 1 to 5 (where 1 is the least and 5 the most) how important/relevant you think each of these is** *Consider all options if possible*

	Being an employee	Importance (on a scale of 1-5)
Advantages	Professional development: can learn from more experienced colleagues	
	Working in a team, a closer sense of belonging, the possibility of cooperation	
	Predictable, 8-hour working time	

	Distribution of responsibility between colleagues	
	More predictable financial conditions, social security (e.g. stable income, paid holidays, sick leave, etc.)	
	Lower risk of staff turnover (as the company retains the professionals)	
	OTHER ADVANTAGE (please write down your own opinion):	
Disadvantages	Fixed hours	
	Time-consuming: daily commute, home office not always self-evident	
	Inflexible, low degree of freedom	
	Fewer professional challenges	
	Limited development potential	
	"Idle chatter" in the workplace ("*someone always has to talk*")	
	The need to comply with management instructions with which the employee cannot identify	
	Wage scales - high incomes harder to achieve	
	ANOTHER DISADVANTAGE (please write your own opinion):	

	Self-employed lifestyle	**Importance (on a scale of 1-5)**
Advantages	Free schedule	
	A sense of independence, freedom	
	Work more efficiently (by not having others to distract you)	
	Higher hourly rates compared to being an employee	
	Diversity of professional challenges, opportunities for professional development	
	OTHER ADVANTAGE (please write down your own opinion):	
Disadvantages	Where applicable, working 0-24 hours, seven days a week	

	Hectically variable income (if you have a job, you have money, if you don't, you don't)	
	Risk of personal isolation, seclusion, confinement	
	Lack or low level of stable work attachment (loyalty)	
	Tax law changes (e.g. KATA) can sometimes have a negative impact on entrepreneurship	
	ANOTHER DISADVANTAGE (please write your own opinion):	

11. Do you find the private sector or the public sector more attractive for work?

a) Clearly the competitive sector
b) Rather the competitive sector
c) Clearly the public sector
d) More public sector
e) No difference between the two
f) DN/NA

12. Please provide possible reasons for or against each sector, considering your previous response. *(e.g. job opportunities, income, professional challenges, development opportunities, working environment, infrastructure, decision-making system, administrative burden, etc.)* *(provided 11 is not equal to f)***!**

	Public sector	**Competitive sector**
Pro		
Con		

13. Do you believe that working from home, abroad, or a combination of both is more appealing to domestic IT professionals?

a) Clearly domestic
b) Rather domestic
c) Clearly foreign
d) Prefer foreign
e) Clearly from home to abroad
f) Rather from home to abroad
g) All three equally
h) Other, namely:..

i) DN/NA

14. Taking into account your previous answer, please list the possible reasons for/against working at home or to/from abroad *(e.g. working environment, income, professional challenges, development opportunities, infrastructure, different culture, different attitudes, etc.) (provided 13 is not equal i)***!**

	Domestic	Abroad
Pro		
Con		

15. **On a scale of 1 to 5 (where 1 is least and 5 is most), please indicate which are the most significant professional challenges for you in your career ?**

	Importance (on a scale of 1-5)
a) Gaining up-to-date professional knowledge, ongoing development, and learning new skills relevant to the curriculum	
b) Enhancing understanding of professional fields outside IT where technology plays or could play a significant role	
c) As an employer, filling vacancies within the organisation	
d) Deciding between working abroad (whether overseas or remotely for a foreign company) and working from home (for a domestic employer)	
e) Choosing between the public and private sectors	
f) Deciding between a traditional employment model and a freelance lifestyle	
g) Other, namely:	
h) DN/NA	

III. Leaving and retention

In this brief session, we are primarily interested in your views on whether the phenomenon of career drop-out among IT professionals is a characteristic feature or a significant issue, and what factors most influence it.

16. On a scale from 1 to 10, where 10 indicates very typical and 1 indicates not typical at all, how much do you believe the IT sector is marked by Hungarian IT professionals leaving the field? Similarly, please assess how serious this issue is concerning the domestic IT skills shortage.

a) How widespread is career drop-out among Hungarian IT professionals?									
1	2	3	4	5	6	7	8	9	10
b) How critical is this issue for the domestic IT skills deficit?									
1	2	3	4	5	6	7	8	9	10

c) DN/NA

17. According to your estimation, what percentage of Hungarian IT professionals would you consider as career leavers? *(provided you answered question 16(a) with an answer other than 1)*

a) ……%

18. What do you think are the reasons behind the abandonment *(if you answered question 16(a) with an answer other than 1; (more than one answer may be given)***?**

a) Professional burnout
b) Adapting to continuous renewal
c) Failure to meet income expectations
d) Stressful work
e) Poor working environment
f) Disappointment with the job and/or profession
g) Interest in another profession (e.g. artist, teacher, etc.)
h) Family reasons
i) Other, namely: ……
j) DN/NA

19. What measures do you think could be taken to decrease career drop-out rates among IT professionals? *(if the answer to question 16(a) is other than 1); more than one answer may be given)*

a) Tax and contribution benefits for IT workers
b) By implementing special measures for IT workers (e.g., flexible working hours, additional days off, mandatory teleworking, etc.)
c) With higher incomes than at present
d) By creating a better working environment than the current one
e) By offering more professional challenges than currently available
f) By enhancing social recognition and prestige beyond the current level
g) By increasing the number of female IT professionals
h) Other, namely: ……
i) DN/NA

IV. Emigration and return

In this section, we explore whether and to what extent IT professionals are working abroad and how this trend might be impacting the shortage of domestic labour.

20. On a scale from 1 to 10, where 10 represents extremely common and 1 represents not common at all, how prevalent do you believe it is for Hungarian IT professionals to work abroad (by relocating to another country)? Similarly, please assess how serious this issue is concerning the domestic IT skills shortage.

a) What is your perception of the prevalence of IT professionals working abroad?									
1	2	3	4	5	6	7	8	9	10
b) How critical is this issue for the domestic IT skills deficit?									
1	2	3	4	5	6	7	8	9	10

c) DN/NA

21. In your opinion, what proportion of Hungarian IT professionals work abroad on a permanent basis?

a) ……%

b) DN/NA

22. How do you propose we mitigate the outward migration of IT professionals and encourage those working overseas to return home? *(multiple answers are possible)*

a) With incomes comparable to those available abroad
b) By providing an attractive working environment
c) By offering more professional challenges than currently available
d) Tax and contribution benefits for IT workers
e) By implementing special measures for IT workers (e.g., flexible working hours, additional days off, mandatory teleworking, etc.)
f) By enhancing social recognition and prestige beyond the current level
g) Other, namely: ……
h) DN/NA

23. On a scale of 1 to 10, where 10 represents very common and 1 represents not common at all, how prevalent do you believe it is for Hungarian IT professionals

to work remotely from home for a foreign employer or client (for example, telecommuting or as a digital nomad while residing in Hungary)? **Similarly, please indicate on the same scale how significant you think this issue is for the IT professional shortage in Hungary.**

a) How common is it for domestic IT professionals to work from home while based abroad?									
1	2	3	4	5	6	7	8	9	10
b) How critical is this issue for the domestic IT skills deficit?									
1	2	3	4	5	6	7	8	9	10

c) DN/NA

24. In your view, what percentage of Hungarian IT professionals work remotely from abroad?

a) ……%

b) DN/NA

25. **Would you like to see more foreign IT professionals working or starting businesses in our country?**

a) yes

b) no

c) DN/NA

26. What do you think should be done to encourage more foreign IT professionals to work/start businesses in our country? *(only if you answered yes to the previous question; multiple answers are allowed)*

a) By providing incomes comparable to those available abroad

b) By introducing IT, programming, start-up and/or digital nomad visas (similar to other EU countries)

c) Fast-track settlement and naturalisation

d) Resettlement allowance, with housing conditions

e) By creating a more attractive working environment than abroad

f) By setting professional challenges higher than those abroad

g) By introducing tax and contribution benefits for IT workers that are higher than those available abroad

h) By introducing more favourable provisions for IT workers than abroad (e.g. working time allowance, increase in holiday days, compulsory teleworking, etc.)

i) Other, namely: ……

j) DN/NA

V. Personal plans, motivations

In this section, we inquire about your personal career plans and the factors that most influence these decisions.

27. What additional personal goals do you have for your professional career? *(please rate the likelihood of each option on a scale of 1 to 5, with 1 being very unlikely and 5 being very likely - for the next 20 years)*

Options	**Probability (1 to 5)**
a) As an employee, I do operational, non-managerial work in the competitive market (in Hungary)	
b) As an employee, I do non-managerial operational work in the public sector (in Hungary)	
c) Become a manager as an employee or move up the management ladder (in Hungary)	
d) I work as a self-employed (entrepreneur, freelancer, digital nomad) in the domestic competitive market (Hungary)	
e) I am self-employed (entrepreneur, freelancer, digital nomad) in the domestic public sector (in Hungary)	
f) I work abroad (for a foreign employer) as an employee	
g) I work abroad as a self-employed person (entrepreneur, freelancer, digital nomad)	
h) I work abroad from home (for a foreign employer) as an employee (telecommuting)	
i) I work abroad from home as a self-employed person (entrepreneur, freelancer, digital nomad) (telecommuting)	
j) I am changing within the IT profession and learning about other subject area(s) compared to my current one	
k) I'm leaving IT to do something completely different	
l) Other, namely:	
m) DN/NA	

VI. Expectations for the future of the IT profession

28. What fundamental changes do you foresee in the IT profession? *(multiple answers are possible)*

a) With digitalisation permeating every aspect of life, we can anticipate even greater IT labour shortages in the short term

b) The rise in labour shortages is likely to drive up incomes further

c) Higher salaries are drawing more young people into IT careers, which should help alleviate labour shortages over the longer term

d) The IT profession is becoming increasingly complex, necessitating a continual acquisition of new skills, abilities, and knowledge
e) We can expect more radical and widespread atypical forms of employment, such as teleworking and digital nomadism
f) Domestic IT professionals are likely to increasingly work abroad, either by relocating or working remotely
g) A growing number of domestic IT workers will be engaged in remote work for international employers
h) Freelance and non-employee IT roles are becoming increasingly prevalent.
i) Other, namely: ……
j) DN/NA

VII. Proposals for solutions

29. **How effective do you think the following tools could be in alleviating the digital skills shortage in your country?** *(please indicate your opinion on a scale of 1 to 5, where 1 means that the tool is not effective at all and 5 means that it could be very effective)*

Tool	**Effectiveness** (1=not at all, 5=very typical)
a) Introducing programming in public education and vocational training	
b) Requiring digital competence as a condition for graduation	
c) Systematic digital transformation of the education system	
d) Increasing the visibility and prestige of IT professions in society	
e) Motivational and awareness-raising programmes among secondary school students	
f) Targeted programmes to get girls interested in IT	
g) Significant expansion in the number and output of IT vocational training institutions	
h) Significantly raise the quality of training in IT vocational education and training institutions	
i) Significant expansion of higher education output in IT	

j) Significantly raise the quality of training in higher education institutions in the field of IT	
k) Introduction of basic training (BProf) in all IT disciplines	
l) Launching new IT specialisations	
m) Launching new interdisciplinary training courses in all fields where digitalisation is a key driver	
n) Tax deductibility of the amount spent on IT training for adults (for individuals, VAT, for companies, council tax)	
o) Support for IT training in adult education institutions (curriculum development, participation, etc.)	
p) Support programming bootcamp schools to significantly increase their output (e.g. by extending student loans)	
q) Other suggestions::	
r) DN/NA	

30. Other comments

In this textbox you can make other comments related to your research:

10. List of figures

11. List of tables