

THE EFFECT OF ARTIFICIAL INTELLIGENCE – A SPECIFIC EXAMINATION



Edited by: Sándor MAGYAR

The Effect of Artificial Intelligence – a Specific Examination

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Conflicts arising from the characteristics of different human generations and the potential applications of artificial intelligence are hot topics in research today. Numerous studies have examined the generalisable characteristics of different generations, their workplace requirements, and their cooperation with older or younger generations, as well as the relationship between artificial intelligence and humans, its applicability in the workplace, and its acceptance.

Due to the new technological solutions used by employees in their work and private lives, particular emphasis must be placed on safe working practices,¹⁰⁹ which is especially true for national security services due to increased security requirements and the large amount of classified data.

The safe and efficient work expected by the employer, as well as the demand expressed by employees of different generations for work that is efficient,¹¹⁰ and can be partly ensured by artificial intelligence, but at the same time enjoyable and balanced with working from home, can only be achieved through mutual understanding, which we aimed to promote in writing this study.

3.3.1. The meaning and application of home office and remote work

The terminology related to home office and teleworking has now been harmonised in Hungary. Based on the Hungarian regulations in force until 2021, in accordance with the European framework agreement on teleworking¹¹¹, "*Teleworking is an activity carried out regularly at a location separate from the employer's premises, using computer equipment, with the results transmitted electronically. The employment contract must stipulate that the employee is employed under a teleworking arrangement*"¹¹².¹¹³ It is therefore characteristic that the employment could be carried out regularly at a location separate from the employer's premises, as opposed to home office, which, even if carried out for a

¹⁰⁸ ORCID: 0000-0002-8073-3786

¹⁰⁹ BABOS, Sándor: *Secret reconnaissance through the generations*. Szakmai Szemle, 2018/4, pp. 17-26

¹¹⁰ MAGYAR, Sándor: *The need to map artificial intelligence in organisational strategies*. In: KENEDLI, Tamás – MAGYAR, Sándor (eds.): *The Effect of Artificial Intelligence – a Specific Examination*. Defence Security and Intelligence Service, Budapest, 2025. pp. 39-51.

¹¹¹ *Implementation of the European Framework Agreement on Telework*. EU Social Dialogue, 2006.

¹¹² Telework, Remote Work

¹¹³ Act I of 2012 on the Labour Code.

longer period during the COVID-19 pandemic, but fundamentally, in terms of labour law,¹¹⁴ did not constitute teleworking, as the employer could opt for it not as an atypical form of employment, but as temporary teleworking ordered due to the health emergency.

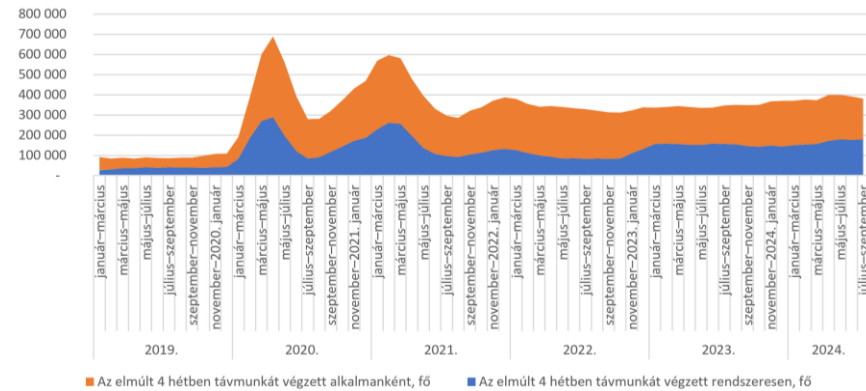


Figure 1. Working from home in Hungary¹¹⁵

Looking at the post-pandemic period, it can be said that home office – which can be characterised as remote work or hybrid work, as it takes place partly at the company's premises and partly at the employee's home – can be carried out on the basis of more flexible teleworking rules than before, following the 2021 amendment to the Labour Code, which has led to a steady increase in this form of employment in Hungary as well.¹¹⁶

Based on experiences during the pandemic, the competitive market sector was able to respond more flexibly to the need to work from home and to the demands made by employees in this regard since then, as IT developments and the widespread use of digitalisation made it possible to ensure remote working. Meanwhile, public administration bodies have lagged behind due to a lack of resources, insufficient regulation and increased data protection requirements.

In business, working from home has become particularly popular in the service, IT, finance, marketing and consulting sectors. This type of work offers the opportunity to provide flexibility for employees, reduce office maintenance costs, create recruitment opportunities without geographical constraints, and communicate working from home as part of the company's environmental strategy due to the reduced carbon footprint from less commuting.

¹¹⁴ Government Decree 47/2020 (III. 18.) on immediate measures necessary to mitigate the impact of the coronavirus pandemic on the national economy.

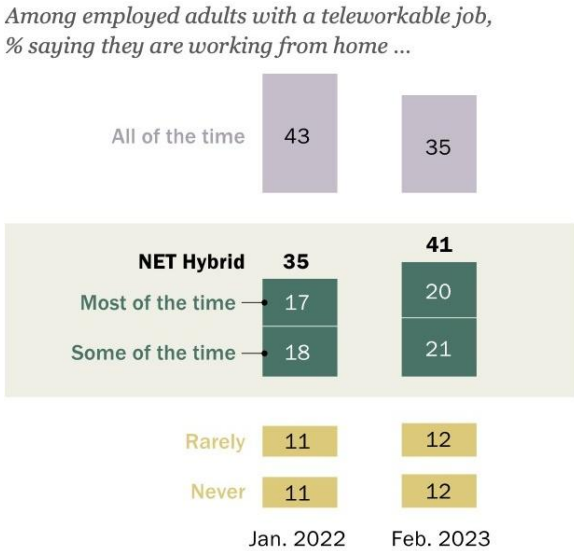
¹¹⁵ Source: Hungarian Central Statistical Office

¹¹⁶ *Trends in teleworking among employees*. Central Statistical Office, 2024.

The pandemic has particularly accelerated the integration of working from home into business practice, and tools such as Zoom, Teams, Slack and Google Workspace have become fundamental alternatives to working in the office. Tech companies such as Google and Microsoft were already promoting hybrid working before the pandemic, and following their example, a significant number of companies have introduced similar models since the outbreak.

3.3.2. The advantages and disadvantages of working from home

Greater freedom in choosing where and when to work is an important consideration for employees when looking for a job. The elimination of commuting time between work and home allows for more efficient time management and eliminates the associated costs. In addition, it also provides an opportunity to achieve a better work-life balance. Many employees are more productive in a home environment, where there are fewer distractions. According to a 2023 survey by the Pew Research Centre¹¹⁷, one-third of the American population who have the option of working from home do so entirely from their own homes.



Note: Adults with a teleworkable job are those who say, for the most part, the responsibilities of their job can be done from home. Share of respondents who didn't offer an answer not shown.

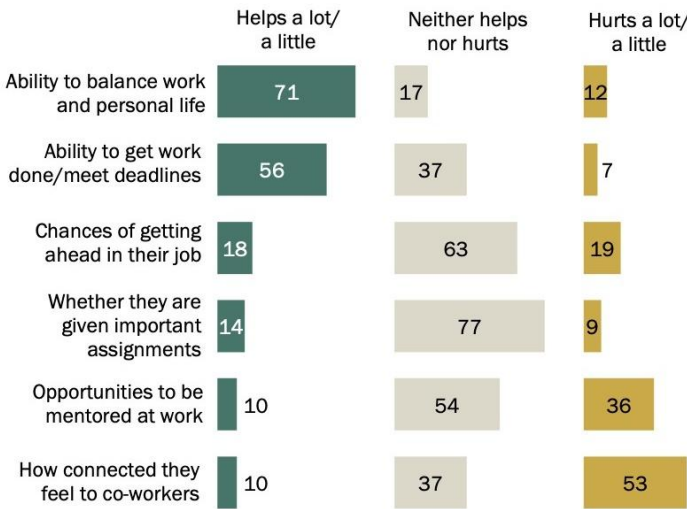
Figure 2. Growth of hybrid working among American workers¹¹⁸

¹¹⁷ PARKER, Kim: *About a Third of U.S. Workers Who Can Work from Home Now Do so All the Time*. Pew Research Center, 2023.

¹¹⁸ Source: Pew Research Centre, 2023.

Although this is a decline from 43% in the previous year, it is still a significant number compared to 7% before the pandemic. The decline is likely due to the self-correction of the system and the realisation by employers and employees that working exclusively from home has not become the Holy Grail of employment, but rather a supplement to typical forms of employment. This is supported by another trend from the same survey, which shows that the number of people who work from home most of the time or occasionally has increased. In terms of advantages, from the employer's point of view, working from home can reduce costs, as some of the costs associated with maintaining an office can be saved, while at the same time broadening the labour market for them, as remote working makes the best and most suitable people available regardless of their geographical location. Another positive aspect, which is a significant factor for both employers and employees, is that a better work-life balance results in a more motivating work environment.

Among employed adults with a teleworkable job who work from home all/most/some of the time, % who say this work arrangement ____ with each of the following



Note: Based on workers who are not self-employed. Adults with a teleworkable job are those who say, for the most part, the responsibilities of their job can be done from home. Share of respondents who didn't offer an answer not shown.

Figure 3. Employees' views on working from home¹¹⁹

The Pew Research Center study cited above also found that 71% of employees surveyed believe that working from home helps them achieve a better work-life balance, in addition to making it easier to meet deadlines. The disadvantages include the lack of mentoring by more experienced colleagues and direct contact

¹¹⁹ Source: Pew Research Centre, 2023.

with co-workers (36% and 53% respectively), which can reinforce feelings of loneliness and isolation and ultimately lead to mental health issues and problems with work quality, as well as having a negative impact on personal life.

Although time management is more flexible in a home environment, there may be more distractions during the working day. Dealing with technological problems can also be a disadvantage, as an inadequate internet connection or device can hinder effective work. Troubleshooting these issues can often be difficult when working remotely.

Working from home also poses challenges for employers, as it is more difficult to measure employee performance and time management, and more creative work lacks the collaborative environment of the office, which can reduce the number of spontaneous ideas. Although employee monitoring software such as CleverControl, Spyrix Employee Monitoring, and REFOG are available, they can only monitor mathematically interpretable parameters and cannot determine the quality of work.

In addition to the above, the biggest challenge for employers is to prevent the security risks associated with remote working and, if they do occur, to manage them. In addition to establishing secure remote access, employers must also protect the data and devices available to users in their homes, whether on their computers or otherwise, and must provide training on the rules to be followed in order to raise security awareness.

Novel trends such as remote working, working from home, or the use of personal devices for work purposes¹²⁰ – including personal subscriptions to artificial intelligence services – can pose a risk to organisations alongside the expected benefits. The most difficult task for employers here is to strike the right balance between the benefits – mainly in terms of human resource retention and efficiency – and the risks, and to take appropriate security measures, such as remote monitoring, mandatory software installation, corporate system firewall and virus protection, or the provision of corporate but optional IT equipment¹²¹ – that minimise the risks while only interfering with the employee's privacy to an acceptable extent.

¹²⁰ BYOD: Bring Your Own Device

¹²¹ CYOD: Choose Your Own Device

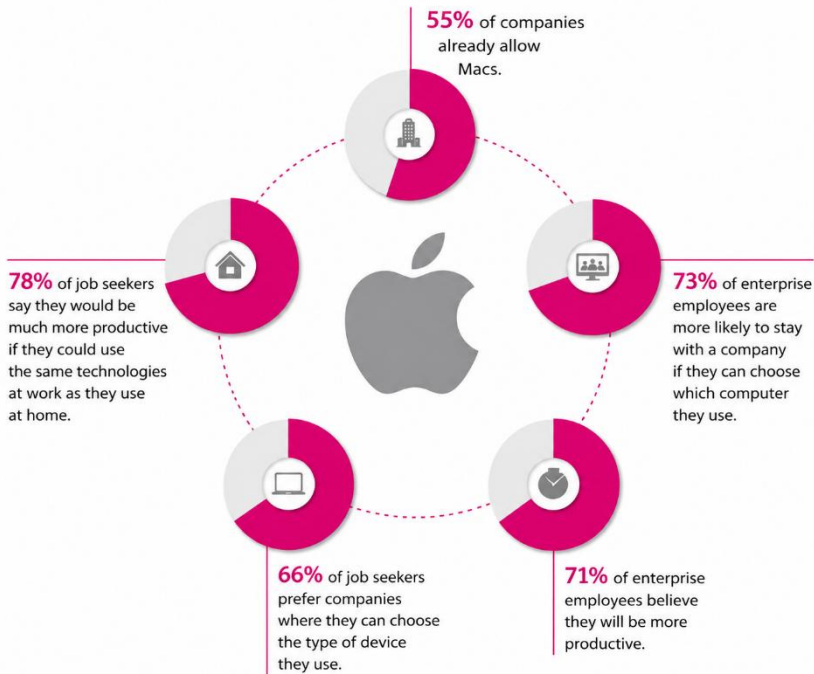


Figure 11. Employee assessment of CYOD (Choose-your-own-device)¹²²

If the organisation's resources allow for its implementation, the CYOD method can create an appropriate balance between security and user needs. However, in addition to the additional costs incurred, attention must also be paid to appropriate rights management, data protection and the separation of personal and work environments.

3.3.3. Generational perspectives

With regard to generational research, which is becoming increasingly well known and has now come to the forefront of attention outside the scientific community, it should be noted that the generally accepted classification can only be used as a framework for examining the characteristics of different age groups, as there are many exceptions in everyday life. The birth years of each generation are generally widely accepted¹²³ – although there is no complete consensus among scientific works – and there are also differences in the names used (e.g. Generation Y is called Millennials, Generation Z is called iGen).

¹²² IDC survey commissioned by T-Systems in 2023

¹²³ MCCRINDEL, Marc – WOLFINGER, Emily: *The ABC of XYZ. Understanding the Global Generations*. UNSW Press, 2009.

However, most research¹²⁴ agrees that it is not the date of birth itself, but rather the external stimuli and influences affecting the individual that allow us to group people. In this sense, the subject of the study is usually to determine the security, economic, social, technological and environmental conditions under which individuals were socialised, what effect these had on their personality formation, and whether these phenomena had a global or local impact. Nowadays, however, local influences in the field of technology are negligible, as new developments spread extremely quickly in a globalised world. At the same time, security, economic, social and environmental influences can still vary significantly from one geographical area to another, and in many cases can influence the characteristics of an entire generation locally.

In this study, due to its citation number, we use the division of the above-mentioned work, but due to space limitations, we do not examine local effects and only present those generational characteristics that are essential to the topic.

Veteran generation (1928 – 1945)

Having experienced the effects of several world wars, veterans value the basic requirements of human existence, such as security and a modest livelihood, most highly as a result of their early life experiences. For them, circumstances that would be unacceptable to later generations, such as commuting to work or poor working conditions, are not reasons to change. Their attitude towards technology can be described as distant, at least, since apart from television, the devices that have had a significant social impact – first and foremost the computer – only became widespread in their late adulthood. The veteran generation is no longer active in the labour market, but it is necessary to mention them for the sake of comparison with other generations.

¹²⁴ PRENSKY, Mark: *Digital Natives, Digital Immigrants*. On the Horizon, 2001/ Issue 5.; TWENGE, Jean M.: *The Real Differences between Gen Z, Millennials, Gen X, Boomers, and Silents – and What They Mean for America's Future*. Simon & Schuster, 2023.

Generation	Television (1950)	Computer (1995)	Internet (2000)	Mobile phone (2005)	Mobile internet (2010)	Social media (2010)	AI (2024)
Veteran 1928 – 1945	5	50	55	60	65	65–82	79–96
Baby Boom 1946 – 1964	0–4	31	36–54	41	46	46–64	60–78
X 1965 – 1979	0	16–30	21–35	26–40	31–45	31–45	45
Y 1980 – 1994	0	1–15	6–20	11–25	16	16–30	30–44
Z 1995 – 2009	0	0	0	0	1–15	1–15	15
Alpha 2010	0	0	0	0	0	–1	0–14

Table 3. *Generations and Technology (based on the time of mass adoption of devices)*¹²⁵

Baby Boom generation (1946 – 1964)

Having grown up during the Cold War, boomers, like their parents, primarily desire security, both physical and economic, due to a constant sense of threat. In addition to respecting formal positions, they are characterised by a high degree of loyalty. Like the previous generation, they find it extremely difficult to change jobs, and even when they do, it is rarely due to working conditions. In terms of technology, television is a defining part of their lives, but computers – which they first encountered at work in their thirties – are a means of survival in the sense that white-collar workers had to learn how to use them in order to keep up with younger generations in their work. Due to the late introduction of mobile devices and social media in their adult lives, these are not an integral part of their everyday lives.

¹²⁵ Source: own compilation

Generation X (1964 – 1979)

Their parents, who had lived through difficult times, wanted to provide them with the best possible living and educational conditions – accordingly, they spent most of their time at work – and, in keeping with the spirit of the age, women were also able to play an active role in this. As a result, members of Generation X spent a lot of time alone at home and, in many cases, formed relationships outside the family and institutional framework, so their circle of friends was extremely wide, but only local. Influenced and guided by their parents' example, they also accepted that work takes precedence over private life. Computers were already widespread during their university years, so learning and working on them came naturally to them. Mobile devices and social media were introduced in their early adult years, when they were still receptive to new things, so they use them with confidence.

Generation Y (1980 – 1994)

Unlike their parents, who lived through the Cold War, members of this generation did not experience threats to their physical safety, but they did experience events with significant social and economic impact, such as the 9/11 terrorist attacks and the 2008 global economic crisis, during their young adulthood.

At the same time, the increasingly globalised and unipolar world, with its exponential technological development, has broadened their opportunities and made them open to new things. The balance between family and private life has become a priority for them due to their permanently secure living situation, making it easier for them to change jobs than their predecessors. They have had access to computers since at least the beginning of their secondary school years, while the internet, mobile phones, mobile internet and social media have been available to them since their early adulthood, so they use them confidently in their everyday lives.

Generation Z (1995 – 2009)

Members of the first generation born into a fully digitalised world, who have been using the technologies described above since childhood and are now active participants in the labour market. Thanks to their parents' attitude, they are well educated, have often seen the world through their studies and live with a constant online presence. As the youngest generation of workers and seemingly the most different from previous generations, they are the most researched in both scientific and market terms. Compared to previous generations, their significantly accelerated pace of life does not allow them to engage with uninteresting people or activities. They are extremely goal-oriented, yet distinctly community-focused, and enjoy working in groups. Based on our own survey of students participating in the 14-18 year old cadet programme, which was based on a sample of 300 respondents, it was found that the factors that motivate Generation Z the most

are salary (63%), good working conditions (39%) and finding a job close to their current place of residence (39%). At first glance, the latter parallels the widely held view that today's young people live in their parents' homes for a long time, even into their thirties. However, based on the discussions held during the survey, it is not only this, but also the aspect of digitalisation that is in the background, as intellectual workers do not need to be physically present to do their jobs, they can perform their tasks remotely, and if this is the case, then members of Generation Z see no point in changing their living situation, as it serves no purpose. An interesting fact about the use of technological tools is that none of the 300 respondents chose the paper-based response method, but instead completed the online questionnaire accessible via the projected QR code, for which they did not need any technical assistance.

Alpha generation (2010 –)

There is currently no research material available on members of this generation, so it is worth examining them based on environmental influences, and the accuracy or inaccuracy of this analysis will also be tested by generational research. What is certain is that they have been surrounded by currently available technology since childhood, which they use intuitively at the user level. However, it remains an open question whether they will use these tools to solve future problems or whether they will become completely dependent on them.

% of employed adults saying they find their job to be ____
all or most of the time

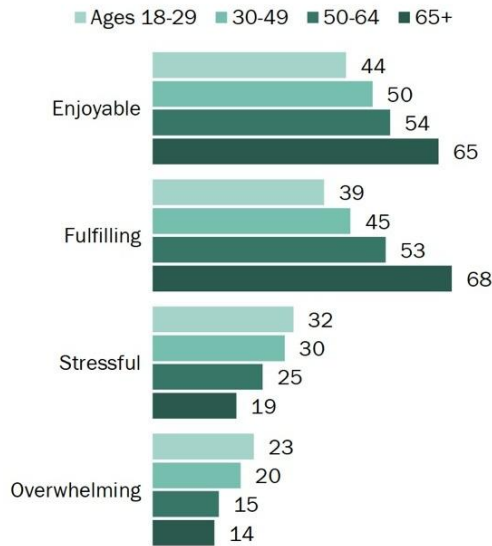


Figure 5. Job satisfaction by age group¹²⁶

Another study by the Pew Research Centre¹²⁷ revealed an interesting trend with regard to the different generations. Job enjoyment and satisfaction decreased among younger age groups, while stress factors and feelings of oppression showed an increasing trend. Overall, members of older generations are more satisfied with their current jobs, while less than half of the youngest generation enjoy their jobs and find them satisfying. The response rate of nearly one-third among the youngest respondents regarding stress and feelings of oppression is also noteworthy and highlights that addressing this problem, even by professionals, will be inevitable for future companies in order to effectively retain and attract labour.

3.3.4. Generations and artificial intelligence

Based on the characteristics of each generation, it can be concluded that the younger the individual, the easier and more willingly they adapt technological innovations into their daily activities – as confirmed by a 2024 American survey¹²⁸ based on a sample of more than 10,000 people. Based on a questionnaire examining ChatGPT usage habits, 43% of respondents aged 18 – 29,

¹²⁶ Source: Pew Research Centre, 2023.

¹²⁷ HOROWITZ, Juliana Menasce – PARKER, Kim: *How Americans View Their Jobs*. Pew Research Centre, 30 March 2023.

¹²⁸ MCCLAIN, Colleen: *Americans' Use of ChatGPT Is Ticking up, but Few Trust Its Election Information*. Pew Research Centre, 26 March 2024.

27% aged 30 – 49, 17% aged 50 – 64, and 11% aged 65, 43% of 18-29 years old, 27% of 30-49 years old, 17% of 50-64 years old, and 6% of those over 65 have used the service at some point. Another noteworthy finding is that, compared to the results from six months earlier, the increase in usage is still 10% in the youngest age group, but decreases to 6%, 4% and 2% in the older age groups. This does not only mean that the younger the age group, the higher the rate of technology use, but also that the increase per unit of time is more significant. The data show that the receptiveness to technological innovations already described in relation to generational differences can also be demonstrated in practice in the case of the younger generation. However, it cannot be clearly stated that individuals who are currently children and young adults will be equally open to new technologies in the future, as this attitude may also depend on the stage of life at which they become familiar with a given device or service.

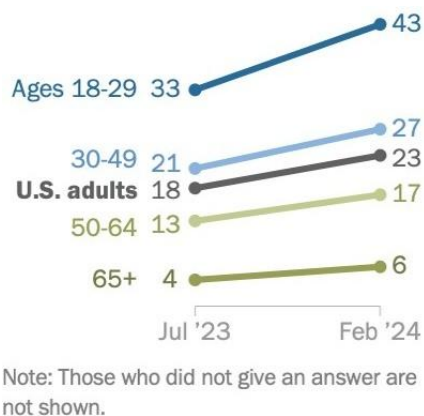
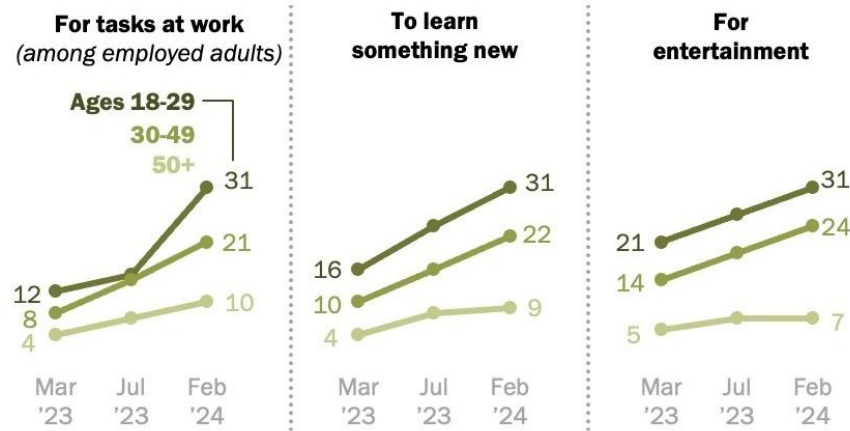


Figure 6. Growth in the use of ChatGPT in the United States¹²⁹

Based on the data from the above research, the use of artificial intelligence for work purposes has increased by 6% among those over 50, 13% among those aged 30 – 49, and 19% among those aged 18 – 29 over the past year. It should be noted, however, that although the percentage increase varies significantly, the number of users is approximately 2.5 times higher in all age groups compared to the previous year's data, showing a steady growth in the user base across all age groups. The reason for the difference between the two perspectives can be traced back to the differences between generations in terms of their openness to new things. When examining the use of artificial intelligence for learning and entertainment, the same difference can be seen between age groups, with the user base growing 2 times in the former case and 1.5 times in the latter.

¹²⁹ Source: Pew Research Centre, 2023.

In all three areas of application, it can therefore be said that growth is continuous and at the same rate regardless of generation. The only difference can be seen in the number of users at the start of data collection.



Note: "Employed" refers to those working full or part time for pay at the time of the survey. Those who did not give an answer are not shown.

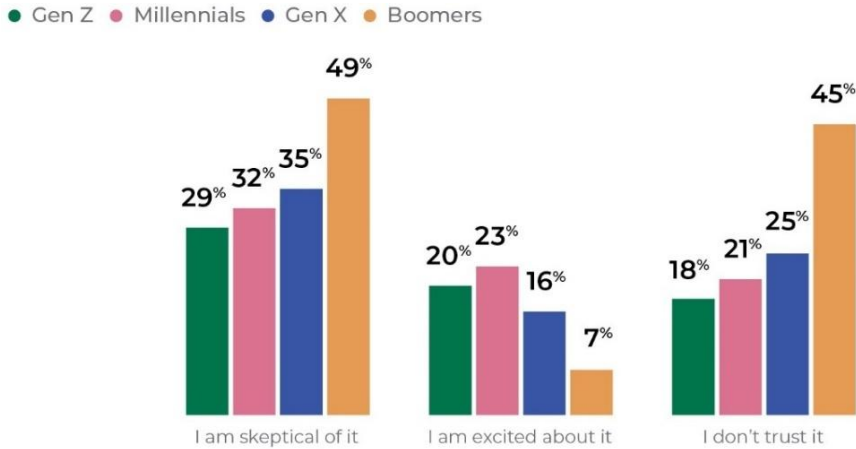
Figure 12. Use of ChatGPT at work in the United States¹³⁰

3.3.5. Generational attitudes towards artificial intelligence

Although younger generations are more open to new things than older ones, even these generations do not have complete trust in artificial intelligence. Scepticism towards this new technology is higher than excitement about it in all age groups, and of the generations currently present in the labour market, only Generations Y and Z have higher levels of excitement than distrust.¹³¹

¹³⁰ Source: Pew Research Centre, 2023.

¹³¹ *Hesitant & Hopeful: How Different Generations View Artificial Intelligence*. Barna Group, 27 November 2024.



n=1,500 U.S. adults, July 28–August 7, 2023.

Figure 13. Generational attitudes towards AI¹³²

Generations Y and Z, which are still partly sceptical but at the same time look forward to artificial intelligence, predict, based on Deloitte's research¹³³, that on the positive side, the technology will free up time for them at work and increase their efficiency. On the negative side, they will have to find jobs that cannot be automated, while at the same time the spread of AI will lead to job losses.

Overall, these two younger generations have an informed and realistic view of the future labour market, sharing the vision of artificial intelligence experts, while treating the exploitation of the benefits of technology in the workplace as a given. As demonstrated in the case of working from home, namely that they consider it unnecessary to be present in the office unless absolutely necessary, they also consider it reasonable, with regard to artificial intelligence, that it would be unreasonable not to delegate tasks that can now be automated – especially the tedious ones – to a system designed for this purpose.

3.3.6. National security, generations, artificial intelligence

Due to their authority to severely restrict fundamental rights and the sensitivity of the data they handle, national security services impose special requirements on recruitment, either due to legal provisions or operational reasons, which make it particularly relevant to examine generational differences.

¹³² Source: Barna Group, 2023.

¹³³ *Gen Z and Millennial Survey*. The Deloitte Global, 2024.

One example of a legal requirement is the examination of foreign connections within the institution of national security screening¹³⁴, which is more widespread among younger generations than older generations, mainly due to the education provided by their parents, even abroad, which has been simplified and intensified by the use of technological tools. and has become more intensive.

The requirements of national security screening can be traced back to the fact that, under the relevant legislation¹³⁵, national security services work primarily with information that falls within the scope of classified data, so in order to ensure their protection, the state also requires the examination of those segments of private life that could be compromised through security risks arising in relation to the individual. In addition to the requirement for national security screening of secret service personnel, in practice, the restrictions arising from legal requirements may include the termination of contact with persons posing a risk – not only foreigners, but also criminals, extremists, etc., restrictions on travel abroad, or prohibitions on membership in social organisations. Persons working with classified data must also submit to legal restrictions on their own information technology equipment and privacy, which are aimed at preventing the leakage of information, as individuals do not have the right to take reasonable risks because they cannot be held accountable for any negative consequences.

Operational reasons include the protection of information relating to national security organisations, activities, personnel, operational tools and methods from persons who are not authorised to access it. In practice, this may take the form of restrictions on fundamental rights, such as restrictions on the use of technological devices and social media.

The restrictions mentioned above in relation to the personnel of national security services, such as restrictions on communication, technological tools, etc., may even result in younger generations leaving their jobs or not even starting the recruitment process. This requires further research using data analysis related to the recruitment and hiring process, which is unlikely to ever be made public for the operational reasons outlined above.

The younger generations' demand for working from home, technology, and, within that, artificial intelligence also poses particular challenges for national security services. In the case of organisations that typically handle classified data, there are legal restrictions on the processing of such data in non-accredited premises, which can only be overcome at unreasonably high cost. In addition, unauthorised access to non-classified data by unauthorised persons could lead to conclusions that could reveal the intelligence needs of the national security service. For all these reasons, the currently widespread large language models, which develop themselves based on user input, pose an unacceptable security risk

¹³⁴ Act CXXV of 1995 on National Security Services, Sections 67 – 72.

¹³⁵ Act CLV of 2009 on the Protection of Classified Data

that the services cannot take. In the case of secret services, however, the use of artificial intelligence applications that can be run in a local environment, thus preventing data transfer to external parties, may be a solution to the problem. This would also satisfy the technological and automation needs of younger generations.

3.3.7. Conclusion

With the rapid development of artificial intelligence and its application in all areas of life, the spread of working from home poses serious technical and security challenges for both market players and public administration organisations.

The demand for working from home has been reinforced by the restrictions introduced due to the coronavirus pandemic, the effects of which are still being felt today. This pressure, mainly from employees, is reinforced by the reasonable demand of younger generations that being in the office without any specific benefits can mess up the balance between their family life and work, and they're way less tolerant of this than previous generations. In addition to all this, the advantages of working from home, such as reduced costs for employers and employees, environmental protection and convenience, are such attractive benefits that this atypical form of employment continues to spread unabated. Due to their flexibility, market players have increased their competitive advantage in this area over government agencies, especially national security services, which are unable to cost-effectively meet emerging new demands due to legal requirements regarding classified information and operational reasons.

When it comes to artificial intelligence, younger generations have similar expectations of their employers, and in this respect, public administration and secret service organisations are currently at a disadvantage due to security requirements, similar to working from home. In this context, it is important to note that we are not aware of any data leaks through artificial intelligence that have caused significant competitive disadvantages, or financial losses to any private company. However – as mentioned in the case of national security services – the questions asked or instructions given to these systems are in themselves capable of drawing conclusions that could lead to the disclosure of newsworthy information or, in the case of civilian enterprises, business strategies, planned actions, products and services. It is likely that after the first major data leak, private companies will also introduce stricter measures, or at least regulations, in relation to artificial intelligence.

With regard to national security services, generational changes will bring about a future change that cannot be precisely defined, but is likely to be radical, requiring a shift in mindset that is necessary to keep pace with rapid technological developments. Due to the inevitable changes resulting from generational differences, it is advisable for secret services to turn these differences to their

advantage and lead the organisation into the future by involving members of the younger generations.

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