

### Unlocking Finland's AI Potential in the Digital Decade

The Nordic nations surveyed in this study (Finland, Denmark, Norway and Sweden) are front runners in the journey to achieving the European Commission's (EC) [Digital Decade goals](#), with both businesses and people embracing the possibilities of new and frontier digital technologies. Nordic businesses particularly recognise the transformative potential of AI and are increasingly exploring AI technologies, with Finnish businesses leading the Nordics in the pace of their adoption of AI technologies.

[This research](#), the first of its kind since the boom in generative AI and large language models (LLMs) in 2023, surveyed 1000 citizens and 1000 businesses in each Nordic nation to examine where Finland stands on its journey towards the realisation of the goals of the Digital Decade policy programme. It also uncovered the benefits of businesses adopting key digital technologies, including AI, and that there was a significant increase in AI adoption in 2023. However, it also revealed that there are significant barriers to be overcome in order to maintain this growth rate.

If left unremoved, these barriers could prevent Finland from realising its full digital potential. Finnish businesses, although increasing their use of cloud computing and AI tools, are struggling to find staff with the necessary digital skills. The report also found that Finnish businesses would benefit from greater agency and flexibility in their work with cloud and AI suppliers, and the public is concerned about the future development of AI. In order to reach the Digital Decade target that 80% of European citizens have basic digital proficiency skills by 2030, Finnish businesses and the government must invest in developing digital skills training for their employees and people. This study, which builds on a [2022 report](#) carried out by Public First and commissioned by AWS, suggests that removing these barriers will also enable Finland's businesses and people to achieve the full benefits of increased adoption of AI and cloud technologies.

#### Key Statistics

- Finnish businesses predicted a **58%** increase in digital investments in 2024, and a **68%** increase in the next three years.
- **35%** of Finnish businesses were using at least one AI tool in 2023, up from 24% in 2022. This is a growth rate of **46%**.
- The increased adoption of digital technologies, most notably AI, could unlock **€59 billion** for the Finnish economy by 2030.
- **81%** of Finnish businesses that use cloud computing report that these technologies are essential or important to their business, and 67% of businesses using AI technologies report the same.
- **Nearly half** of Finnish businesses (45%) suggest that more choice among AI providers will enable them to increase their adoption of AI technologies.
- Finnish businesses which have adopted AI are doing so with increasing sophistication – **73%** are using large language models (LLMs) or generative AI.
- **Half of Finnish people** believe that AI will be important in addressing large societal challenges, such as climate change or disease control.

### The Expanding Potential of Digital Technology

Finnish businesses are increasingly adopting and looking to incorporate new and frontier technologies into their everyday operations, especially cloud computing and AI tools. Almost half (**48%**) of Finnish businesses state that cloud computing technologies have become more important to their business in the past year, while exactly half state that AI has become more important.

Excitement about the future potential of digital technology for business purposes in Finland is demonstrated by business investment in digital technology. Finnish businesses have increased their levels of investment in digital technology by **58%** since September 2022, higher than the Nordic and European average of **51%**. Finland is similarly outpacing the Nordic average in projected spending on digital technology – Finnish businesses expect their investment in digital technology to increase by **68%** in the next three years, compared to the Nordic average of **59%**.

In our survey, Finnish businesses reported that **17%** of their IT budget was spent on AI in 2022, estimating that this figure will rise to **a quarter** of their IT budget by 2030, in line with the Nordic average. These figures reflect Finland's bolder long-term investment intentions, comfortably larger than the average European digital investments, as well as their increasing focus on AI technology.

**78%** of Finnish businesses consider digital technology essential or important for achieving their five-year growth plans, similar to the Nordic average of **81%**. Not only are Nordic businesses increasingly using AI technologies, but they are using them with a greater degree of sophistication, and Finland is leading the way. **73%** of Finnish businesses which have adopted or are experimenting with AI are using LLMs and generative AI.



**48%**  
of Finnish businesses state that **cloud computing technologies** have become more important to their business in the past year



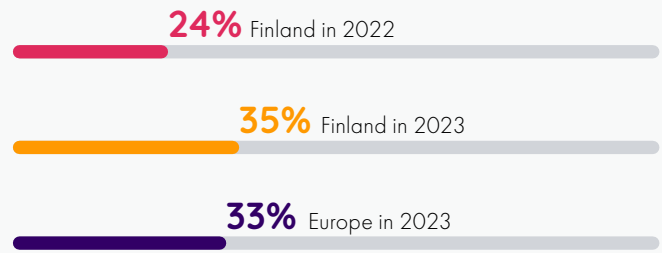
Since September 2022, Finnish businesses **increased their spending** in this area by **58%**



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## 2023: A 'Year of AI' Driving an Acceleration in Economic Growth

Finnish businesses are leaders in Europe in the uptake of AI technologies. **35%** of Finnish businesses reported that they consistently used at least one AI tool in their daily practices in 2023, up from **24%** in 2022, representing significant growth at a percentage increase of 46%. The proportion of businesses using AI in Finland is therefore in line with the European average of **33%**. Only **7%** of Finnish businesses say that they have no plan to introduce AI tools into their business.



**If this rate of growth in AI adoption is maintained until 2030, it could unlock €59 billion for the Finnish economy by the same year. This is equivalent to 22% of Finland's economy.**

The most common use for AI technology in Finnish businesses is to interpret and generate human language (for example, through machine translations or chatbots). **61%** of Finnish businesses using AI intend to use it for this purpose, higher than the Nordic average (**54%**). The next most common uses for AI among Finnish businesses that have adopted these technologies are for using data to make predictions or decisions without being explicitly programmed to do so (**39%**) and for detecting fraud or anomalies (**30%**).

Cloud computing serves as a key enabler for the use of AI and has become a cornerstone of digital transformation. Nordic businesses have a general understanding of cloud technology, with **84%** (**83%** in Finland) having heard of the concept before, in line with the European average. Finnish companies using the technology have already felt its benefits, reporting that cloud computing supports flexible or remote working (**47%**) and replaces paper or manual systems (**43%**).

Finnish businesses anticipate AI having a significant impact on their industry. More than half (**61%**) of Finnish businesses anticipate that AI will substantially or entirely transform their industries within the next five years, as do **62%** of Nordic businesses. Furthermore, **70%** of small businesses (those employing fewer than 50 people) in Finland identify this transformative potential. These sentiments underpin the widespread use of AI in Finland.

For the companies which have adopted the technology, the benefits are already realised; an overwhelming **97%** reported improved efficiency as a direct result of AI integration, above the Nordic average of 93%. A further **76%** of Finnish adopters report that AI has already improved customer experience, as did 79% of Nordic businesses, and stimulated innovation (**61%** of Finnish businesses, substantially lower than the Nordic average of 78%).

**The adoption of AI has stimulated growth across Finnish businesses, with:**



**76%**  
of Finnish AI adopters stating that the technology has already increased their revenues, a benefit which is similarly reflected in Nordic businesses.



**67%**  
of Finnish businesses state that AI technologies have already led to cost savings.

**The success of these businesses is likely to further drive awareness, excitement, and uptake of AI technologies in Finland.**

Although Finnish businesses that have adopted AI have already reported tangible benefits, only **18%** of Finnish businesses were able to name a specific everyday problem within their business that they believed AI could solve, slightly above the Nordic average (14%). This suggests that, despite increased uptake, there is still space for greater understanding regarding the specific potential uses of AI in Finnish businesses.

Finnish businesses foresee AI improving their businesses in a variety of ways over the next five years. The most common benefit Finnish businesses anticipated from an increased adoption of artificial intelligence was stimulating innovation, for example, through improved product development (**89%**). A further **88%** of Finnish businesses stated that they envisioned AI enabling personalised customer experiences, improving decision-making and analysis, and generating new ideas and strategies.

Finnish businesses are increasingly looking to use AI in more sophisticated ways. Over half (**56%**) believe that generative AI will completely or largely transform their industry's landscape over the next five years, a sentiment reflected in the wider region, with 53% of Nordic businesses reporting the same.

## Unlocking Ambitions

Despite raised technological ambitions, Finnish businesses face substantial challenges to accessing the full potential of digital technology.

**45%**

Nearly half (**45%**) of Finnish businesses state that greater choice between AI providers would enable them to increase their adoption of the technology, reflecting a preference towards greater choice shared by 41% of Nordic businesses.

**30%**

A further **30%** of Finnish businesses stated that more flexible regulations regarding the exchange of data between AI providers would similarly enable them to increase their adoption of AI tools.

**12%** of Finnish businesses (matched by 13% of Nordic businesses) state that legal compliance issues, such as potential liability or damage caused by AI, also formed a barrier to their adoption of AI technology.

In line with Nordic businesses, Finnish businesses thrive in a regulatory landscape which provides clarity and guidance to businesses, thus reducing their regulatory burden. The European Commission has recognised the importance of providing a clear regulatory framework to European businesses. The European Commission has committed to setting out a comprehensive legislative approach to AI and recognises the need for open dialogue with AI developers and deployers.<sup>1</sup>

In December 2023, the EU reached a provisional agreement on the AI Act, forming a broad legal framework for regulating the use of AI. AWS supports government efforts to put in place effective risk-based legislation for AI that protects people and their rights and encourages trust, while also allowing for continued innovation and practical application.

**We encourage policymakers to continue pursuing an innovation-friendly and internationally coordinated approach and are committed to collaborating with the EU and industry to support the safe, secure, and responsible development of AI.**

Another significant challenge in Finland is the lack of in-house skills for utilising AI technology. **One in three** Finnish businesses cited this barrier as preventing them from adopting more AI tools, just slightly above the Nordic average (30%). Moreover, among small and medium sized businesses (those employing fewer than 250 people), **41%** reported that they faced skills barriers to AI adoption. The digital skills gap is a problem faced by businesses across the Nordics and Europe as a whole: businesses have advanced digital ambitions but limited digital capabilities in the workforce which prevents them from achieving these goals.

For example, only **26%** of Finnish businesses believe it is easy to find new employees with good digital skills, slightly above 22% of businesses in the wider Nordics. Within their existing workforce, only **27%** of Finnish businesses find it easy to train existing employees in digital skills. Moreover, over half (**54%**) report that basic digital skills, such as creating a spreadsheet or editing a document, are the digital skills most lacking in their organisation, as do 51% of Nordic businesses overall. Citizens are also struggling with the skills gap. **58%** of Finnish citizens, just below the Nordic average (62%), feel that their weaknesses in digital skills are hindering their job opportunities.



**One in three Finnish businesses** cite the lack of in-house skills for utilising AI technology as preventing them from adopting more AI tools



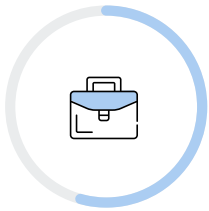
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To overcome this issue, Finnish businesses are beginning to invest in digital training programs. Although **85%** of Finnish businesses are offering some form of digital skills training, only **22%** report that they regularly invest in comprehensive digital training programmes for all employees.

Further investment in quality digital skills training is needed in order to act upon the recognition that digital skills are becoming increasingly important. **68%** of Finnish businesses predict that digital skills will take precedence over university degrees in hiring decisions within the next five years, just below the Nordic average (70%).

## Citizens' Concerns

Finnish citizens understand the transformative potential of AI and digital technology, while also harbouring certain concerns.



Over half (**53%**) believe that artificial intelligence will impact their lives in the next three years, slightly more than the European average (51%) and slightly below the Nordic average of 56%. Finnish citizens predict that AI will have a transformative impact on sectors such as **healthcare (58%), education (71%), and transportation (63%)**.



Although citizens recognise the power of AI, people still harbour concerns about the technology. **Nearly three in four (74%)** Finnish citizens voiced some fear about AI. The main concern, noted by **45%** of respondents, was the potential for AI to cause job losses.

Although there are concerns about AI, 58% of people in Finland believe that it will create more opportunities than risks in regard to job security and the future of work. This belief is supported by the 2023 World Economic Forum Future of Jobs report, which estimates that AI is expected to have a 25.6% net positive effect on job growth over the next five years.

# CASE STUDY:

Virta



## A Finnish Company Helping Over 1000 Electric Vehicle Charging Businesses Expand Globally

Established in 2013, Virta is one of the world's leading digital EV charging platforms that enables charging point owners, such as large charging networks and retail chains, to manage their charger networks and turn the provision of EV charging services into a business.

Virta's mission is to contribute to a profitable and rapid transition to sustainable mobility and a sustainable energy system. The company's current goal is to be the leading service platform that combines electric transport and energy systems in Europe and Southeast Asia, and it is developing commercial solutions to connect EV batteries to the power grid to satisfy the growing demand for energy flexibility. Connecting a network of charging stations with the energy system highlights the potential of harnessing cloud computing in order to improve European sustainability networks.

Virta is using AWS cloud to power growth and meet sustainability goals. AWS helps Virta to offer its clients the most cost-efficient and effective solution to launch and scale charging service networks, and the company is looking to innovate further, particularly through the use of artificial intelligence and machine learning.



### Core Features:

- **EV Charging Networks:** Virta platform runs a growing network of EV charging networks, which are scalable to demand and have led to cost savings of 15-20%.
- **Adaptable and Scalable:** Virta helps over 1000 businesses across a huge range of industries, such as retail, hotel, parking, energy, and more to harness EV charging solutions.
- **Sustainability:** Virta has been able to use cloud computing to track its carbon footprint and produce its first sustainability report in 2023.



### Key Advantages:

- **Exponential Growth:** scaling its customers' networks across different geographies on AWS cloud means that Virta has achieved higher-than-average market growth every year since its founding in 2013, with 114% revenue growth in 2022.
- **Convenient:** the Virta mobile app hugely improves convenience for EV drivers across Europe, by allowing them to locate, view costs, and navigate to any charging station across 65 countries.
- **Sustainable:** AWS cloud has enabled Virta to match global scalability and growth with sustainability. In 2022, sustainability ranking group, EcoVadis, placed [Virta in the ninety-first percentile](#) of all the companies it assessed.



### Digital Ambitions:

- **Ready for Growth:** Virta has projected over 100% revenue growth for 2023 and to increase the amount of energy that flows through its solution by six or seven times by mid 2025.
- **Innovation:** by automating and managing services, AWS has freed Virta employees from managing solutions, enabling them to focus on high-value work, such as software development and innovation.
- **Optimising Renewable Energy:** Virta's innovation focuses on renewable energy infrastructure. Virta, using AWS, will seek to use EV charging networks to address issues of high grid load and to meet stringent load capacity requirements in global markets.
- **Improved Communications:** Virta is experimenting with artificial intelligence and machine learning in order to improve the customer experience, enabling better communication between drivers and EV charging businesses.
- Virta has harnessed a range of technologies to empower over 1000 electric vehicle charging businesses to expand across Europe and south-east Asia. 77% of Nordic companies state that cloud computing technology is important or essential to their businesses, and Virta highlights the role cloud computing can play in enabling a company to build a flexible, international network.

Virta showcases a Finnish company seeking to use increasingly sophisticated AI technologies. By automating and using artificial intelligence to manage key services, it can provide new and innovative solutions to bolster renewable energy infrastructure. Virta affects business growth and global expansion among its clients.

## Conclusion

### **Finnish businesses and people are increasingly looking to adopt new digital technologies, in particular AI and cloud computing.**

Businesses are increasing their investments in digital technology and will continue to do so, with AI making up an increasingly large part of their IT budgets. Businesses which have already adopted AI have reported a range of benefits, focussed on improving efficiency and stimulating growth and innovation. Finnish businesses are leading the Nordics in growth in AI adoption, with their use of the technology increasing by 46% between 2022 and 2023.

Finnish people believe in the transformative potential of AI but have concerns about the technology's potential impact, particularly on their job opportunities. In order to maintain its strong AI growth, Finland's government and businesses will need to work to address public concerns regarding AI and highlight the opportunities for growth that the technology presents.

Although Finnish businesses and people are moving rapidly towards the Digital Decade goals, they face barriers to AI adoption, especially regarding the choice of AI provider and digital skills gaps. The digital skills gap is particularly felt among smaller businesses in Finland. In order to fully realise their digital potential and achieve the goals of the Digital Decade, businesses and individuals must be able to operate in a landscape that provides clarity, certainty, and flexibility, and continue to invest in digital skills training for both tech and non-tech employees. By doing so, Finland will be able to unlock the ambitions of the Digital Decade.

### **References:**

1. European Commission (2023) State of the Union Address by President von der Leyen. Available at: [https://ec.europa.eu/commission/presscorner/detail/en/speech\\_23\\_4426](https://ec.europa.eu/commission/presscorner/detail/en/speech_23_4426)