NORWAY

COUNTRY REPORT

A Deep Dive into Norway's Digital Landscape

The Nordic nations surveyed in this study (Denmark, Finland, Norway and Sweden) are European frontrunners in AI adoption. Both businesses and people are embracing the possibilities of new and frontier technologies, such as AI, showing a strong understanding of their transformative power and increasingly looking to accelerate their adoption of these tools.

This research, the first of its kind since the boom in generative AI and LLMs (large language models) in 2023, surveyed 1,000 citizens and 1,000 businesses to reveal a significant increase in AI adoption in Norway and the wider Nordics, as well as significant barriers to overcome in order to maintain this growth rate.

Building on a 2022 report carried out by Public First and commissioned by AWS, this report suggests that to fully embrace the opportunities offered by the AI era, Norwegian governments and businesses must work to offer increased digital skills training to the workforce and address citizen concerns about AI, to ensure that they are bringing Norwegian workers and citizens with them on the AI journey.

Key Statistics

- **30%** of Norwegian businesses were using at least one AI in 2023, up from **23%** in 2022. This is a growth rate of **30%**.
- The increased adoption of digital technologies, most notably AI, could unlock **748 billion NOK** for the Norwegian economy by 2030.
- Norwegian businesses predict a **46%** increase in digital investments in the next year, and a further 53% increase in the next three years.
- **81%** of Norwegian businesses that use cloud computing report that it is essential or important to their business, and **67%** of businesses using AI report the same.
- Norwegian businesses which have adopted AI are doing so with increasing sophistication – **57%** are using LLMs or generative AI.
- **63%** of Norwegian citizens believe that AI will be important in addressing large societal challenges, such as climate change or disease control.

The Expanding Potential of Digital Technology

Norwegian 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 Norwegian businesses state that cloud computing technologies have become more important to their business in the past year, in line with the Nordic average (49%). 42% of Norwegian businesses state that AI has become more important, trailing the Nordic average (50%).

Norwegian businesses recognise the potential of digital technology, with 83% believing that digital tools will be pivotal in achieving their five-year growth targets, closely mirroring the European average (84%) and Nordic average (81%). Excitement about the future potential of digital technology for business purposes in Norway is further demonstrated by investment by businesses in digital technology. In the past year, Norwegian businesses have increased their investment in digital technology by 43%, although this is behind the Nordic average (51%). In projected spending on digital technology, Norwegian businesses expect their investment in digital technology to increase by 53% in the next three years.

Norwegian small and medium sized businesses (those employing under 250) report particularly high ambitions for future tech investment, and expect a three-year rise of 62%. In 2022, Norwegian businesses reported that 13% of their IT budget was spent on AI, estimating that this figure will rise to 22% by 2030.

As with many other European countries, businesses in Norway understand the powerful potential of digital technology. Not only are Norwegian businesses increasing their use of AI technologies, but they are looking to use them with a greater degree of sophistication. 57% of AI adopters are using LLMs and generative AI.

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

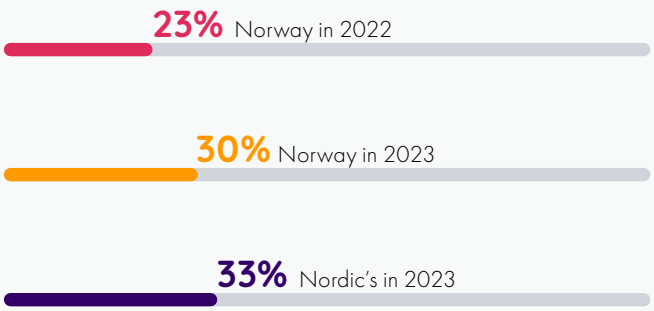
83% believe that digital technology will be pivotal in achieving their five-year growth targets

In the past year, Norwegian businesses have increased their investment in digital technology by **43%**

Harnessing the Potential of AI

This report highlights increased AI adoption, as well as the need to overcome significant barriers in order to maintain these growth rates.

The integration of AI technologies into business operations is becoming increasingly prevalent across Europe. Norwegian enterprises, however, appear slightly more hesitant to engage with AI than their peers across Europe. **30%** of Norwegian businesses report that they consistently used at least one AI tool or technology in their daily practices in 2023, compared to **23%** in 2022; a percentage increase of 30%. This is largely in line with the Nordic average, of **33%** of businesses using AI daily in 2023. Just over half (**53%**) of Norwegian businesses anticipate that AI will either completely or predominantly transform their industries.



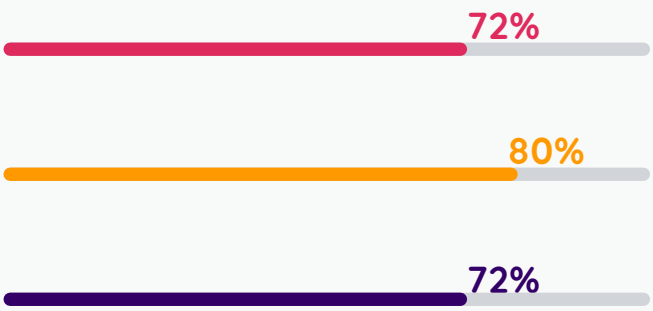
Maintaining this rate of growth to 2030 could unlock 748 billion NOK for the Norwegian economy by the same year. This is equivalent to 18% of Norway's economy.

The most common uses for AI among Norwegian businesses are for using data to make predictions or decisions (**61%**), and analysing, understanding, and interpreting visual information (**57%**). Many Norwegian businesses are using AI to interpret and generate human language (for example, through machine translations or chatbots), cited by **46%** of businesses.

Cloud computing serves as a key enabler for increased experimentation with and adoption of AI and serves as a foundation for the AI age. Norwegian businesses show a good general understanding, with **81%,** just below the Nordic average of 84%, demonstrating familiarity with the concept. In order to maintain current growth rates in AI adoption, Norwegian businesses will need to build on this understanding of cloud computing as a foundational technology.

Norwegian companies which have embraced cloud computing are reporting a range of benefits. The most common benefit reported by Norwegian companies which have adopted cloud computing was improving their online security (**53%**), followed by supporting remote or flexible working (**49%**). Starting to sell products or services online and improving the way employees work internally and collaborate were the next most commonly listed advantages, each at **30%**.

In both Norway and the wider Nordics, there is clear excitement around the potential of AI. **53%** of Norwegian businesses anticipate that AI will substantially or entirely transform their industries within the next five years, a figure which increases to 62% among Nordic businesses. **93%** of Norwegian AI adopters state that AI has enhanced their automation and efficiency, exactly in line with the Nordic average. Moreover, **83%** state that it has stimulated innovation (for example, improving the development of new products), slightly above the Nordic average (78%), and **76%** of Norwegian businesses state that AI has improved their customers' experience.



The adoption of AI has stimulated growth across Norwegian businesses, with **72%** of AI adopters stating that using these technologies has already increased their revenues, as also reported by 76% of AI adopters in the wider Nordics. Small businesses (those employing fewer than 50 people) were even more likely to have experienced this after adopting AI, with **80%** reporting increased revenues. A further **72%** of Norwegian businesses state that AI technologies have already improved cost savings, close to the Nordic average of 73%. The increased adoption of AI among Nordic businesses could represent significant financial growth for Norway, if growth rates are maintained and obstacles are overcome.

Norwegian businesses foresee AI further improving their business in a variety of ways over the next five years. **86%** think that AI will enable more personalised customer services, **83%** believe it will increase revenues even further, while **82%** believe it will lead to improvements in productivity.

This study also found that Norwegian businesses are increasingly interested in generative AI specifically. **59%** believe that generative AI will transform their industry's landscape over the next five years, in line with the Nordic average.

Although Norwegian companies that have adopted AI have already reported a range of benefits, only **1 in 10** were able to name an everyday problem faced by their business that they thought AI could solve, below the Nordic average of 14%. Opportunities remain to develop a greater understanding of the technology and its applications.

Unlocking Ambitions

In order to unlock the full potential of their AI ambitions, Norwegian public and private sectors will need to work to overcome significant barriers to adoption to maintain the accelerated uptake of AI.

Two significant impediments stand in the way of Norwegian businesses increasing AI adoption:

The limited choice among AI providers

reported by 45%

in Norway, compared to **39%** across Europe

A skills deficit within businesses

reported by 38%

in Norway, compared to **28%** across Europe

Greater flexibility in choice of AI provider would also help a significant number (45%) of Norwegian businesses to increase their adoption of AI technology, a sentiment shared by 41% of Nordic businesses. A further 28% of Norwegian businesses stated that increased ability to switch between AI providers would help them to adopt AI tools more easily, while 14% cited legal or compliance issues as a barrier.

Norwegian authorities must therefore work to maintain a principle-based and open regulatory framework that provides both guidance and clarity, securing the safe and responsible development of AI while incentivising innovation and practical application.

Another significant challenge to greater AI adoption across the Nordics, and particularly in Norway, is a lack of in-house digital skills, both basic and advanced. 38% of Norwegian businesses cited a lack of digital skills as a barrier to the further adoption of AI technology. The digital skills gap is a barrier to be overcome by Norwegian and European businesses alike: while businesses have advanced digital ambitions, limited digital capabilities in the workforce prevent them from realising their goals. Only 13% of Norwegian businesses believe it is easy to find new employees with good digital skills, below the Nordic average of 22%. This is particularly true among small businesses in Norway, with just 11% saying that it's easy to find staff with good digital skills. Norwegian businesses state that, from the posting of a job vacancy, it takes **6.1 months** to find an employee with the appropriate digital skills, largely in line with the Nordic average. This highlights a significant digital skills dilemma which Norwegian businesses will need to overcome in order to fully harness the potential of AI technology. Furthermore, within the workforce, only 27% of Nordic businesses and 20% of Norwegian businesses find it easy to train existing employees in digital skills.

Only 13% believe it is easy to find new employees with good digital skills

Only 20% find it easy to train existing employees in digital skills

38% cited a lack of digital skills as a barrier to the further adoption of AI technology

Of particular concern are the shortages of basic digital skills in the workforce which form a barrier in preventing companies from utilising more advanced digital technologies. Over half (50%) of Norwegian businesses report that basic digital skills, such as creating a spreadsheet or editing an online document, are the digital skills most lacking in their organisations. Moreover, 44% of businesses which lack digital skills in their workforce reported that this has increased costs for their business, and 16% that this slowed their business growth.

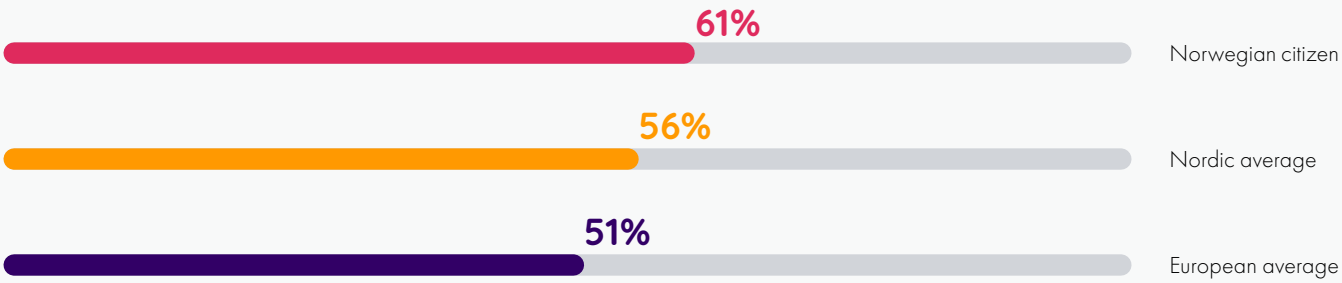
73% of Norwegian citizens, compared to the Nordic average of 62%, feel that their weaknesses in digital skills are hindering their job opportunities. In order to fully harness the potential of AI, businesses and governments will also need to work to foster digital skills among their citizens – both to empower them to use technologies and to ensure their understanding of the risks and opportunities created by AI are grounded in reality.

To overcome this issue, Norwegian businesses are beginning to invest in digital training programs. Although 80% of Norwegian businesses are offering some form of digital skills training, this is below the Nordic average of 85% and only 20% of businesses report that they regularly invest in comprehensive digital training programmes for all employees.

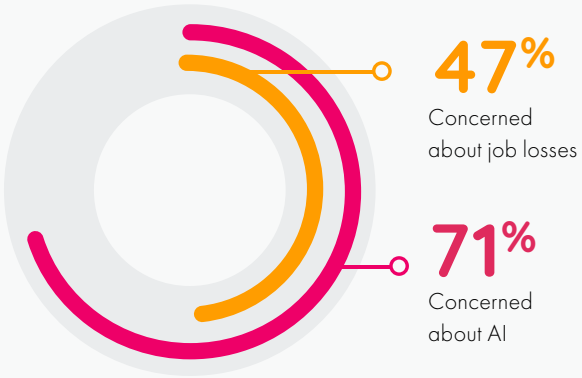
Further investment in comprehensive quality digital skills training is needed in order to act upon the recognition that digital skills are becoming increasingly important. 70% of Norwegian businesses predict that digital skills will take precedence over university degrees in hiring decisions within the next five years, in line with the Nordic average.

Public Concerns

Norwegian citizens demonstrate both excitement and concern about the potential impact of AI. 61% believe that AI will positively impact their lives in the next three years, above the Nordic average of 56% and substantially above the European average of 51%.



Norwegian citizens also believe that AI will have a transformative impact on education (82%), healthcare (80%), and transportation (75%), substantially outpacing average projections across Europe.



Although citizens recognise the power of AI, they also harbour concerns.

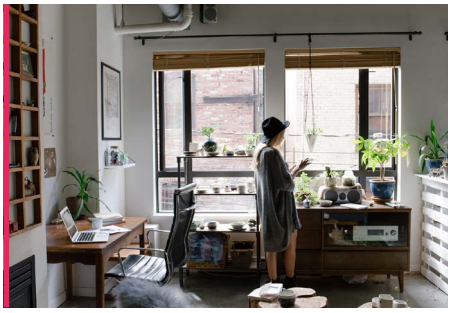
71% of Norwegian citizens voiced some fear about AI in this study, in line with the Nordic average of 73%. The main concern, noted by 47% of respondents, was the potential for AI to cause job losses. This was also the leading concern across the Nordic region (47%) and Europe as a whole (48%). Beyond this, 40% of Norwegian citizens also reported concerns about a lack of transparency in how AI makes decisions, and 34% were concerned about the loss of human control over AI.

Despite this, 59% of Norwegian citizens believe that AI will create more opportunities than risks in regard to job security and the future of work. Similarly, the 2023 World Economic Forum Future of Jobs report estimates that AI is expected to have a 25.6% net positive effect on job growth over the next five years.[1]

Cloud computing underpins the uptake of AI and 57% of Norwegian citizens state that they were very familiar with cloud computing, while a further 38% demonstrated familiarity but not understanding. Norwegian businesses are simultaneously looking to harness cloud in a variety of ways, to improve and increase their offerings.

CASE STUDY:

DNB



How One of the Nordics' Oldest Banks is Betting on the Future

DNB, one of the Nordics' biggest and oldest banks, is looking to become a "technology company with a banking licence," offering a full range of banking services to both retail and corporate customers. The bank is using the AWS cloud to move its mobile banking '20 years ahead' (Nicolai Rygh, CTO of personal banking). With the support of cloud, DNB is now Norway's biggest online banking service and mobile banking platform, with over 1.7 million customers.

Core Features:

- **Mobile Banking platform:** the DNB mobile banking app is updated every month, creating a seamless online banking experience, and allowing DNB to save costs by building an elastic infrastructure, easily scaling services up or down.
- **Cloud-native Infrastructure:** by moving to a cloud-native infrastructure, DNB can focus on innovating and updating its online services in to meet customer demand and ensure maximal satisfaction.
- **Customer Services:** DNB is able to continuously expand and update its customer services according to demand. DNB's Personal Finance Management (Pengebruk), analyses its customers' financials to create breakdowns of their expenses, giving them greater control over their money.

Key Advantages:

- **Continuous Evolution:** the AWS cloud has enabled DNB to quickly roll out a basic banking application for its customers, which it is able to continuously adapt to customer feedback and experience, creating a rich and flexible banking experience. New capabilities can be rolled out and perfected quickly and continuously.
- **Customer Satisfaction:** the DNB app has placed customers front and centre, helping DNB to improve and dynamically respond to customer needs.
- **Working Externally:** DNB's data lake is being used for wider benefit in Norway. The bank can predict trends in the Norwegian economy and supply data and solutions to the Ministry of Finance and the central bank, navigating periods of global financial uncertainty.

Raised Ambitions:

- **Innovation Without Disruption:** DNB is looking to migrate its entire online banking service to AWS cloud, seeking to transfer 20,000 pages with no interruptions to its services or disruption to its customers.
- **Data Driven:** adoption of cloud technology is helping the bank to develop its data lake, helping its data scientists to speed innovation and develop more detailed insights, improving decision making.
- **Technology Working for Customers:** DNB is planning a range of new updates to its app. It is harnessing machine learning in order to provide personalised financial advice to individual customers.

DNB has harnessed cloud computing and crafted an app which has enabled them to reduce costs, speed development and innovation, improve customer satisfaction, and develop deep data insights. DNB's cloud journey has helped the bank to shift its focus from infrastructure to customer-facing applications.

Conclusion

Norwegian businesses and people are looking to adopt new digital technologies, with a particular focus on AI. Businesses are increasing their digital investments and will continue to do so, with AI making up an increasingly larger portion of their IT budgets. 30% of Norwegian businesses reported using AI technology regularly in 2023, a percentage increase of 30% from 2022. If Norway is able to harness and extend this momentum, it will realise significant benefits.

Norwegian people believe in the transformative potential of AI but have concerns about its potential impact, particularly regarding their job opportunities. Despite this, the majority (59%) of Norwegian people believe that there are more job-related opportunities than risks through the adoption of AI. In order to maintain the current growth rate in AI adoption, Norway's government and businesses will need to work to address consumer concerns regarding AI and highlight the opportunities for growth that technology presents.

Norwegian businesses, people, and governments are innovating rapidly, but still face barriers to maintaining increased AI adoption. In order to address these barriers, businesses and governments will need to work together to invest in comprehensive digital skills and maintain a principle-based and open regulatory framework that protects rights while incentivising innovation.

By doing so, Norway will be able to maintain its momentum in AI adoption and fully unlock the resulting benefits.

References:

1. The World Economic Forum (2023) Future of Jobs Report. Available at: https://www.weforum.org/reports/the-future-of-jobs-report-2023/