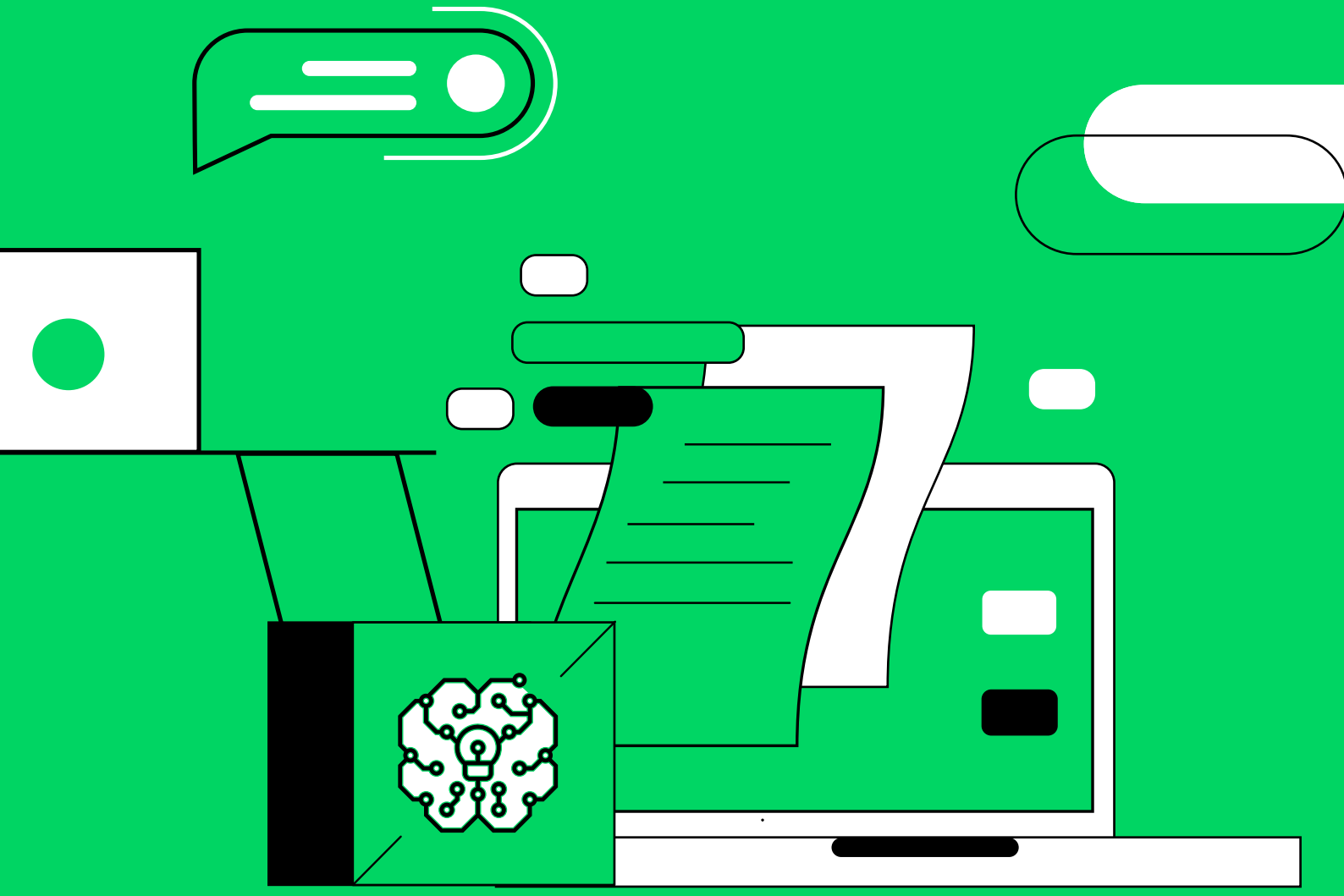
Disruption Report

THE STATE OF MACHINE LEARNING IN FINTECH 2020

by netguru



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Introduction

Fintech has revolutionized the financial services industry and continues to evolve rapidly. Advances in technology have enabled disruption and innovation in a market once dominated solely by large institutions. Now, startups and new business models continue to reshape the market, including insurance services, payments and transactions, financial advice, and customer service.

One of the key driving forces accelerating the transformation of the industry is machine learning. From predictive analytics and fraud detection to personalized customer engagement and improving customer experience, machine learning creates a myriad of exciting opportunities. Companies can reimagine their businesses, pursue operational efficiencies, and, ultimately, get ahead of the competition.

Given the rapidly changing nature of technology adoption and the fintech landscape alike, we wanted to collect and share the most up-to-date information about the current state of machine learning in fintech. In this report, we will explore the current trends, wins and opportunities, challenges, and future developments for companies in the fintech space.

The State of Machine Learning in Fintech is based exclusively on data provided by representatives of the fintech community around the world. This year, we surveyed 80 respondents from companies of all sizes, and at various stages of machine learning maturity. More than a half of the respondents were C-suite executives, while a further 30% were management-level employees. More information about the respondents can be found in the Methodology section.

The State of Machine Learning in Fintech is powered by Netguru – a consultancy, product design, and software development company founded in 2008.

The following are the findings from our survey, along with an analysis of the results.

Key takeaways

In this survey, our goal was to get an up-to-date picture of where fintech companies are in their machine learning journeys, as well as to gauge the hurdles they are facing, their successes, and what the future developments may be. Our key findings were as follows:

- The main takeaway is that almost 75% of the companies we surveyed are currently actively engaged in learning projects at various levels of maturity.
- Almost **90% of the companies expect their machine learning adoption to increase in the next 12 months**, with 45% predicting that the increase will be significant.
- The top three most popular use cases for machine learning are advanced analytics, forecasting, and fraud detection and prevention, respectively.
- Companies indicated the same top three use cases in their future plans for machine learning.
- **54% of companies surveyed cited extracting better information from their data as their main driver for adopting machine learning.**
- **The biggest challenge that compa nies of all sizes** face in adopting machine learning **is shortage of the necessary skills within the organization**, with more than a half of the respondents citing it as an issue.
- Another important challenge is data collection and analysis. **Nearly 85% of respondents collect and work with data but without a well-structured analytical component to gain valuable** insights and use them in a data-driven decision making process. Only 15% of companies do this.

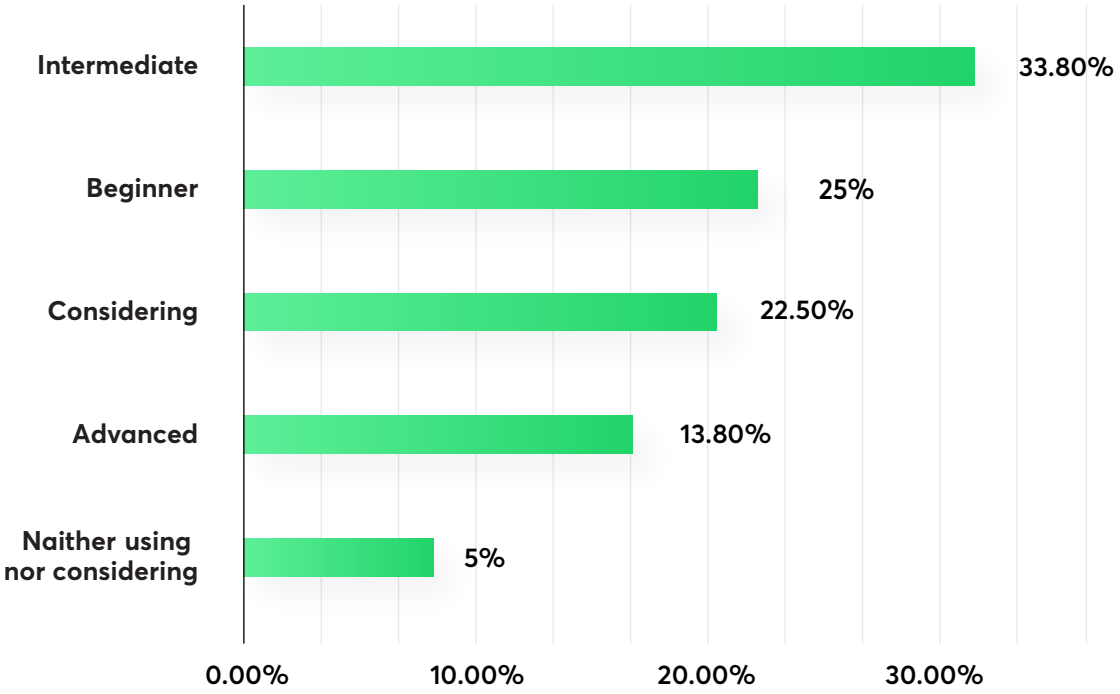
The current state of machine learning in fintech

Machine learning adoption

We wanted to understand where companies viewed themselves in terms of their machine learning (ML) maturity and how this differed depending on a company's size. To assess this, we asked respondents to select one of the following options:

- Neither currently using ML nor considering it
- Considering using ML in the near future
- Beginner – pilot projects underway
- Intermediate – some ML initiatives deployed and running
- Advanced – multiple use cases of ML in organization

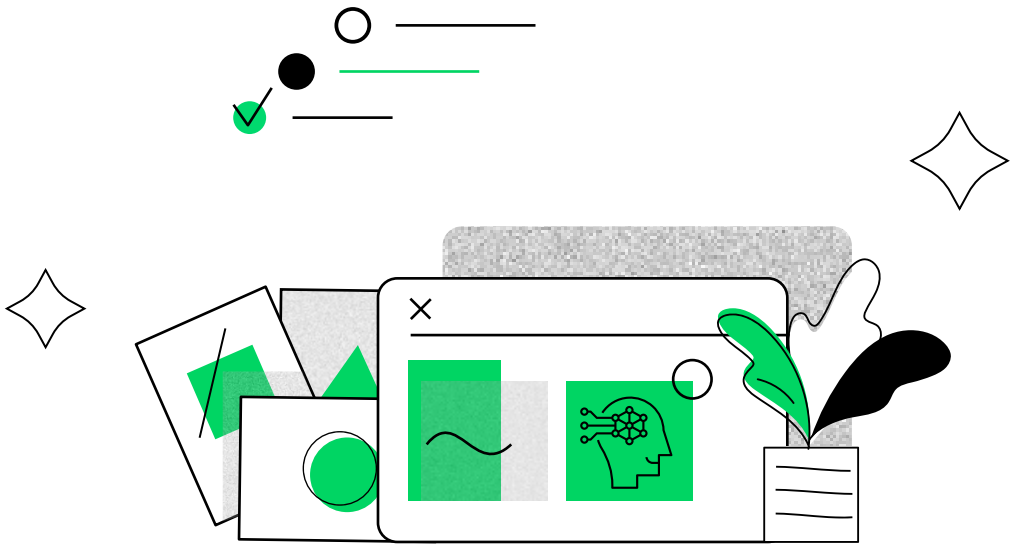
to select one of the following options:



Almost three-quarters of respondents indicated that their companies are actively using machine learning in their businesses. While a quarter are still at the pilot stage, a healthy 47% of companies have initiatives deployed and running at an intermediate or advanced level. The fact that only 5% of businesses are not currently using machine learning nor considering it, likely demonstrates the increasing pressure on fintech companies to keep up with the pace of technology adoption to remain competitive.

The Situation has reversed in comparison to 2019, as indicated by an O'Reilly survey. According to this report, 54% of respondent organizations were evaluating AI and just 27% were in the "mature" adoption phase. It seems that companies that, considered using AI technology years ago have now adopted it to the extent that it is used in production. This means that certain processes regarding managing and developing AI-related projects are in place, or are considered.

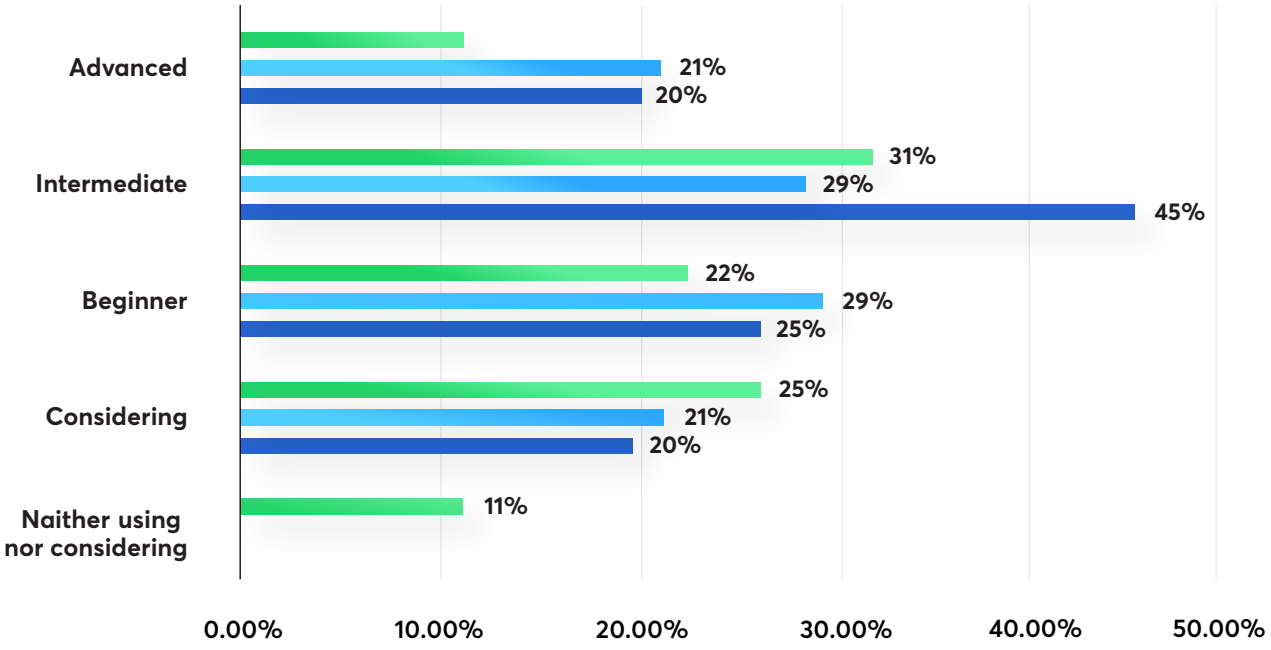
In comparison, a survey by Gartner spanning a range of major industries, showed that 37% of respondents had deployed AI in some form or were planning to do so shortly. This represents a 270% increase in AI implementation in the past four years. Chris Howard, Distinguished VP Analyst at Gartner, echoed the competitive pressure on companies, stating "if you are a CIO and your organization doesn't use AI, chances are high that your competitors do and this should be a concern."



Comparison by company size

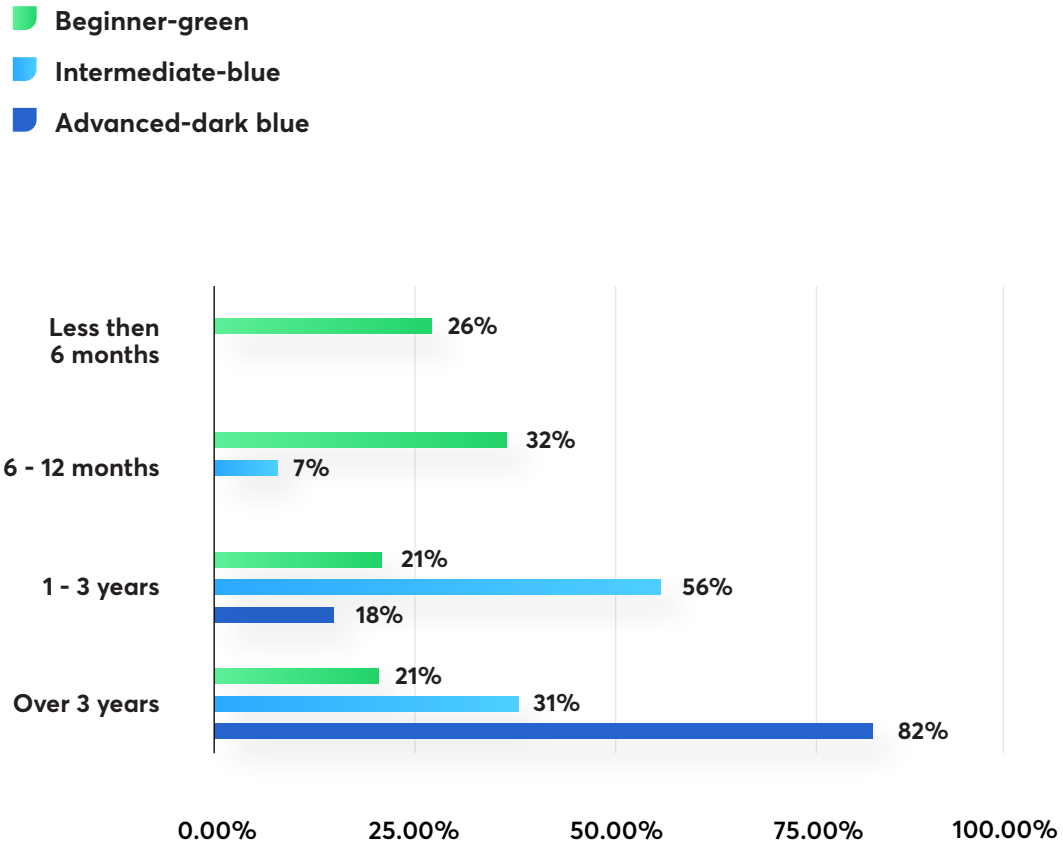
- **Small-green**
- **Mid-sized-blue**
- **Large-dark blue**

Large and mid-sized companies are most advanced in ML adoption. We can say that ML is the core of mid-sized entities' competitive advantage over large companies, which started to adopt ML solutions later, and now 45% of them test some ML solutions to improve their business. They are leading in intermediate ML initiatives. It looks like big players are aware that ML can drive a company's success, and a further 25% have begun pilot projects, while 20% are still considering using ML. Only 10% of small entities have not considered using ML in their business.



These findings correlate with the biggest challenges pointed out in the survey, namely: a lack of skills and budget. It is of no surprise that large companies can afford to run ML projects on a daily basis (hiring talents and investing in ML research), while small companies struggle to acquire enough staff or transfer resources in prospective return on investment in the future. It seems that small companies can be divided into two groups. The first group is companies that have used ML as a source of business value from the beginning. Those companies have ML solutions in advanced or intermediate stages. The second group is testing some solutions but the majority of this group are only considering or have outright rejected using ML in their business.

Comparison by length of time spent investing in data initiatives and machine learning



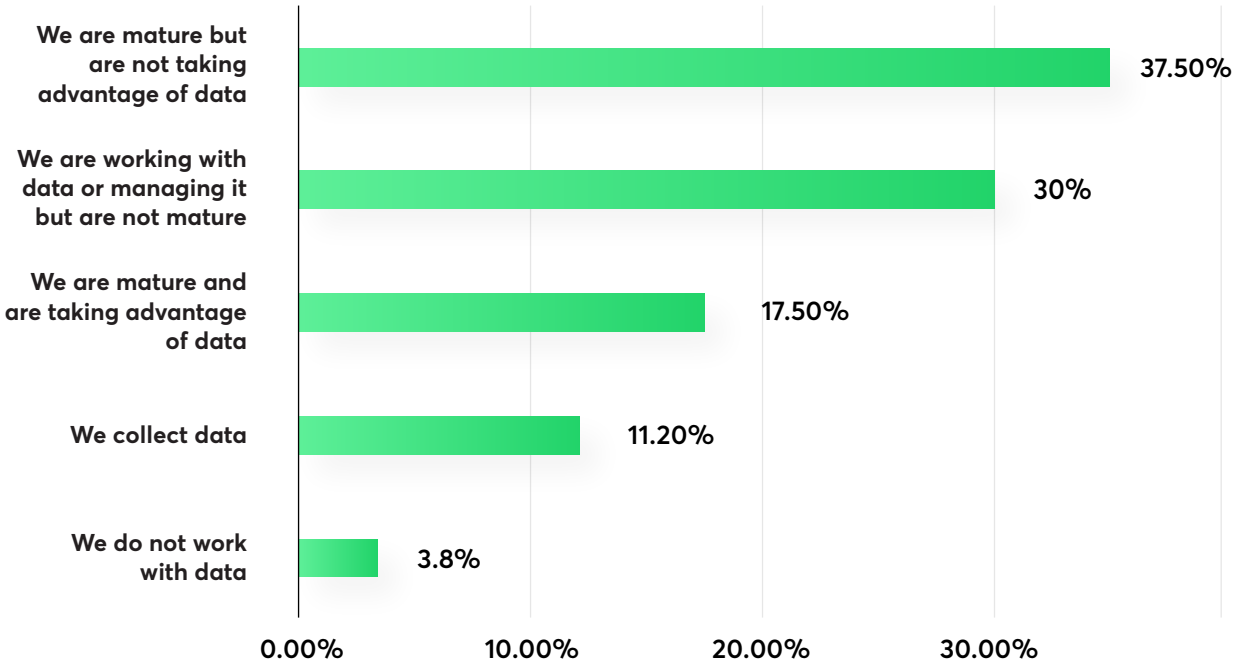
Perhaps unsurprisingly, there is a strong correlation between the length of time organizations have been investing in data or machine learning initiatives, and the stage of their maturity. Over 80% of companies that fell into the advanced category have been investing in data or machine learning for more than three years, while at the intermediate level, all companies had been working on it for at least a year.

What is interesting, however, is that 42% of companies in the pilot stage have been investing for more than a year. Of these companies, 75% cited the shortage of ML talent within their organization as the key challenge, which partly demonstrates the wider impact of this global issue.

Data readiness

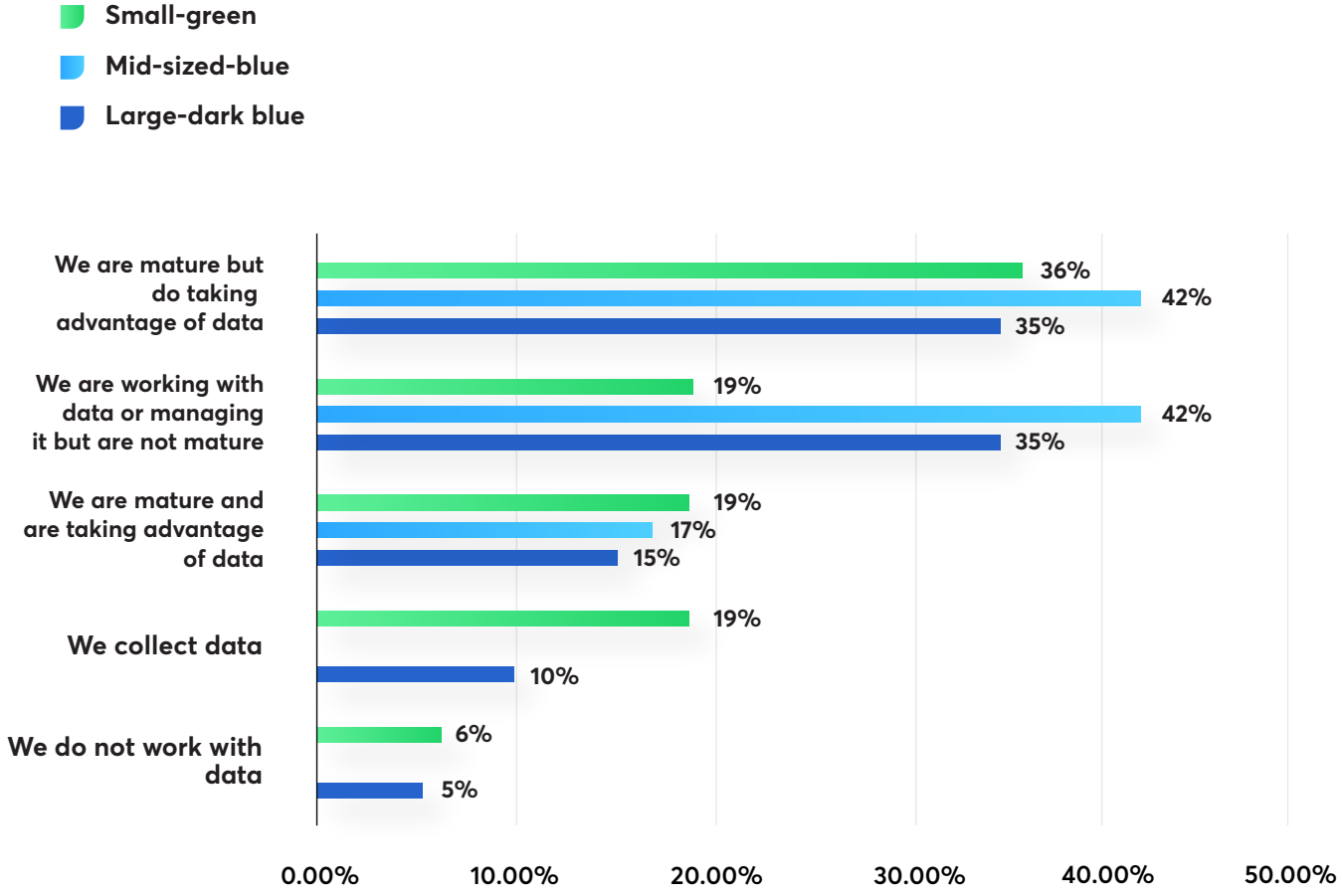
To assess the maturity of data readiness within the organizations we surveyed, we asked respondents to select one of the following options:

- We are mature in our data governance, we collect the data we want, and are taking advantage of it
- We are mature in our data governance but we might not be fully taking advantage of it
- We are working with data or managing it but are not mature
- We collect data but do not work with it yet
- We do not work with any data at this point in time



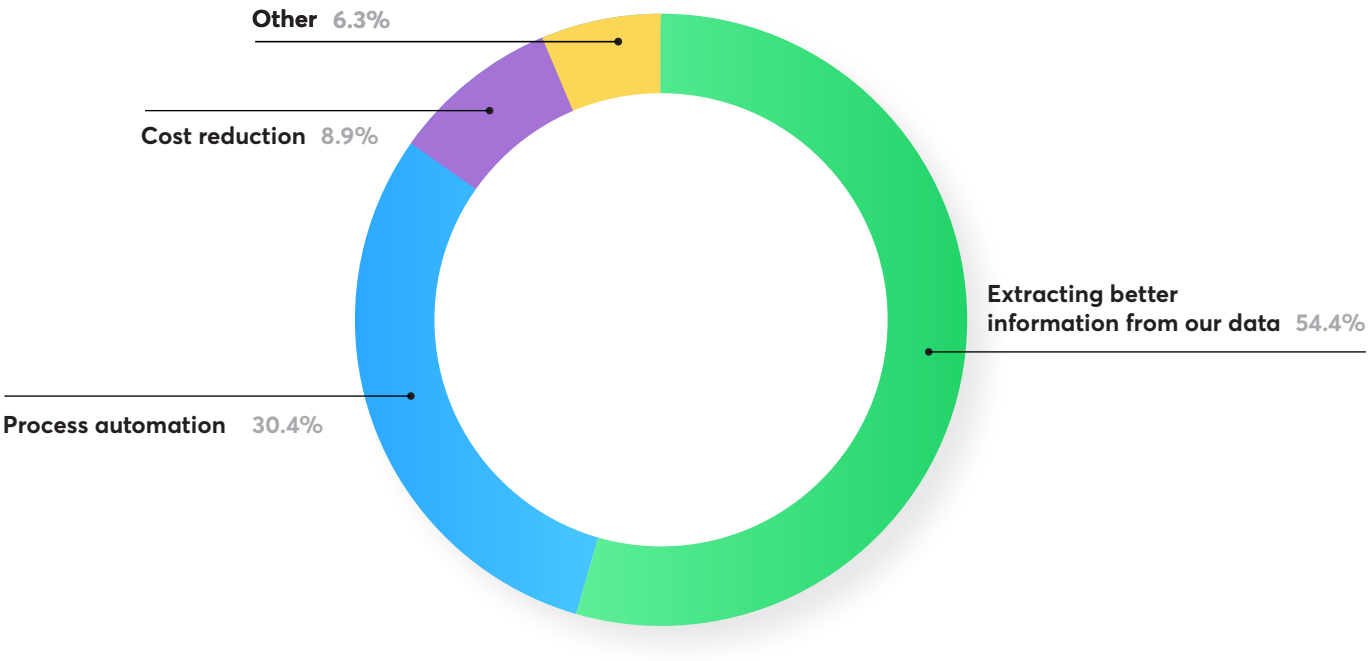
Nearly 40% of companies indicated that they are mature in their data governance but felt that they might not be taking full advantage of it, while almost a third felt that their data capabilities were not mature, despite working with or managing their data.

Comparison by company size



While you might expect larger companies to be leading the way in data readiness as a result of potentially larger budgets and greater resources, this isn't necessarily the case. Thirty-five percent of large companies indicated that they are working with data but felt that they are not mature, while a further 35% felt that they were mature but they weren't taking advantage.

Biggest drivers

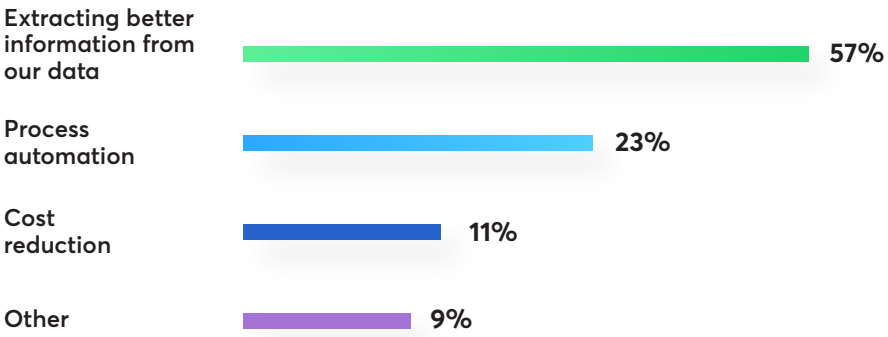


Over half of the companies surveyed cited extracting better information from their data as their main driver for adopting machine learning. Companies realize that data-driven decision making is more efficient and transparent to stakeholders. The drivers for small companies varied considerably, with user experience and reducing credit card fraud also cited amongst the responses.

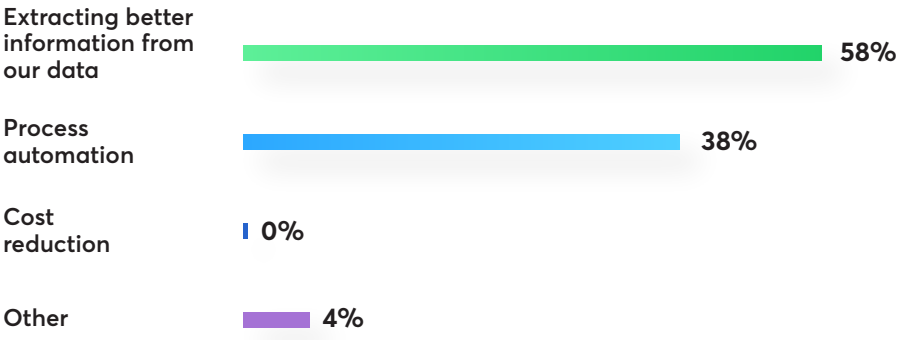
In a survey conducted by Gartner, 40% of organizations named customer experience as their biggest driver for using AI technology, while task automation was cited by 20% of respondents as their biggest motivator.

Comparison by company size

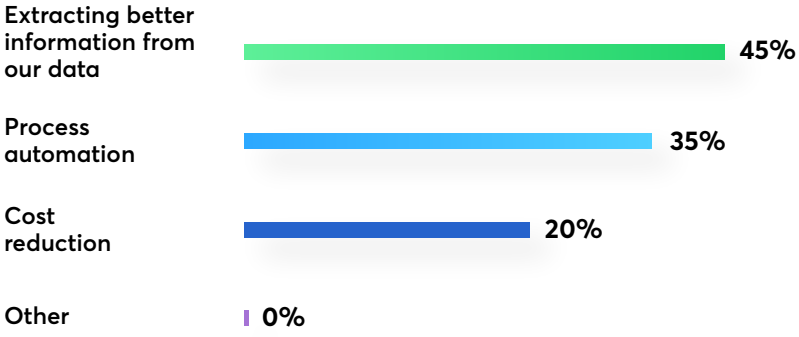
Small companies



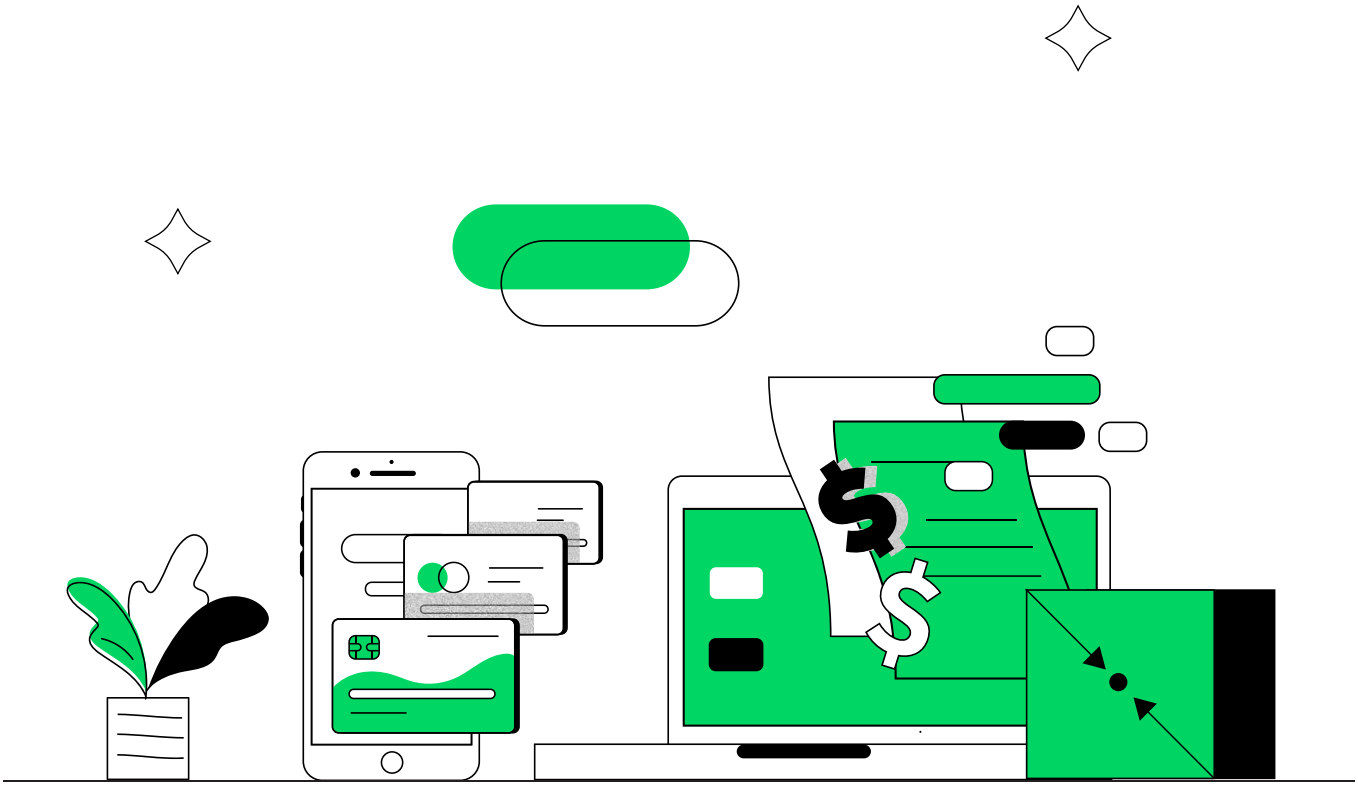
Mid-sized companies



Large companies

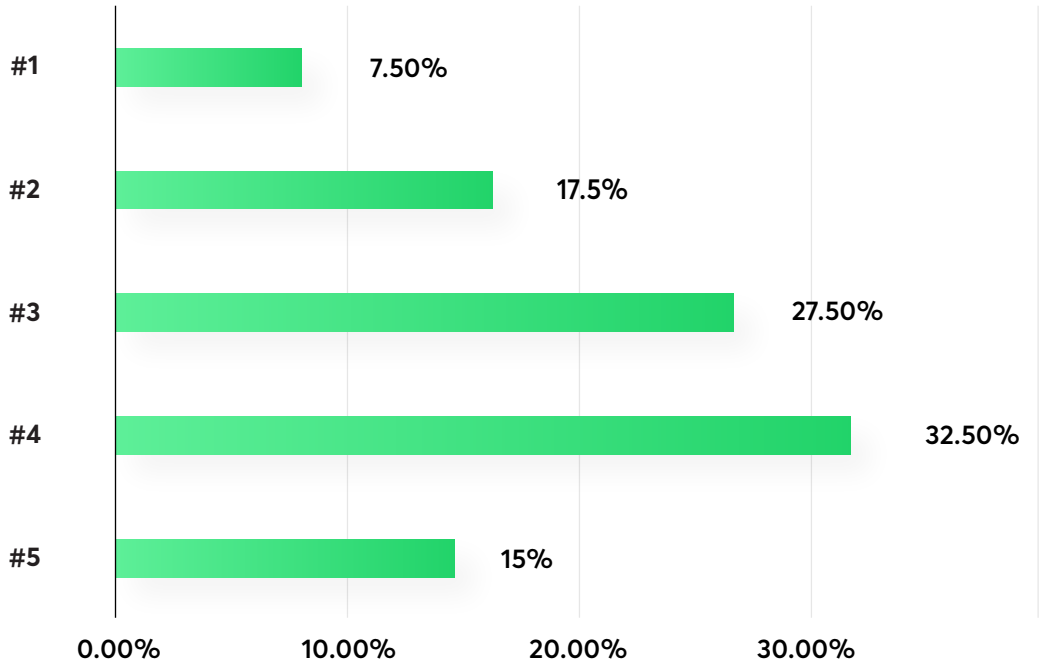


Although companies shared the same order of priority in terms of drivers, there were slight variations in the level of focus by company size. The most significant was a higher focus on cost reduction in larger companies compared with the average.

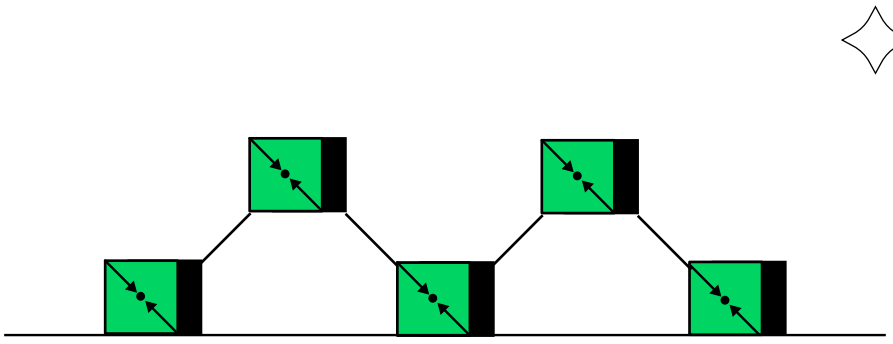


Strategic priority

We asked respondents to rate how much of a priority machine learning was in their organizations on a five-point scale, where five is the top priority. Almost a third rated it as 4 out of 5, while only 7.5% rated it as a low priority.



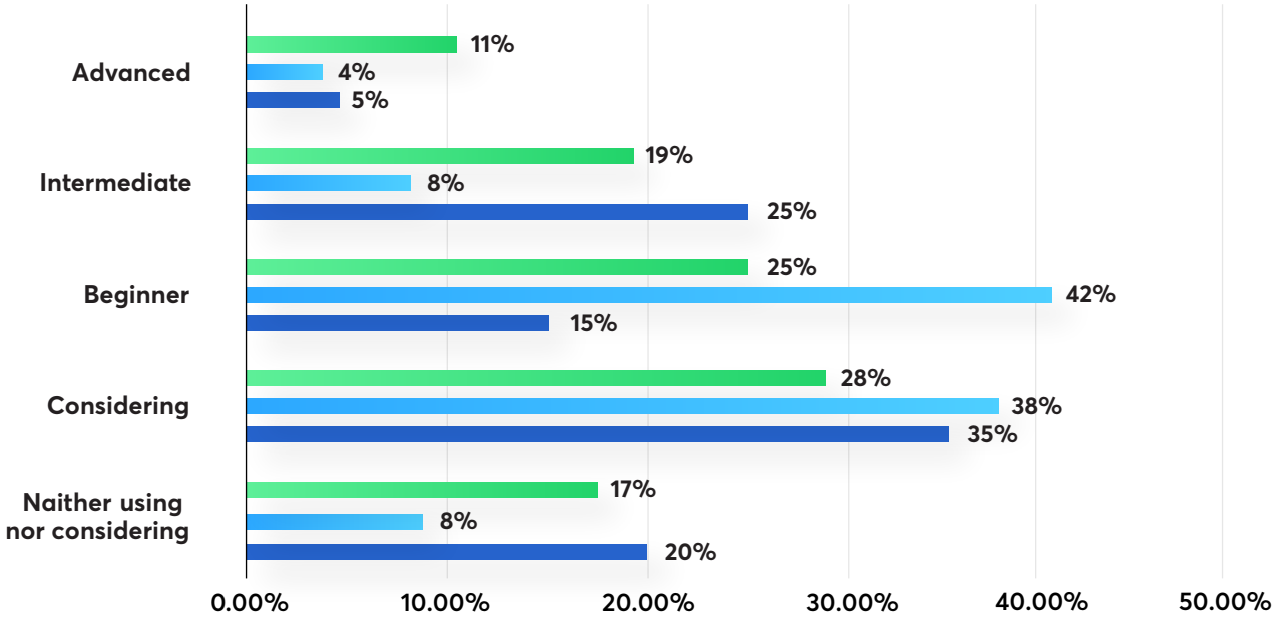
Only 25% of companies considered ML as an important technology, with high and very high priority. But it is safe to say that the majority recognizes that introducing ML into their business is quite an important issue and is among the top three to four fields to focus on.



Comparison by company size

Breaking down the data by company size reveals some slight variations, though across the board, at least 70% of companies rate machine learning as a priority of three and above.

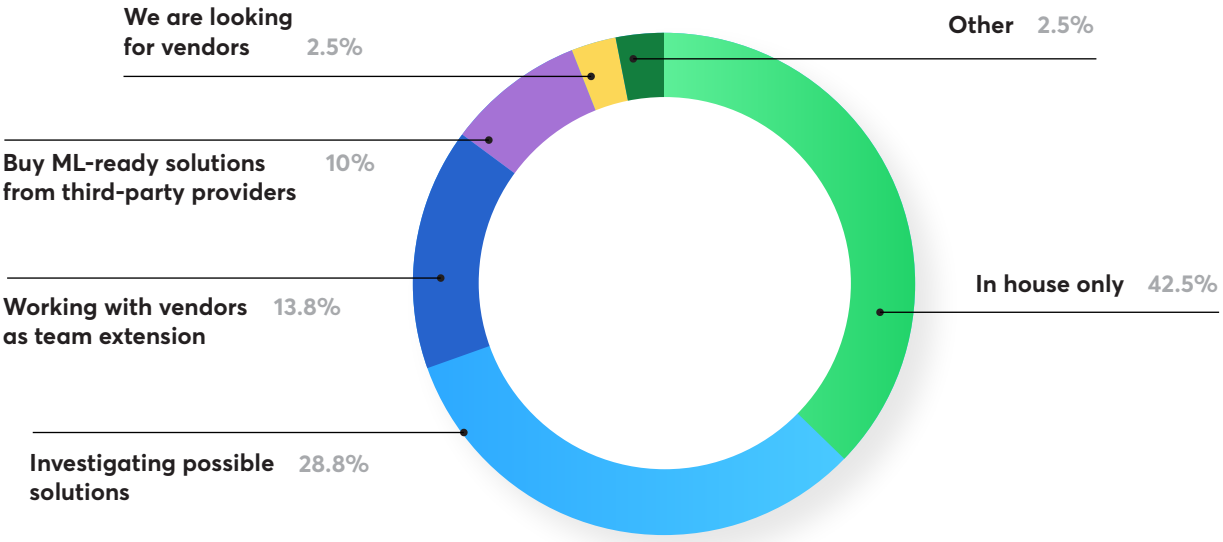
- Small companies:green
- Mid-sized companies:blue
- Large companies: dark blue



Large companies with established processes and business goals do not set introducing new technologies among their most important priorities. The situation is reversed for small companies. More flexible and with less complex decision hierarchy, small firms see machine learning as an important factor allowing them to find a niche or gain an advantage over large enterprises.

Approach to deploying machine learning

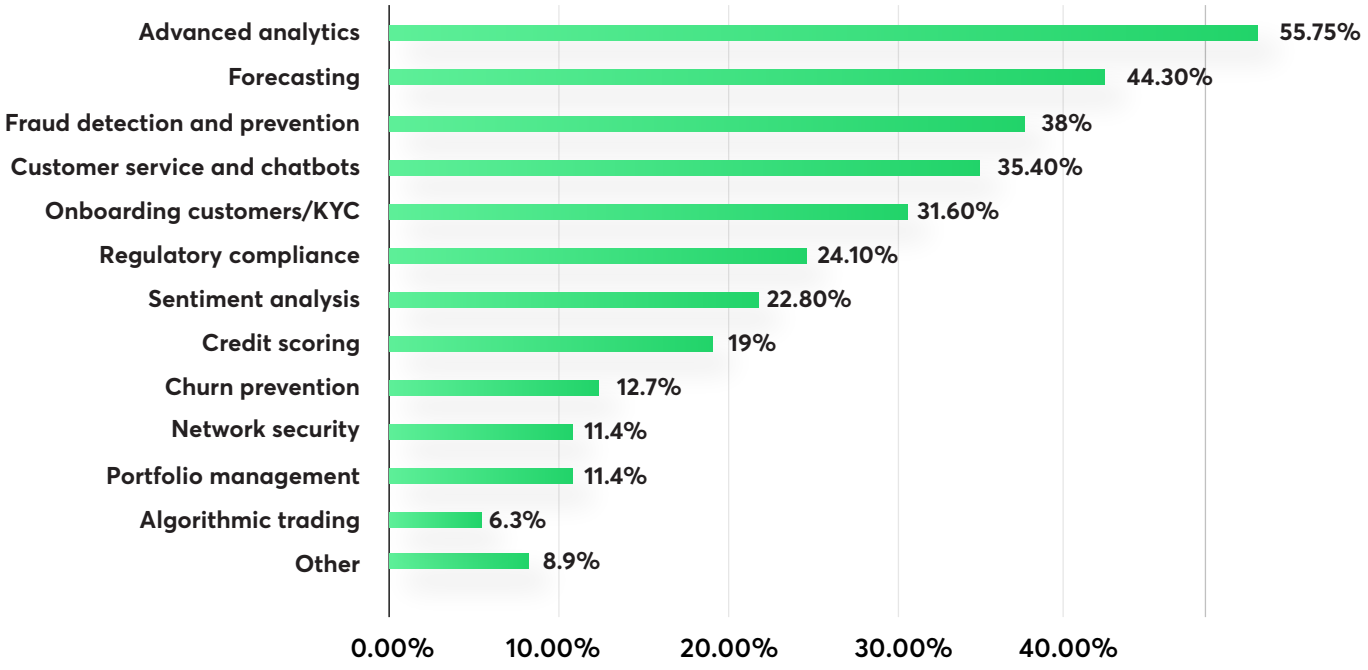
To gain a greater insight into the way in which companies are deploying machine learning solutions, we asked respondents about their approach.



Over 40% of companies indicated that they build and deploy machine learning technology in-house, while just over a quarter of respondents are investigating their options. There were no significant variations based on company size.

Use cases

Machine learning enables companies to accomplish a wide range of objectives – from automating manual tasks and increasing operational efficiency, to improving customer engagement, and transforming customer experience. As machine learning capabilities and applications are constantly evolving, we asked respondents to select from a wide list all use cases that applied to their companies, plus an additional text option. The results are shown on the chart.

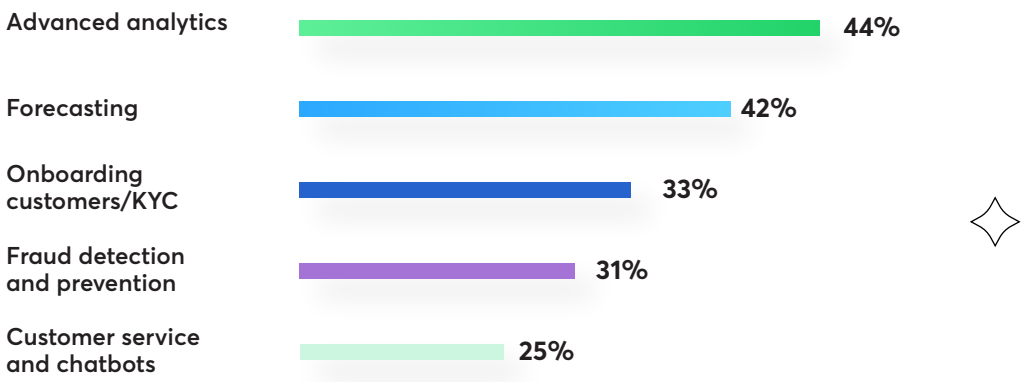


The survey data showed that advanced analytics was the most popular use case overall, with more than half of the respondents indicating that their companies were working on it. Forecasting and fraud prevention were the second and third most popular, respectively.

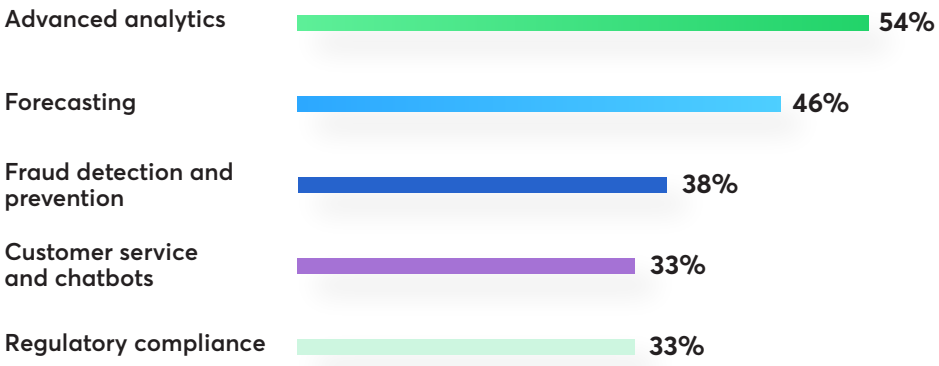
Comparison by company size

When we look at the data in relation to company size, while advanced analytics remains the most common use case across all company sizes, after this, we can see some variation in priorities here.

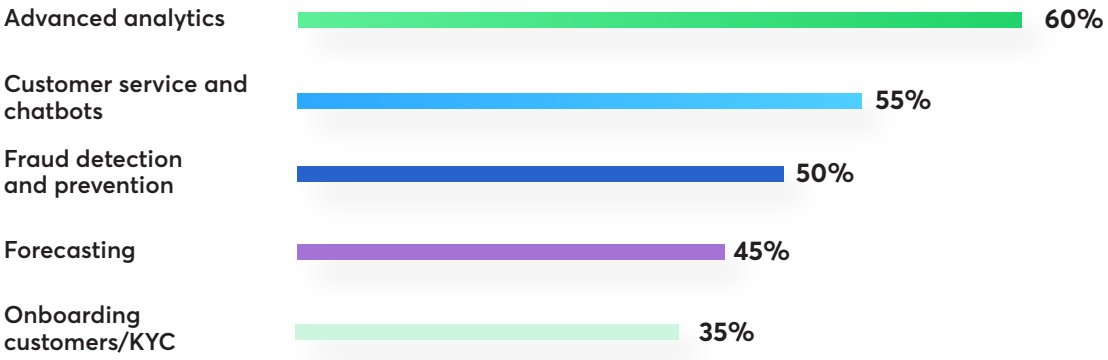
The top five use cases for small companies:



The top five use cases for mid-sized companies:



The top five use cases for large companies:



Unsurprisingly, the priorities of large companies are quite different from those of smaller organizations. When it comes to large organizations, three quarters are working on advanced analytics compared to around half of small and mid-sized companies, followed by a heavy emphasis on customer service and chatbots.

"We are using machine learning to develop a platform that analyzes and predicts safety behaviors, maintenance, and the performance of workers. One of the most important areas we cover is the rail sector, so we have fulfilled some key features by using machine learning to understand and control our business:

- *Reducing maintenance costs*
- *Increasing the capacity of the network*
- *Improving the quality of services*
- *Digitalization of infrastructure*
- *Improving the traceability of the condition of all assets."*

Alvaro Mantecon-Rodriguez, CEO, TRIA UK

A brief overview of the top three

Advanced analytics

This is an umbrella term for the examination of data using sophisticated techniques to uncover deep insights, produce recommendations, and make predictions. It can encompass anything from data mining, pattern recognition, and sentiment analysis, to visualization and big data processing.

Forecasting

Powerful machine learning algorithms are used to improve customer engagement and, most frequently, to predict consumer demand for products and services with an unparalleled degree of accuracy.

Fraud detection and prevention

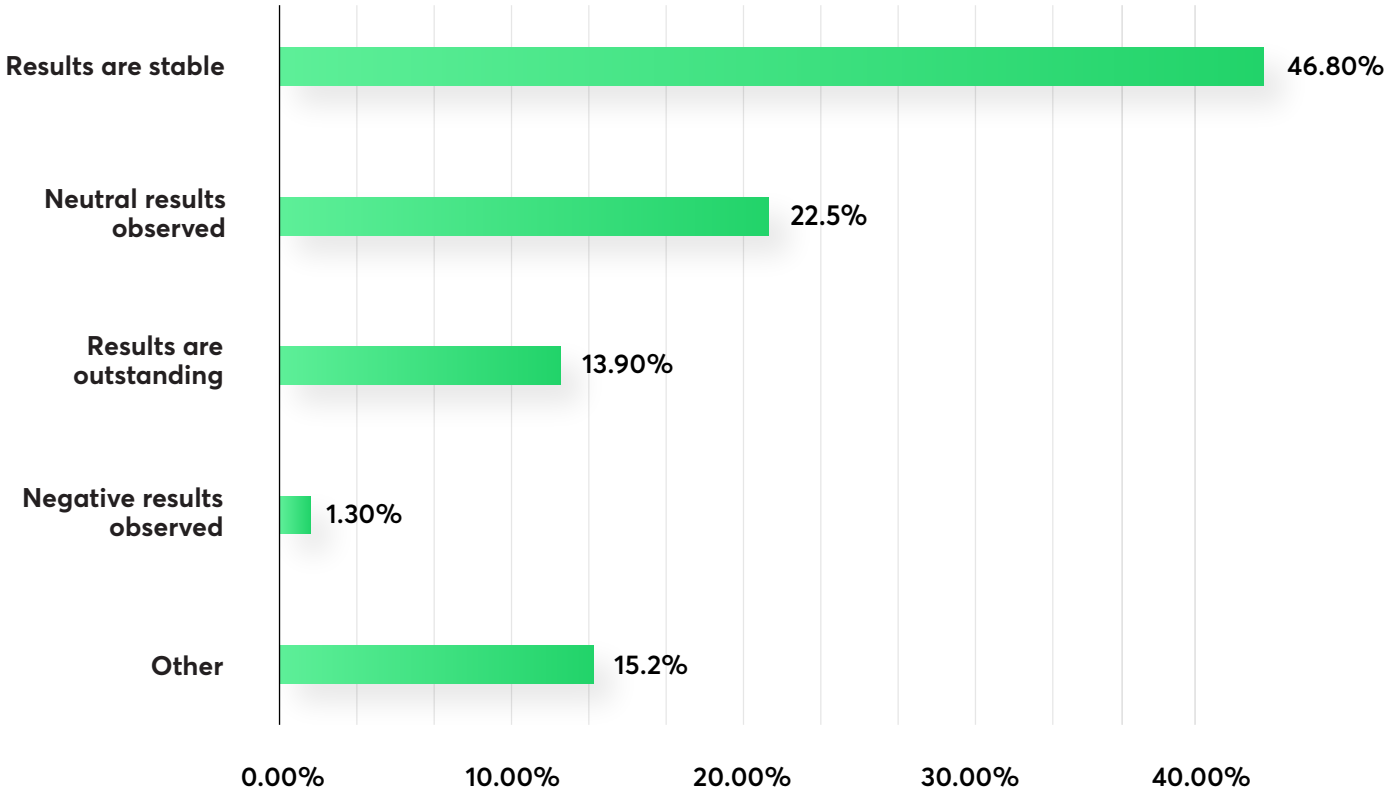
As machine learning models can learn from data patterns, the use of a well-trained ML model allows one to identify and flag anomalies – in the case of a bank's transaction data these are suspicious operations on clients' accounts.

A look at the wins and losses

Value gained

We asked respondents to rate the outcome of their machine learning projects by selecting one of the following options:

- Results are outstanding, ML solutions have helped to improve business significantly
- Results are stable, within our expectations
- Neutral results observed
- Negative results observed
- Other



Almost half of the companies reported results that were stable and in-line with their expectations. Fourteen percent felt that the results they had achieved were outstanding, while just over a fifth indicated neutral results. Fifteen percent of companies advised that projects had either not been started or completed yet, or that it was still too early to tell. Only 1% observed negative results.

We know that it can be difficult to quantify the impact of data-driven initiatives, so as an open-ended question, we asked respondents what value their machine learning projects had provided to their businesses. Responses ranged from increased process automation and cost savings, to greater insights for decision making, reduced credit risk, and better fraud detection.

A survey by McKinsey covering a range of industries also suggests that AI is delivering meaningful value to companies. Sixty-three percent of respondents reported increases in revenue, while 44% reported cost savings in places where AI was deployed in the business.

"The biggest obstacle and the greatest chance for the company is the need for general digital transformation including all present systems – ERP, CRM, marketing. We are considering solutions like Salesforce to build a proper source of truth about our customers and boost marketing and sales efficiency."

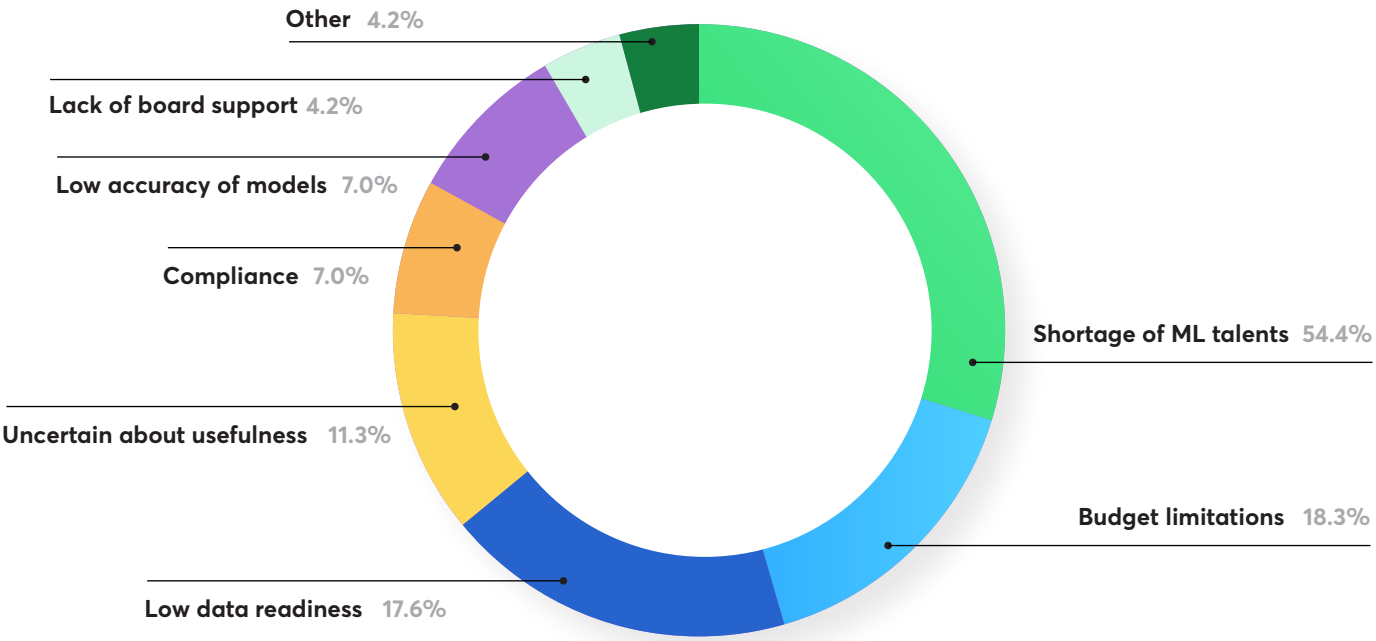
Piotr Kosior, Director of Global Expansion, AC S.A.

Challenges

Key challenges in adoption

To assess the challenges faced by fintech companies in adopting machine learning, we asked respondents to select all that applied from the following options, plus an additional text option:

- Shortage of ML talents inside organization, or lack thereof
- Budget limitations
- Low data readiness
- Uncertain about usefulness
- Compliance
- Low accuracy of algorithms and models
- Lack of board support, ML not seen as a key initiative



Over half of the companies we surveyed indicated that they are struggling with a shortage of machine learning talent within the organization. This is representative of the global shortage of machine learning talent – a Gartner Research Circle Survey also showed that 54% of respondents saw the shortage of skills as the biggest challenge facing their organization. While the issue is not unique to fintech, its effect could dampen the acceleration of machine-learning initiatives in the industry.

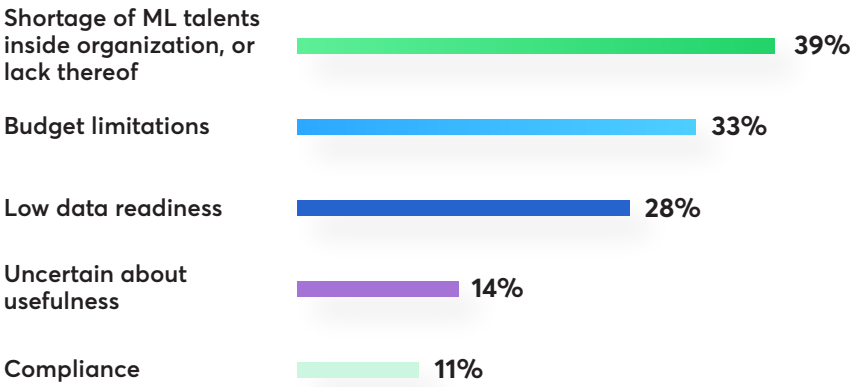
In comparison, the latest survey by O'Reilly, indicates that the biggest impediment to AI adoption in 2020 was "a lack of institutional support". Almost 22% of respondents identified it as the number one problem. The second most prominent difficulty was identifying appropriate business use cases (20%). The AI skills gap occupied the third position and was reported by 17% of respondents.

Differences are partially the result of the distribution of respondents professions. The O'Reilly survey was answered mostly by technical/development teams and tech-leads, and team managers. CxO's comprised only 11% of respondents. As indicated in the Methodology, 55% of the respondents in our survey were C-suite level executives.

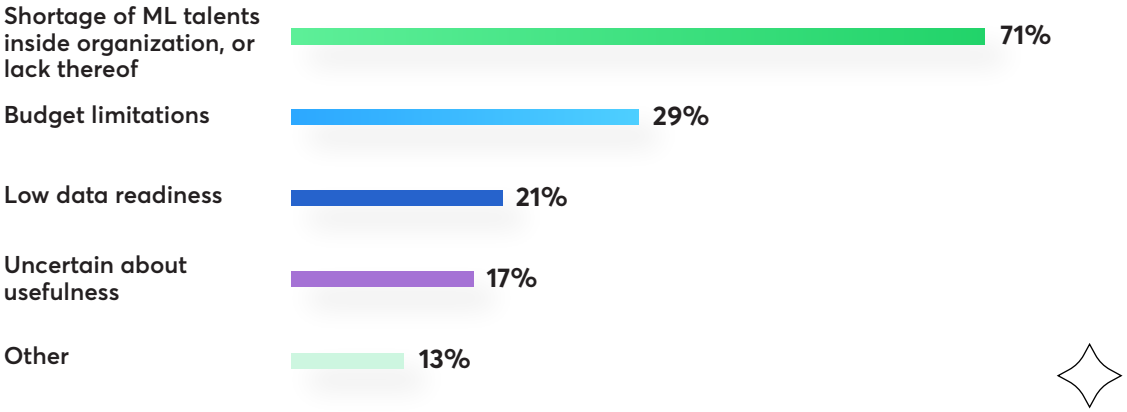
Comparison by company size

When we break down the responses by company size, we can see that there are variations in how the challenges affect different companies.

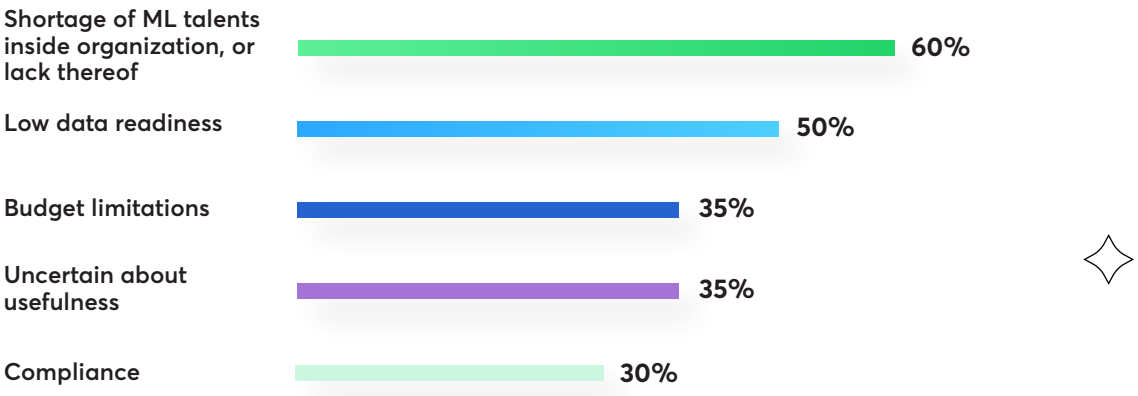
The top five challenges for small companies:



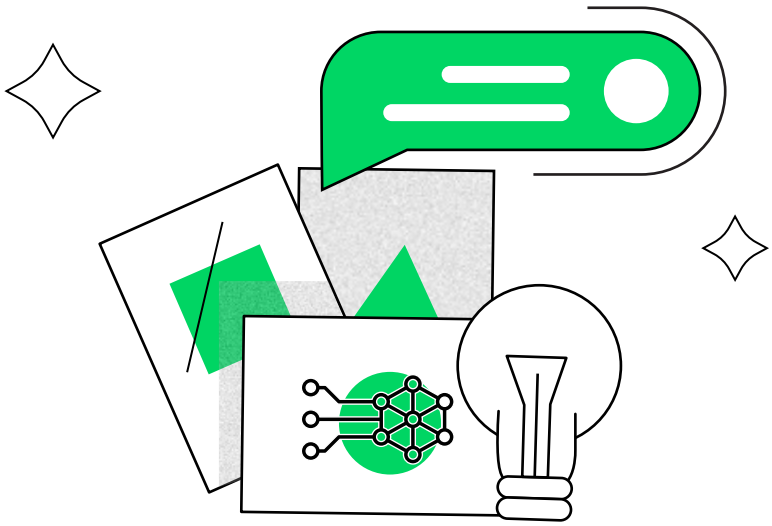
The top five challenges for mid-sized companies:



The top five challenges for large companies:



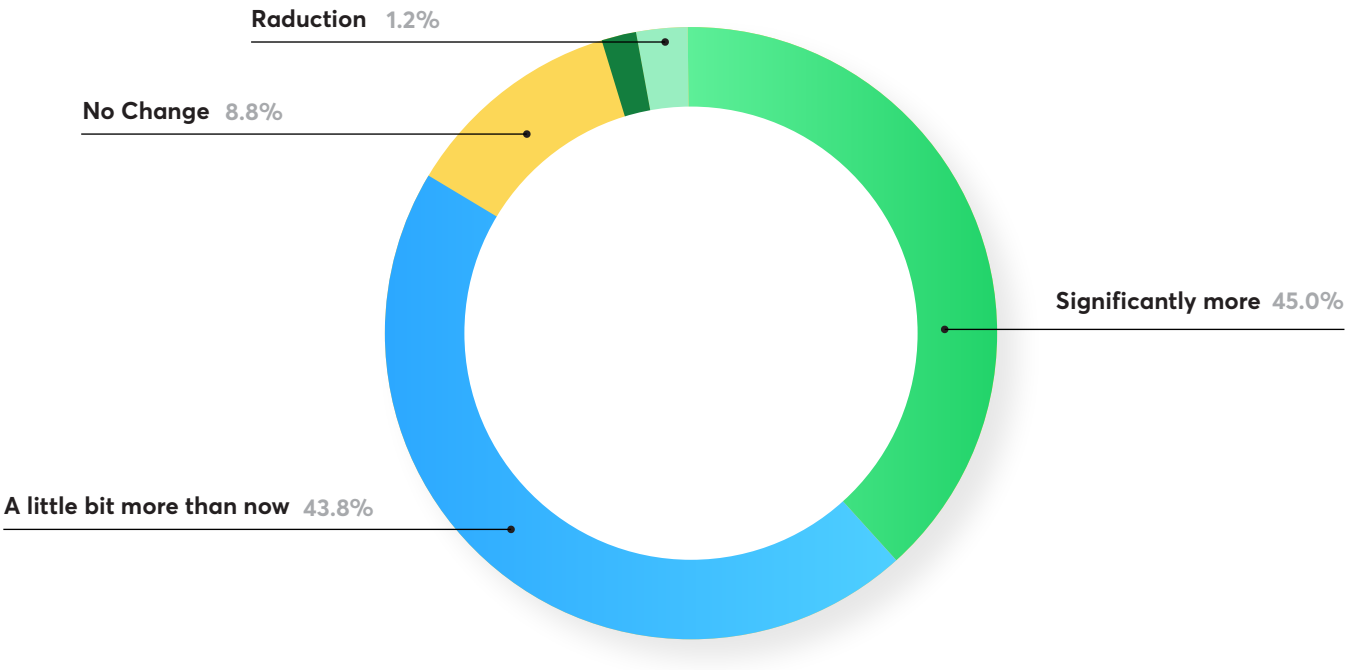
Small companies appear to be far less affected by a perceived lack of talent, with just 39% reporting this as a challenge, compared to 71% in mid-sized companies and 60% in large companies. Almost double the number of large companies are concerned about low data readiness than small and mid-sized companies, with 50% of respondents citing it as an issue.



Looking to the future

Future adoption

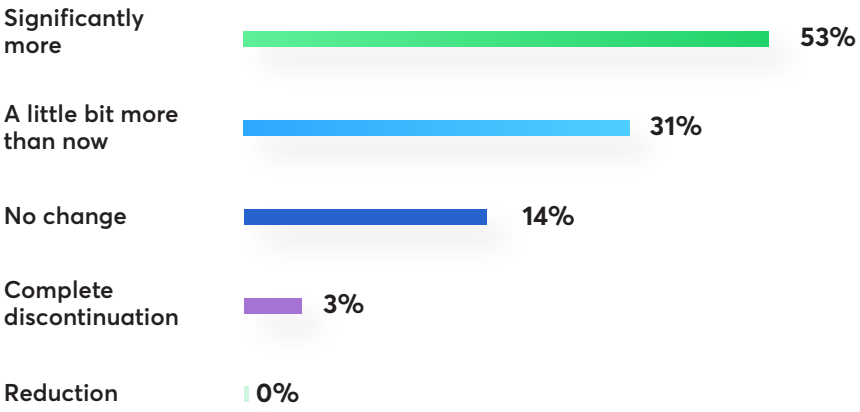
To gain an insight into the future of machine learning in fintech, we asked respondents how they saw the adoption of machine learning in their company in 12 months from now.



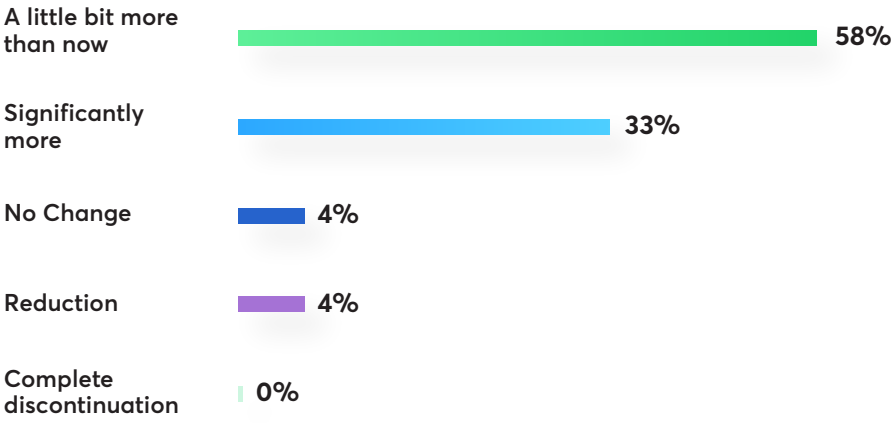
Overall, almost 90% of companies expect their machine learning adoption to increase in the next 12 months, with 45% of companies predicting that the increase will be significant. Given the accelerating pace of technological change in the fintech industry, it is not surprising to see that fewer than 3% of respondents expect to reduce or discontinue their journey into machine learning.

Comparison by company size

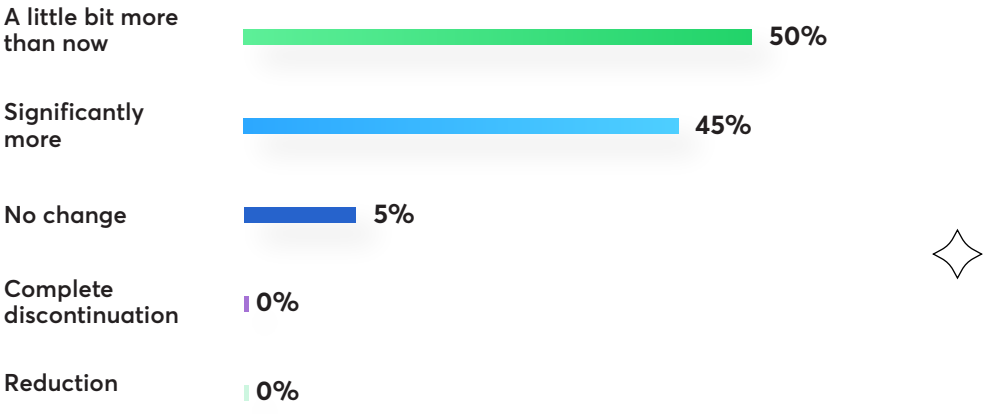
Small companies



Mid-sized companies



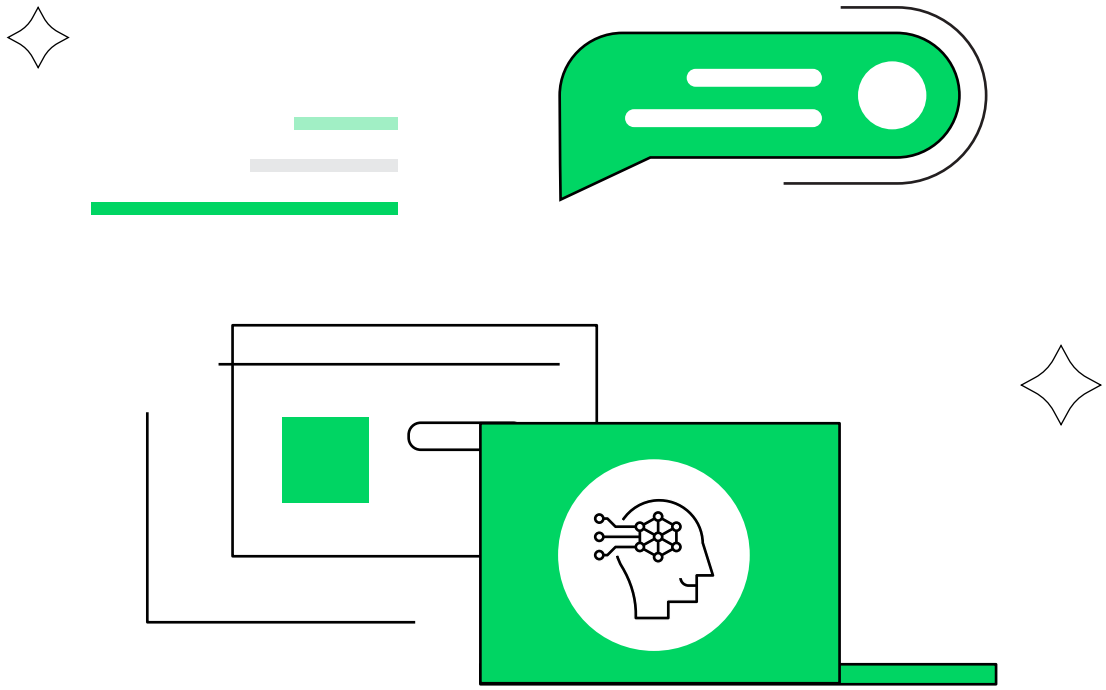
Large companies



When we analyze the results broken down by company size, we can see that small companies are leading the charge when it comes to a significant increase in machine learning adoption, with 53% of respondents expecting a large change. Small companies also represent the highest proportion expecting no change at 14%.

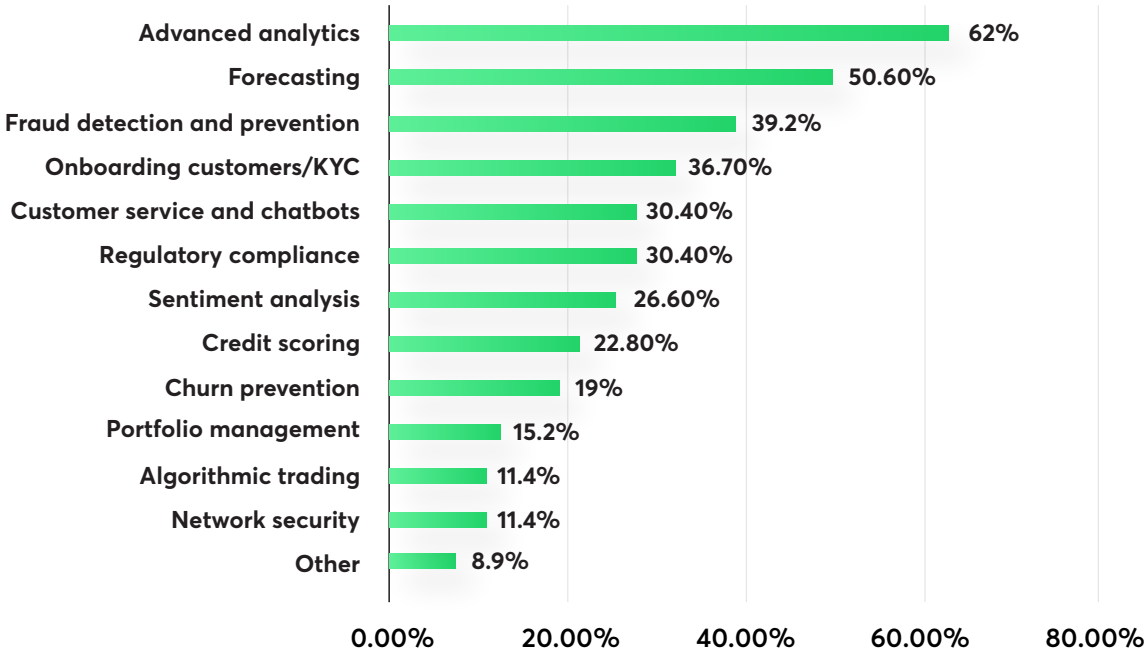
*"The future will be the combination of **more complex algorithms, more data science, and a lot more process automation.** If machine learning can take the error from existing processes and learn from them on its own, then the next processes will improve based on the prior changes."*

Mark Cheng, Management Consultant, Sia Partners.



Future use cases

To gauge where machine learning in fintech could go next, we asked respondents about the use cases they are considering for their future machine learning projects.

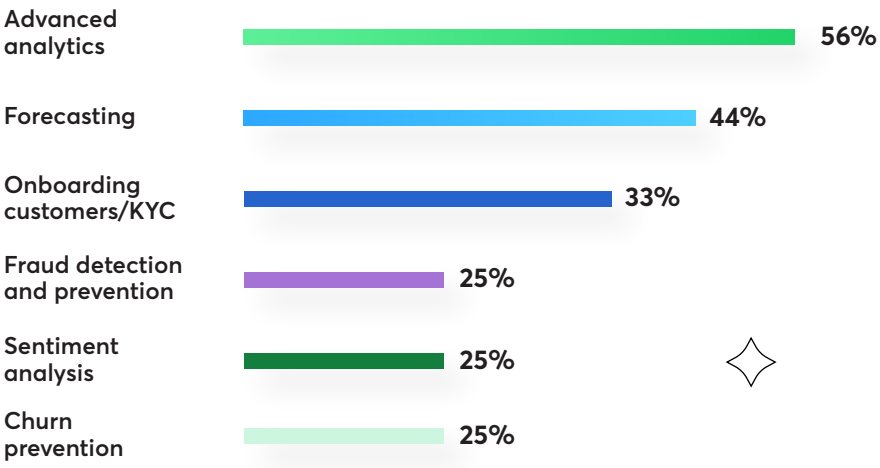


We can see that advanced analytics remains at the top of the list and gains in importance, with 62% of companies pursuing it as a future project, versus 56% that are already working on it. Forecasting and fraud prevention remain in the top three as we move forward.

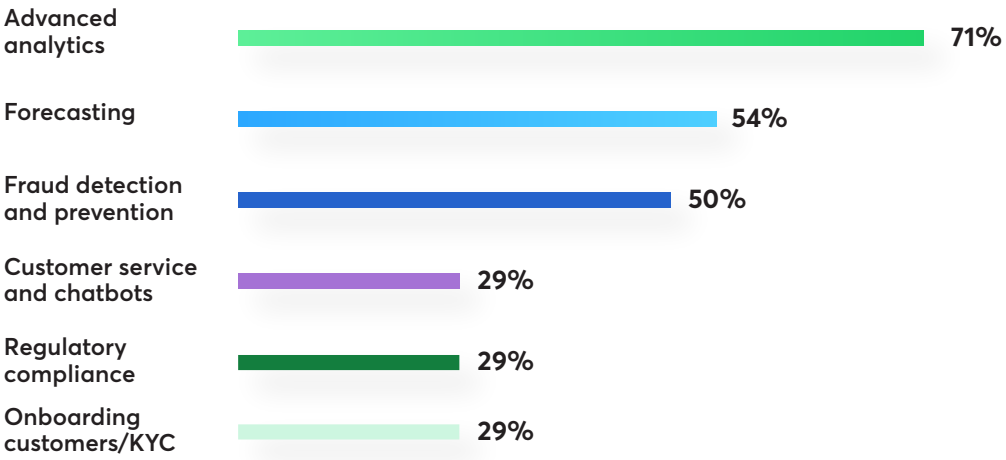
Comparison by company size

Looking at the data through the lens of company size reveals some variations in priorities.

The top five use cases for small companies:



The top five use cases for mid-sized companies:



The top five use cases for large companies:

Although advanced analytics and forecasting remain the top two priorities for companies of all sizes, what comes next is different for each size category. Small companies will favor onboarding customers, whereas mid-sized companies turn their attention to fraud detection and prevention. Large companies, on the other hand, have a three-way tie between forecasting, customer service and chatbots, and regulatory compliance.

"Due to a lack of specific competencies on our partners' part, it's very often the case that our final customers contact us directly in service cases or just for advice. The number of direct contact attempts is growing and it has become overwhelming and disrupts the regular work of our technical support/service teams.

Our idea is to use AI to identify, select, record, and channel cases to the right departments and people. In general, we need to improve the quality and flow of service cases.
Our second idea is to implement AI to support the effectiveness of remote training for our partners."

Piotr Kosior, Director of Global Expansion, AC S.A.

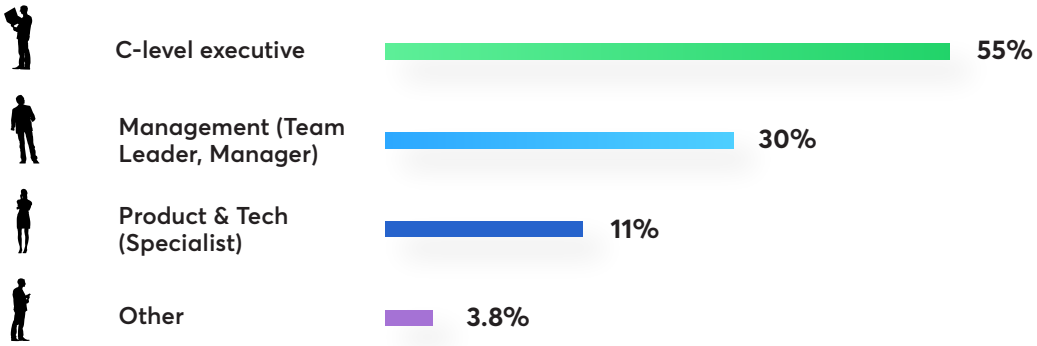
"The number one priority is to set the best predictive maintenance tool. It will make a difference to know for real how infrastructure is suffering and move forward rather than do corrective maintenance. The more accurate we predict, the better. We can save money, lives and improve the performance of every worker by being more efficient and making the right calls.

Alvaro Mantecon-Rodriguez, CEO, TRIA UK

Methodology

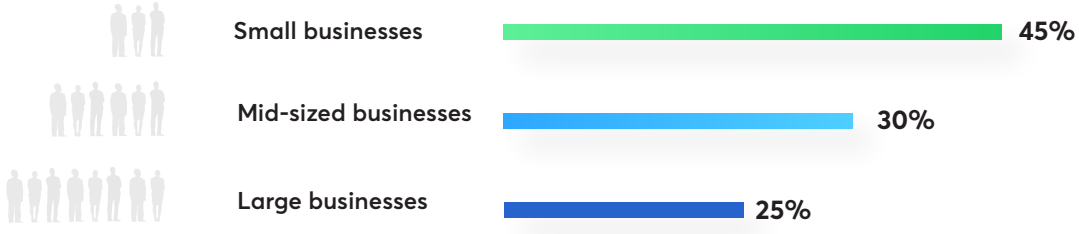
The survey was conducted among the fintech community between the end of 2019 and beginning of 2020. We shared the survey via direct contact with experts, approaching fintech communities on LinkedIn fintech groups, and promoting it among our target group through paid ads in LinkedIn InMail. In total, we received 80 responses.

The leadership level of respondents was made up of:



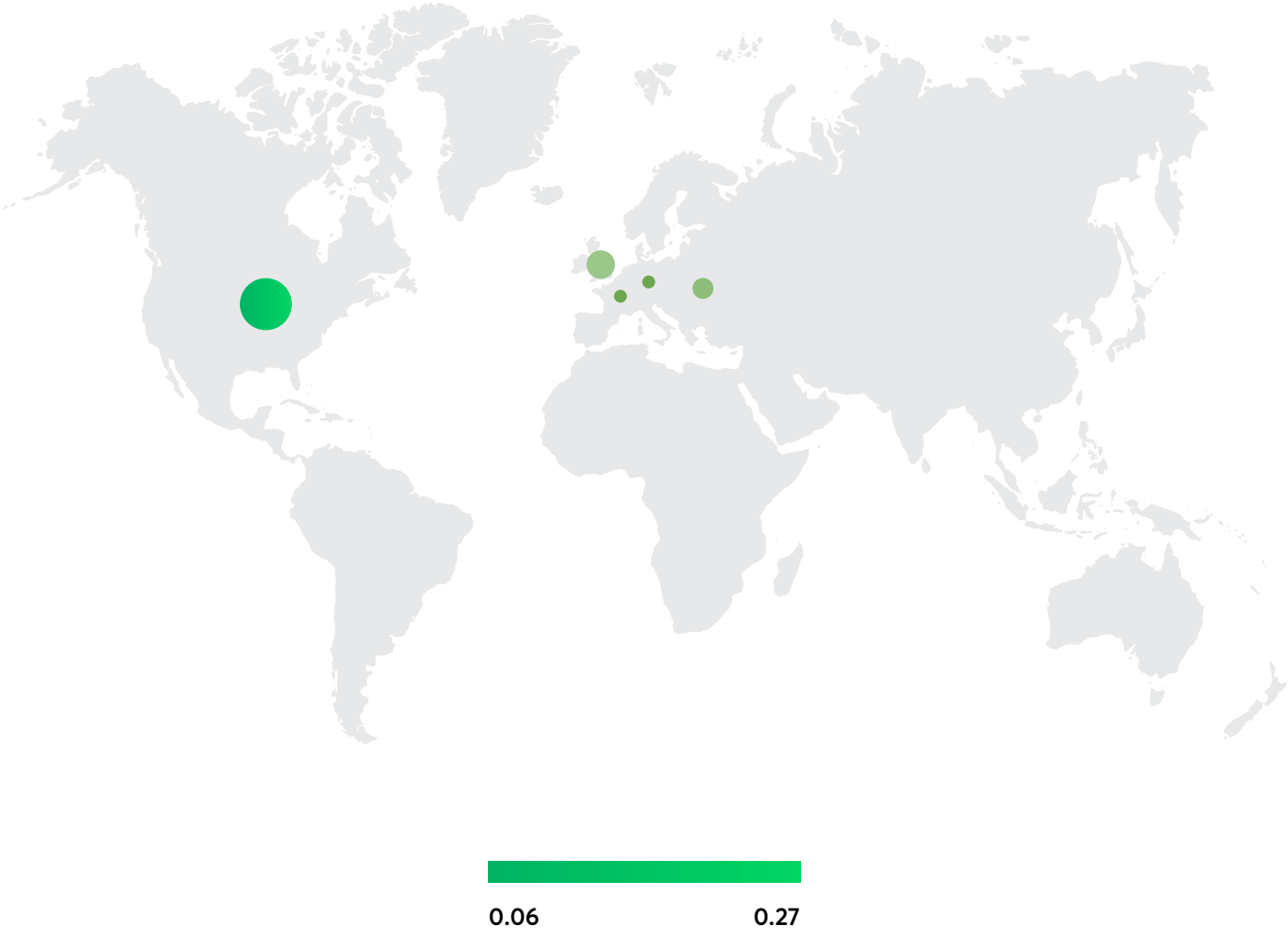
In our analysis, we categorized company size by the number of employees:

Respondent companies were split as follows:



Countries all around the world were represented, including Europe, Africa, North and South America, Asia, and Australia. The top five countries were:

- 27% United States
- 13% United Kingdom
- 11% Poland
- 6% France
- 6% Germany



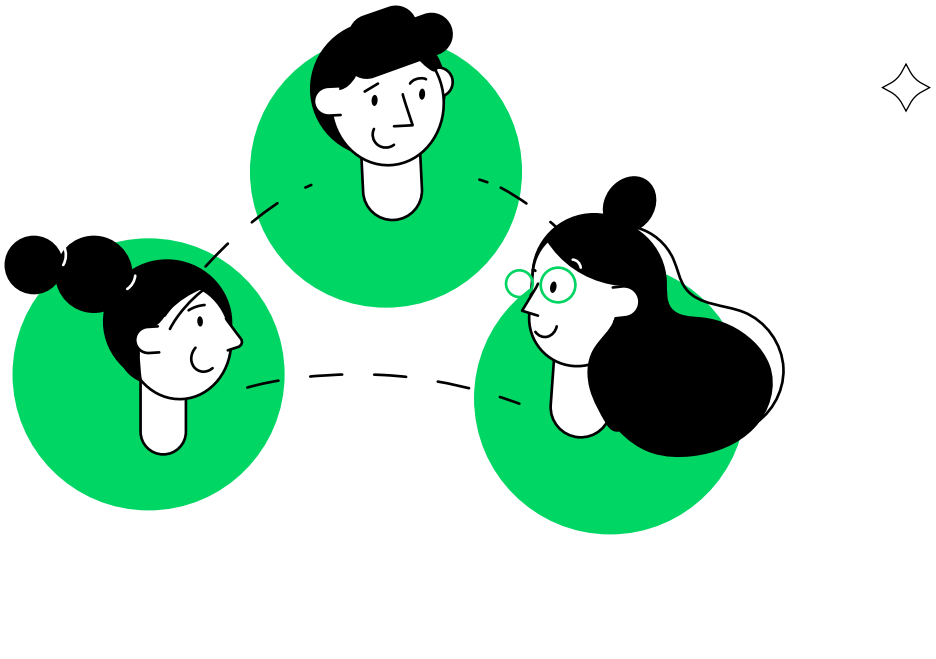
About Netguru

Netguru is a consultancy, product design, and software development company founded in 2008. Our aim is to create a sustainable, digital world where everyone can realize their full potential.

We build digital products that let people do things differently – offering consulting, tools, and resources to companies of all shapes and sizes – to make beautifully designed digital products in a way that's fast and fits their needs.

Netguru has become one of the fastest-growing companies in the EU, recognized for its achievements by the Financial Times, Deloitte, and Forbes. We work with both the largest brands in the world, such as Volkswagen, IKEA, and Keller Williams, as well as fast-growing startups in the financial, education, and even robotics industries.

To learn more about how Netguru's machine learning solutions can help you, visit our website.



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