Future of Artificial Intelligence and Machine Learning in the Finance Function

Insights from the FSN Modern Finance Forum on LinkedIn
Global Survey 2022

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Gary Simon
CEO FSN & Leader of the
Modern Finance Forum LinkedIn

Covering letter

Dear colleague,

I am delighted to bring you the results of FSN's "Future of AI and Machine Learning" survey 2022. The research finds considerable support for artificial intelligence (AI) and machine learning (ML) in the finance function and an expectation of substantial adoption (71%) by the end of the decade. 13% have already adopted solutions with a further 13% piloting right now, but turning this foothold into widespread adoption is going to require substantial increases in market awareness, significantly upgraded skills, more technical transparency and demonstrably more use-cases and reference sites.

The chances are that you regularly encounter AI capabilities as you go about your day-to-day business but are possibly unaware of its involvement. Things that we take for granted, for example, intelligent home heating systems, digital entertainment, travel, and electronic banking all have a degree of machine learning built-in and many industrial sectors, such as online retail, telecommunications, health diagnostics, and security services make extensive use of AI. But uptake in the finance function has been incredibly slow and 74% have no experience whatsoever with AI and machine learning.

So, what's holding back progress? Lack of knowledge is an enormous stumbling block. 61% have had no training at all and only 14% have had a day or more of training. Less than one percent regard themselves as experts. Finance professionals are most likely to see real life examples of machine learning in their organizations, on the shop floor and in manufacturing processes, but there are clear signs of growing involvement in the purchase-to-pay and order-to-cash processes. Planning, budgeting, and forecasting is thought to offer the biggest opportunities for machine learning and AI by the end of the decade, closely followed by reporting, automatic data capture, and intelligent process automation. The broad surge of interest across transaction and information systems is driven by the modern finance function's desire to improve process efficiency, remove manually intensive work, and accelerate time to insight. By contrast, cost savings and reducing headcount are low down the list of priorities.

So, who are the leaders in applying these technologies to the finance function? The research identifies a strong link between data-driven organizations and machine learning/AI adoption. Those that exhibit data mastery are much more likely to adopt these technologies as are organizations that are invested in extensible data platforms, such as modern ERP and corporate performance management (CPM) systems. Size of organization is not a good indicator of likely success, although in common with many other FSN surveys, mid-sized organizations are the most stretched and have the toughest time resourcing new initiatives.

We trust that you find the survey's findings set out in this report thought-provoking and interesting. But above all, we hope that the contents of this report will inspire you to explore and discuss with your colleagues how you can leverage machine learning and AI to propel your business to new heights.

Regards,

Gary Simon

Foreword

There is no question that we continue to experience an unprecedented period of change and uncertainty, which has impacted the Office of Finance. Finance leaders must be more agile, flexible, and responsible. In turn, many are embracing digital transformation to keep up with the pace of change.

One of the most exciting elements of this change is the implementation of Artificial Intelligence (AI) and Machine Learning (ML) technologies. These capabilities enable the Office of Finance to eliminate repetitive, manual tasks and focus more on providing valuable insights.

However, in addition to the enthusiasm for AI and ML, there are challenges to consider. It's a new technology with little precedent. Finance leaders should upgrade their skills and work to establish a data culture. There are also segments of the market that are at risk of falling behind more technologically advanced organizations.

This report outlines the opportunities AI and ML can provide the Office of Finance while highlighting important factors to consider.

Alok Ajmera
President and CEO
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What will it take for finance leaders to move from interest in AI & ML to action?

Executive Summary

There is considerable enthusiasm for the deployment of AI and machine learning in the finance function, but this is not matched by a commitment to skills development and learning. Expectations are high, for example, 71% of finance professionals consider that they will be using these advanced technologies by the end the decade, but only 11% have received more than a day's relevant training and less than 1% consider themselves to be experts.

This research highlights the shortage of real-life examples of successful AI and machine learning implementations, with many finance functions relying heavily on vendors' software presentations to illuminate the potential for these technologies. Overall, 74% of finance professionals have no experience whatsoever with AI and machine learning.

Despite these shortcomings, around 13% of finance professionals say they are piloting AI applications and approximately 7% are currently implementing this technology. 4% are using the technology. But these low levels show that little ground has been gained since the last time FSN measured

Despite considerable enthusiasm for the deployment of AI and machine learning in the finance function, there is a lack of commitment to skills development and learning.

uptake in 2019. Popular applications for AI and machine learning appear to be the accounts payable process and increasingly, planning, budgeting, and forecasting. The 'record to report' process also benefits through automated reconciliations, though task management and collaboration are low down the finance function's list of priorities.

Process efficiency and throughput are seen as the most fruitful areas for investment, which is why high-volume transaction processes such as 'order to cash' and 'purchase to pay' seem to be finding favor. But speed to insight remains important, which is why there is growing interest in the application of AI and machine learning to planning, budgeting, and forecasting. Investments are rarely motivated by cost and headcount reduction.

Obstacles to deployment relate largely to the scarcity of real-life examples of the technology in practice. 63% of respondents raise this as a major stumbling block. There is also a widespread lack of knowledge of the software solutions available. Even where finance functions have had exposure to solutions, a commonly voiced concern

(50%) is the lack of transparency in the technical solution, for example, how crucial algorithms are configured and how the finance function can flex them. Most finance functions say they will depend more heavily on the IT function in the future as they grapple with the technology and skills they require.

Leadership in the deployment of AI and machine learning rests with finance organizations that are the most data-driven. They are three times more likely to provide a day's training compared to organizations that are only partially data-driven. The research also considered the impact of the data platform on the ease with which these new technologies could be deployed. There was compelling evidence that organizations that had invested in robust and extensible data platforms were well placed to leverage AI and machine learning. Indeed, the research confirmed that they were twice as likely to deploy these technologies.

The size of organization was also an important determinant of interest and success in deploying AI and machine learning. In common with FSN's earlier research, it is mid-sized organizations that risk getting left behind. Being in the middle seems to encapsulate the worst of all worlds, for example, lacking the agility of small organizations and not having the established processes and resources of large organizations. The largest organizations have the edge. 19% of large organizations (who say they are data-driven) and 18% of small organizations (who say they are data-driven) have deployed these applications compared to just 9% in medium-sized organizations.

Organizational size and extensible data platforms can play a significant role in the success of AI & machine learning.

Prophix's take

To experience the benefits of AI and machine learning, organizations must commit to training and skills development, especially for those in the mid-market.

The Finance Conundrum

Lack of data science skills is one of the biggest barriers for finance departments looking to utilize AI and machine learning.

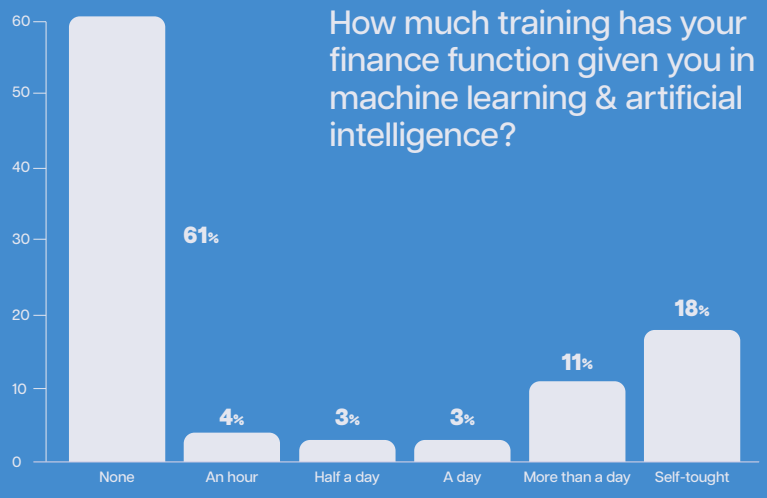
The Finance Conundrum

During the past few years, interest in advanced technologies such as artificial intelligence and machine learning has gathered pace. FSN's research in the first half of 2022, confirms that 71% of finance professionals believe they will be utilizing AI and machine learning by the end of the decade. Despite this noteworthy optimism, only 4% claim to have it in place now, leaving 26% who say that it is either not achievable by 2030 or they don't need this capability at all.

One of the pivotal issues relating to the feasibility of delivering AI and machine learning capabilities in the finance function is the availability of the pre-requisite skills. There is a profound skills gap in the finance function and 71% of finance functions are pinning their hopes on increasing data science headcount to meet their objectives by 2030.

This research shines a light on the true extent of the skills deficit in the modern finance function. Astonishingly, 61% of finance professionals have received no training in machine learning and AI, and 18% claim to be self-taught. Only 11% have received more than a day's training, leaving 10% that have received a day or less.

Figure 1: Despite the hype, finance functions are not investing in advanced technologies



The findings are in line with FSN's earlier research from 2019, which first highlighted the extent of the skills gap. At that point in time, 60% of finance functions did not have a training and development plan to make sure that they had the right digital skills in the finance function, and 59% did not have a recruitment plan to support the digital transformation of the finance function more broadly.

Unsurprisingly, there is a profound gap in knowledge as well. 70% of finance professionals responding to the current research say they have little or no knowledge of AI and machine learning, although encouragingly 20% say they have a working knowledge of these technologies, with 9% claiming to be competent. Just 1% claim to be experts.

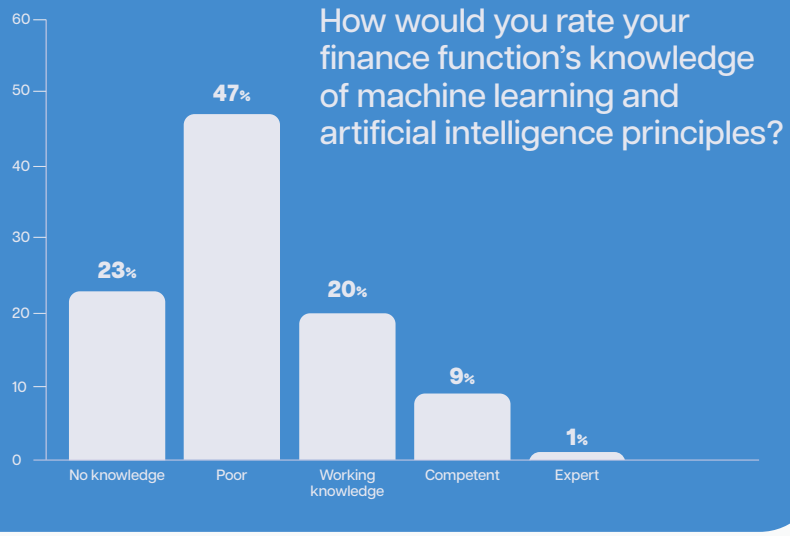
Overall, the lack of skills and knowledge is a serious impediment to progress, adding to the sense that deployment within the modern finance function is lagging behind progress in other business functions.

59%
of organizations do not have a recruitment plan to support digital transformation.

Prophix's take

With an increased reliance on timely and strategic insights, organizations should look to invest in digital finance transformation platforms sooner rather than later.

Figure 2: Finance function knowledge wasteland



Show Us!

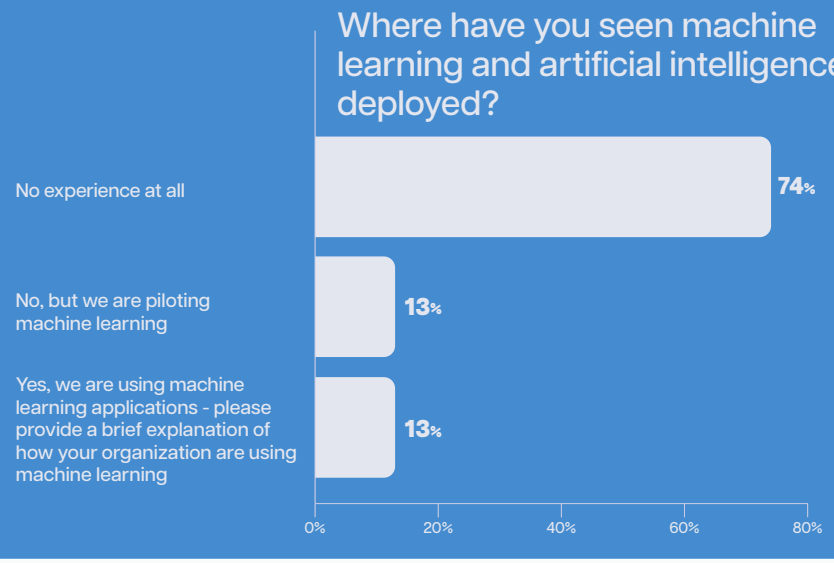
Relevant use cases and reference sites for AI and machine learning deployment in the finance function are thin on the ground. It's another significant factor weighing on progress in this crucial area.

Real life applications of AI and machine learning remain elusive. Instead, finance functions find themselves having to rely on software vendors' sales pitches for information (38%), which is a poor substitute for the real thing. A fortunate 25% have found real life examples in other organizations' finance departments, but 22% have never seen an AI application in the finance domain. Overall, 74% have no experience at all, but 13% say they are piloting AI applications, and a further 13% say they are using machine learning applications.

54%

see predictive analytics and forecasting providing the biggest opportunity for AI and machine learning.

Figure 3: Almost 3/4 of organizations have no experience of AI or machine learning



Comments from participants in this year's survey indicate that finance professionals are most likely to see examples of AI and machine learning on the factory floor and within the manufacturing processes of their own organizations, but few can cite compelling examples in core financial processes. However, our research suggests that the technology is gaining ground in the accounts payable and P2P (purchase to pay) process more broadly. Several respondents mentioned the automatic reading and posting of vendor invoices, accounts payable reconciliations, and spotting anomalies in monthly recurring payments by leveraging variances and defined thresholds in an AI model.

Predictive analytics and forecasting are emerging as a new area of success. This is in line with expectations for the future, as 54% of respondents see this application area as providing the biggest opportunity for ML and AI by the end of the decade. This is followed by reporting (43%) and automatic data capture and data entry (38%). In broad terms, collaborative applications are seen as less of a priority for these new technologies.

Planning, budgeting, and forecasting appear to be the best candidates for leveraging AI and ML over the foreseeable future. A quarter of participants say they will consider deploying AI infused planning, budgeting, and forecasting technology in the next 24 months and a further 16% are presently evaluating platforms. 8% have a pilot project underway and a further 7% are currently implementing. 2% have only recently changed their planning, budgeting, and forecasting application since many projects were delayed by the pandemic.

The 'record to report' process also features strongly in short-term plans for harnessing AI and machine learning capability with 22% confirming that they will consider the technology in the next 24 months, and a further 17% currently evaluating what this nascent technology has to offer. But just 4% have progressed to a pilot program and only 6% are currently implementing.

'Order to cash' and 'purchase to pay' applications are next in line for consideration over the next 24 months, but that trailing position is misleading. That's because they have the most projects already in progress and are leading the way. In fact, the survey supports the view that these transaction-centric applications are more conducive to AI and machine learning.

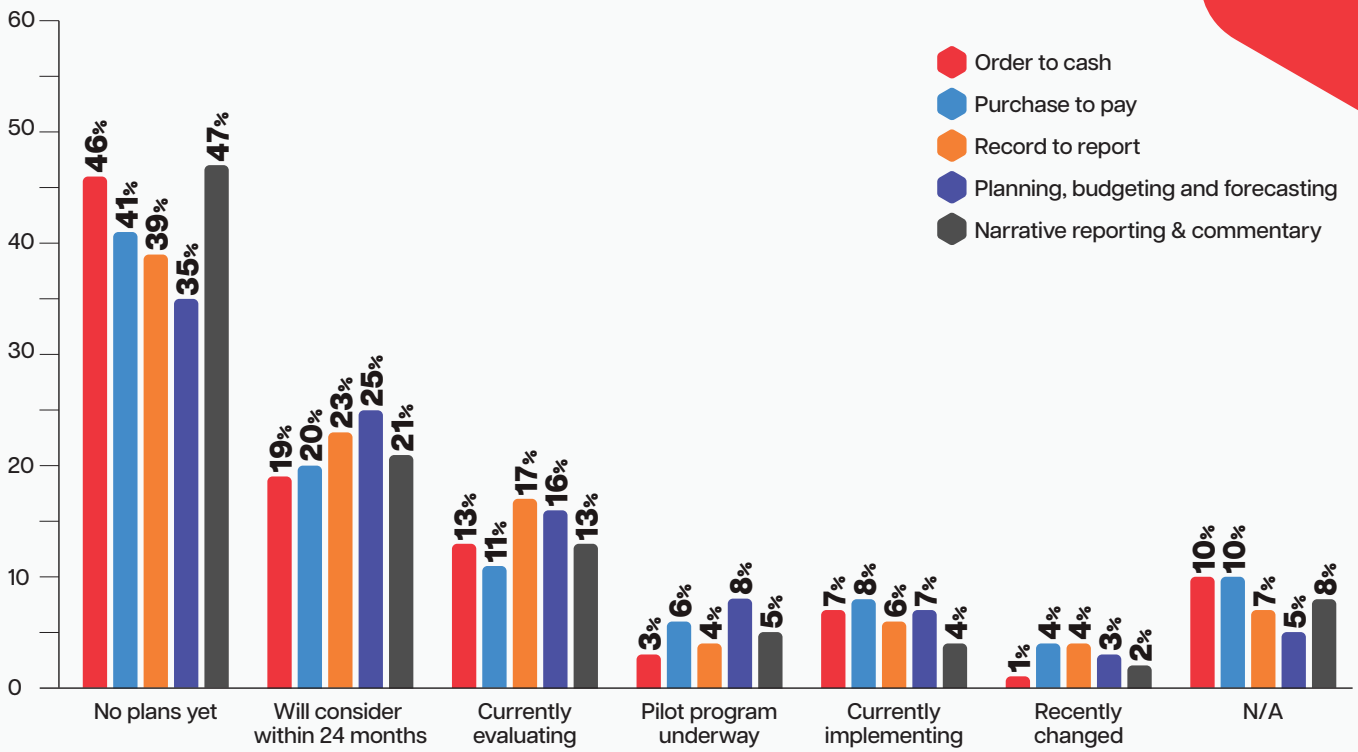
Narrative reporting is the least likely financial application to be deployed with machine learning and AI. The early promise of self-generating management and statutory commentary has been difficult to realize in practice. Perhaps this is because knowledge workers, such as finance professionals, view their commentary on financial results as heavily nuanced and specialized. It suggests that machine learning is not up to the full splendor of language expression and tone that distinguishes the human mind from that of a machine.

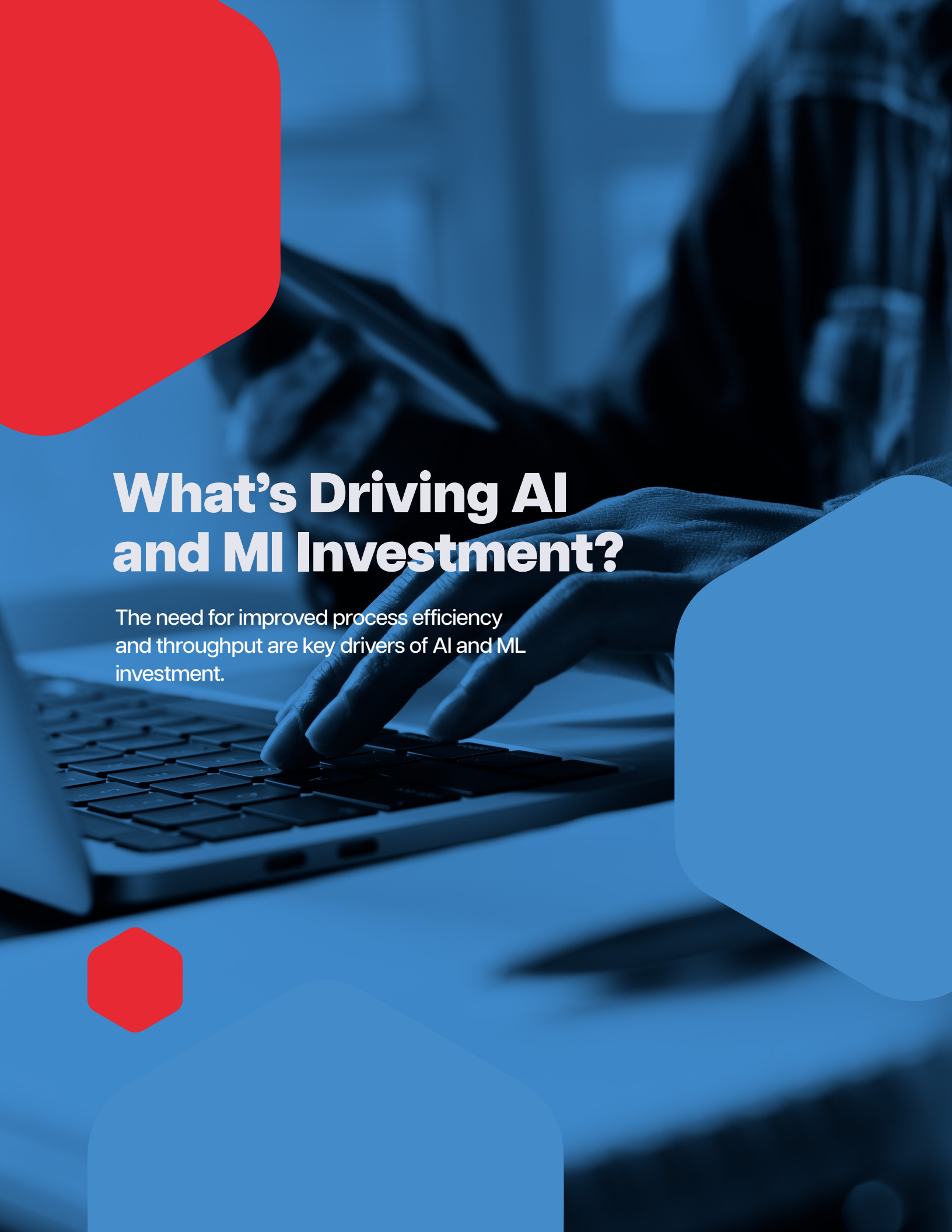
Prophix's take

Prophix is ideally positioned to address the needs of finance teams with AI and machine learning capabilities as part of their financial performance platform, which supports predictive forecasting, narrative reporting, and planning, budgeting, and forecasting.

Figure 4:
Deployment timelines for AI & ML

How close are you to deploying artificial intelligence in a financial application?





What's Driving AI and MI Investment?

The need for improved process efficiency and throughput are key drivers of AI and ML investment.

What's Driving AI and ML Investment?

AI and machine learning have global applicability across almost every sector and application, but traction within the finance function has been noticeably slower.

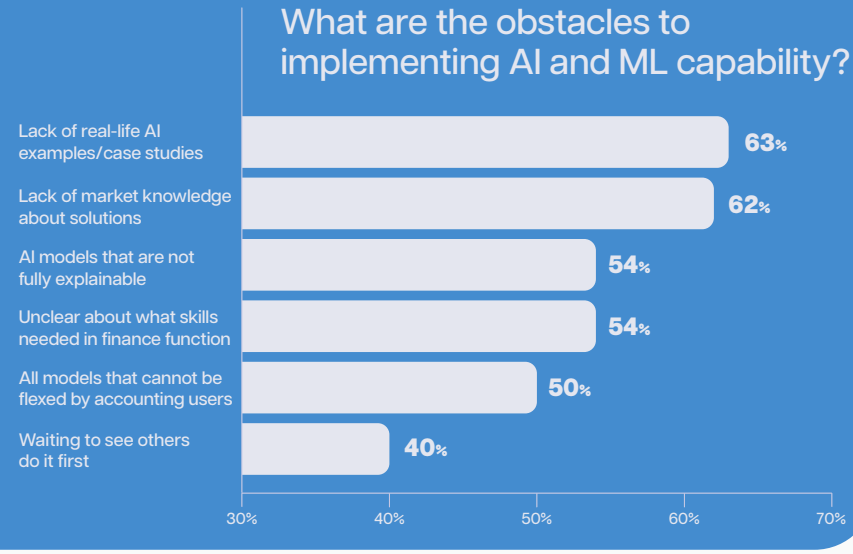
Automation, insight, competitive edge, process efficiency, and speed are all drivers for AI investment. But within the finance function, which faces increasing data volumes, compliance pressures and headcount constraints, the search is on for improved process efficiency and throughput. 70% of finance professionals rate this as the number one priority, closely followed by the related aim of reducing mundane and manually intensive work (67%). Unsurprisingly, improving speed to insight comes a close third (65%), which is consistent with the pronounced interest in harnessing AI and machine learning in planning, budgeting, and forecasting applications.

Interestingly, AI is not being used defensively to make cost savings or enable a reduction in total headcount. Rather, it seems to be viewed as a complimentary technology, helping to chip away at process inefficiency and reduce the burden of transaction processing, in areas such as high-volume reconciliations and risk management.

So, what are the obstacles to adoption?

The most notable obstacle to AI adoption in the finance function is the lack of real-life examples of success. 63% of the respondents to the survey highlights

Figure 5: Finance function waiting to be shown the way - biggest obstacle to AI implemention is lack of real life examples and knowledge



this as a major stumbling block. There is also widespread (62%) lack of knowledge about the software solutions available. Taken together, these two factors represent a significant brake on progress.

Even where AI has been implemented, it is not always obvious how it can be harnessed and applied in a finance setting. In many implementations, AI remains something of a 'black box' and 54% of respondents complain that AI models are not always fully explainable. In many instances, AI is applied as a set of algorithms, but it is not clear how the algorithms are developed and how they can be flexed to meet different sets of circumstances. Exactly half of the respondents say that the inability of accounting users to flex AI models is a serious obstacle.

75%
of finance functions believe organizational change is required for an AI deployment to be successful.

The precise skills needed in the finance function is also unclear, possibly reflecting the different approaches to AI implementation. For example, some software vendors have gone down the route of embedding AI capabilities in their applications, whereas others have deployed external machine learning capabilities. In addition, some software vendors provide all the resources necessary to build an AI application, whereas others strive for a more distant relationship, encouraging finance professionals to develop the AI capability themselves. With this level of doubt surrounding which model of deployment to pursue, it is difficult for the finance function to decide what skills and resources they should develop in-house and how much should be developed on the outside.

Three quarters of finance functions consider that significant organizational change is required to bring about success in deploying AI applications. 79% point to the need for clear leadership and ownership for AI initiatives, and a similar percentage (78%) want to draw on increased collaboration with the IT function for the skills and support they need. These findings fit with the discernible shift over the last few years towards more IT involvement with the finance function, as data architectures and data sources become more complex and convoluted.

The finance function is also grappling with the possible need to support AI initiatives with completely new skill sets, such as data engineering and data science. 77% want to develop data science skills within the finance function, and 76% would like to see data engineering skills reside within the finance function.

Prophix's take

One of the ways software vendors are reducing obstacles to adoption is by embedding certain elements of AI and machine learning into existing software platforms. This ensures there is no additional cost of procuring, purchasing, and accessing specialized software. This can also result in a smaller learning curve and make AI and machine learning less daunting, while expanding access to all the users within the finance function.

Examples of embedded AI and ML capabilities include:

- Natural language processing - for sending and executing commands within the platform.
- Narrative reporting - automatic generation of text or narratives to support variance and contribution analysis in reports and charts.
- Predictive forecasting - productization of commonly used algorithms (e.g., Holt-Winters or ARIMA) to support predictive forecasting models.
- Built-in platform capabilities to support best practices that would otherwise require the use of product experts to analyse models and provide recommendations.

Who Will Succeed?

What are the key success factors for deployment of AI and ML?

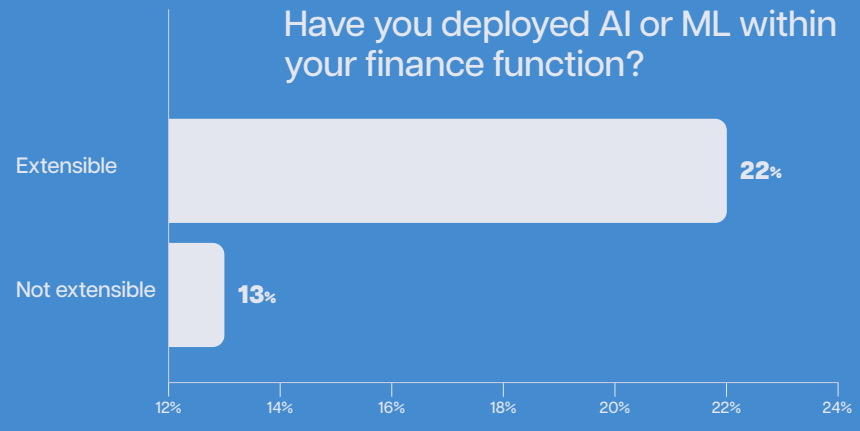
Who Will Succeed?

The research sought to understand which organizations are most likely to succeed in implementing AI and machine learning in the finance function. The study examined the behavior of organizations that claim to be data-driven and those that have set the groundwork by deploying extensible data platforms. Finally, the research looked at the impact of organizational size on AI deployment.

The research finds that organizations that say they are completely data-driven focus more heavily on specialized AI training. 32% of these organizations say they provide at least a day's training, which is almost three times larger than those organizations that are only partially data-driven. In addition, the findings show that organizations that are leading the way in leveraging data are the most open to training. As a result, a similar percentage consider their knowledge of machine learning and AI principles to be competent. This has led to 36% of data-driven organizations having deployed AI & machine learning within the finance function to some extent. Most of the investment has gone into the 'record to report' process (18%), followed by planning, budgeting, and forecasting (11%), and 'purchase to pay' (11%).

Those organizations that consider themselves data driven are more likely to successfully deploy AI and ML.

Figure 6: Data-driven organizations making use of AI and ML in the finance function



As in previous FSN surveys, it is mid-size organizations, with 100 to 1,000 employees that struggle to stay on trend. For example, finance professionals in mid-sized organizations are least likely to receive more than a day's training in machine learning and AI. In fact, it is the smallest organizations that invest in AI training (17%), even exceeding the largest organizations (13%). But when it comes to deployment of AI, it is the largest organizations (more than 1,000 employees) that have the edge. 19% of large organizations, which claim to be data-driven, and 18% of small organizations (with less than 1,000 employees) have deployed these applications compared to just 9% in medium-sized organizations. Mid-size organizations, that have outgrown the start-up phase, appear to struggle for resources and skills, and frequently get left behind in the race for innovation and market differentiation through the use of technology.

Separately, the research looked at the influence of the data platform on the ability to leverage AI and machine learning technologies. In all respects, having an extensible data platform, such as a modern ERP or CPM platform was a significant factor in providing the foundation for an AI initiative. Those organizations that had invested in an extensible data platform were far more likely to be competent in AI and machine learning technologies and were twice as likely to have deployed these technologies compared to organizations that did not have a robust data platform.

So, it appears that being data-driven and being able to lean into a robust and extensible data platform are important pre-requisites for the ability to implement these important technologies. Mid-size organizations remain in danger of getting left behind.

Prophix's take

With a data- and security-first stance, Prophix is well-positioned to facilitate the transition to a data-driven mindset, particularly for mid-sized companies. Prophix can leverage it's 35-year history of successful implementations at mid-sized companies, and continuous innovation to bring mid-sized companies to the forefront of finance technologies, while assisting them with the required skills development to be able to take full advantage of all that AI and machine learning have to offer.

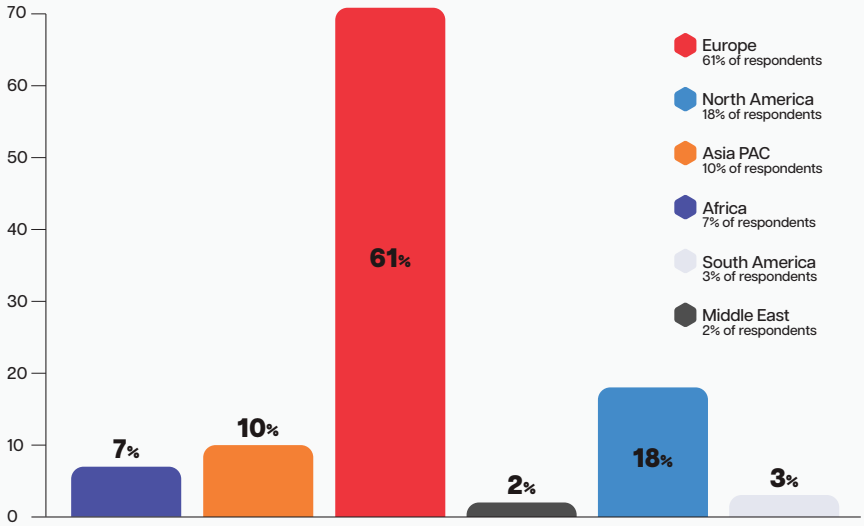
Methodology

Methodology

The survey drew responses from 321 international senior finance professionals from the FSN Modern Finance Forum on LinkedIn. This survey covered finance professionals across 23 different industries. 81% of these professionals were considered to have senior job titles and above.

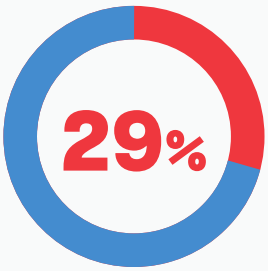
Response demographics

321 survey responses globally*

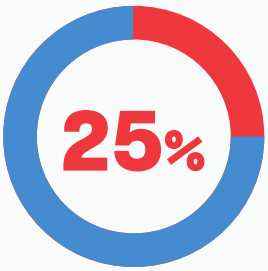


Company size

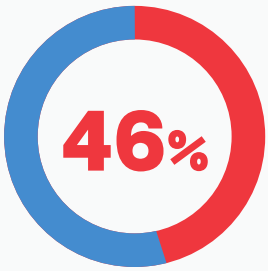
Based on employee numbers



Small
0 - 100 employees



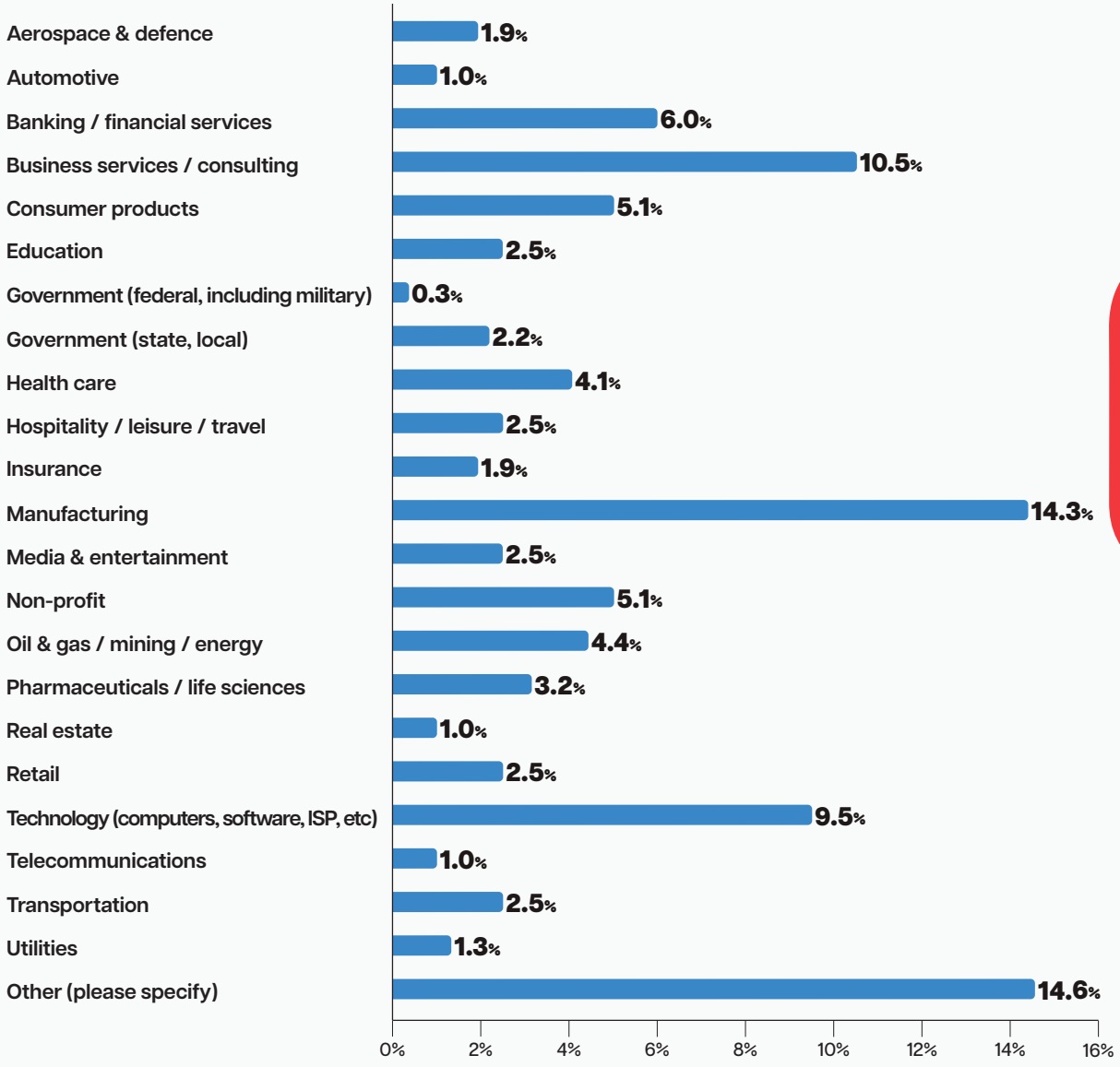
Medium
101 - 1,000 employees



Large
1,001+ employees

*82% of respondents considered to be senior professionals

Industry of respondents



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