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Boost Profitability And Efficiency With Mathematical Optimization

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FORRESTER OPPORTUNITY SNAPSHOT: A CUSTOM STUDY COMMISSIONED BY GUROBI | JANUARY 2022

Overview

Higher returns, less risk, messy data, big decisions. That's the life of financial services analysts. They must find the signal in the noise and formulate strategies for maximizing returns and minimizing risks.

These high-level analyses require superior tools for evaluating strategies and, most importantly, determining the precise decision-making elements that lead to compliant, risk-adjusted returns. As a result, leading financial services firms are turning to next-generation AI technologies such as mathematical optimization and machine learning. These technologies provide analysts with better predictive power and decision-making insights.

Gurobi commissioned a custom study from Forrester Consulting to understand how decision-makers — specifically those involved with assets, operations, and portfolio risk management — are using optimization technologies today.

Key Findings

Fifty-four percent of decision-makers consider optimization to be critical to their financial services organization.

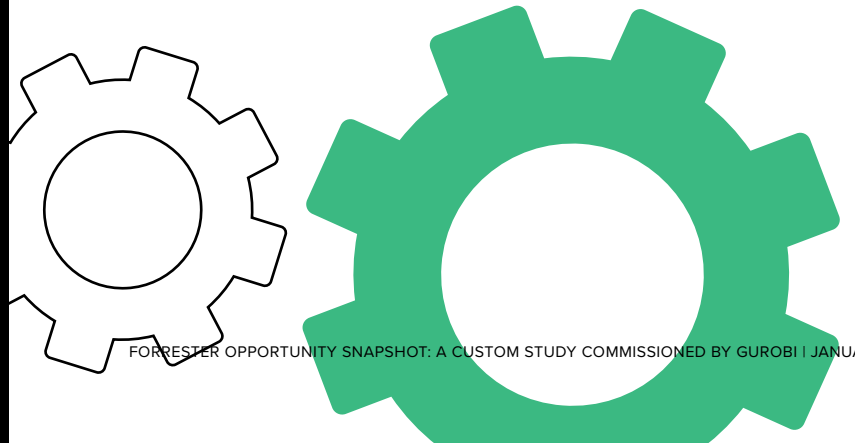
Seventy-seven percent are implementing or expanding their optimization technologies — with 61% investing in two or more areas of optimization.

Decision-makers report that mathematical optimization helps them achieve greater profitability, a competitive advantage, and operational efficiency.

Financial Services Organizations Prioritize Optimization Technology

Over half of decision-makers indicated that optimization is critical to their financial services organization and over three-quarters of them are planning, expanding, or upgrading their optimization technology implementations.

Financial firms recognize that optimization tools can give them a competitive edge in making business decisions, so time is of the essence.

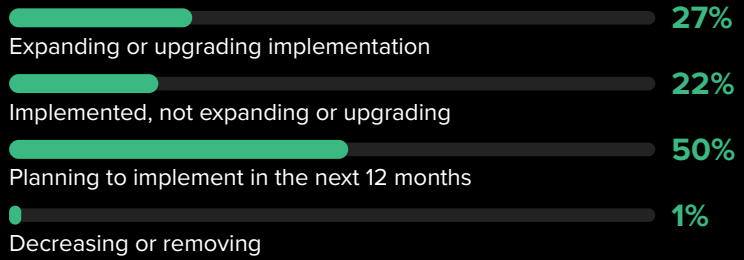


Optimizations And Optimization Technologies Are Top of Mind

54%

agreed or strongly agreed that “optimization is critical to [their] business”

What are your company’s plans when it comes to optimization technologies?



Base: 162 global decision makers of optimization technology in the financial services industry
Source: A commissioned study conducted by Forrester Consulting on behalf of Gurobi, August 2021

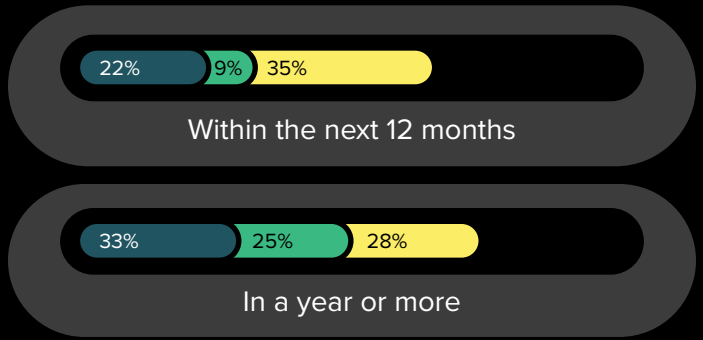
Firms Are Applying Mathematical Optimization More Frequently And For More Use Cases

Financial services organizations use mathematical optimization to answer complex business questions. When given a specific business problem, analysts can use data analysis tools to gather insights and then employ machine learning to predict the next trend. But it's mathematical optimization that can then provide quantitative recommendations for the best course of action and inform business decisions.[1] Having the right mathematical optimization insights can mean better decisioning accuracy, efficacy, scale, and speed.

As a result, over half of financial services organizations plan to increase their use of mathematical optimization — both in the number and variety of use cases — in the next few years.

How do you expect the number of use cases using mathematical optimization to change?

- Stay the same
- Significantly increase
- Increase



52% Expect to use mathematical optimization to tackle more use cases.

Base: 162 global decision makers of optimization technology in the financial services industry
Source: A commissioned study conducted by Forrester Consulting on behalf of Gurobi, August 2021

Unleashing The Power of Combined Analytical Tools Requires Care

Mathematical optimization can be a differentiator when added to the decisioning toolbox because combining multiple advanced analytical capabilities can maximize all levers at an analyst's disposal. While 46% of respondents want to combine mathematical optimization with other advanced analytical technologies, nearly all respondents (98%) face at least one challenge doing so.

To overcome many of these challenges, firms must start by asking the right questions: What are we trying to find out? Do we have the data we need? How will we measure whether we're achieving our objectives?

After completing this exploratory process, firms can then follow up with their tools to make sure they are capturing as much value from their data as possible.

What are the challenges that your organization faces with combining mathematical optimization with other advanced analytics technologies for optimization projects?

- **26%** We struggle with too much market information.
- **23%** There are privacy concerns around some of the data we use.
- **22%** Our market information is changing too quickly.
- **22%** We don't have the right skill set.
- **20%** It doesn't fit our process.
- **20%** We have insufficient compute power.
- **18%** Accessing the right data is too difficult.
- **18%** We don't have the right data for the models we want to run.

Base: 162 global decision makers of optimization technology in the financial services industry
Note: Top eight responses shown
Source: A commissioned study conducted by Forrester Consulting on behalf of Gurobi, August 2021

Mathematical Models Must Change At The Speed Of Business

Every business decision affects the decisions that follow it. It's therefore important to consider all of an option's factors before moving forward.

With mathematical optimization, decision-makers can explore a possible decision's impact by simply tweaking and re-running their mathematical models. This enables them to adjust their strategies frequently and to keep up with the ever-changing business landscape.

Forty-five percent of respondents want to assess and adjust their strategies more frequently, knowing that this approach enables them to reduce operating costs, respond quickly to market changes, manage risk, and achieve greater efficiency.

What are the benefits to assessing and adjusting your optimization strategy frequently?

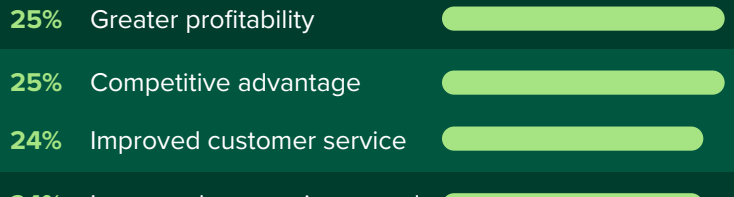
Base: 162 global decision makers of optimization technology in the financial services industry
Source: A commissioned study conducted by Forrester Consulting on behalf of Gurobi, August 2021

Top Benefits Include Greater Profitability, Efficiency, And Competitive Advantage

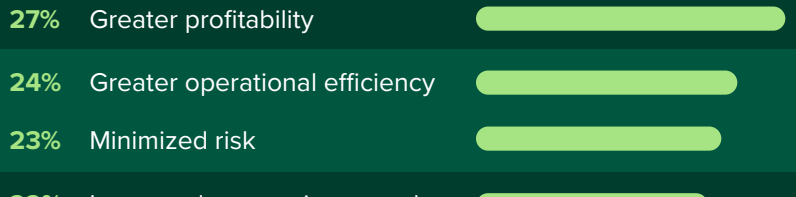
Whether adopting mathematical optimization alone or combining it with other analytical capabilities, respondents expect to achieve multiple benefits when using optimization — with greater profitability being the top benefit.

Respondents expect to gain a competitive advantage and improved customer experience (CX) when using mathematical optimization. When combining mathematical optimization with other analytics technologies, they expect internal business benefits like greater operational efficiency and reduced risk.

What benefits has your business achieved or expect to achieve using mathematical optimization for optimization projects?



What benefits has your business achieved or expect to achieve combining mathematical optimization with advanced analytical technologies for optimization projects?



Base: 162 global decision makers of optimization technology in the financial services industry
Source: A commissioned study conducted by Forrester Consulting on behalf of Gurobi, August 2021

Decision-Makers Are Investing In People And Technology

Financial services firms are quickly taking steps to invest in optimization projects, with 70% investing either in mathematical optimization technology or in using machine learning with mathematical optimization technologies. Over 60% are investing in two or more initiatives for optimization projects.

But acquiring technology is not enough. That's why 64% of respondents are investing in people with mathematical optimization expertise — whether hiring and training employees in-house or reaching out to a consulting firm.

By turning to mathematical optimization and leaning on optimization experts, financial services firms can embrace the complexity of running a modern business and, ultimately, maximize profits while minimizing risk and maintaining compliance.

What areas you are investing in for your optimization projects?

42% Using other technologies such as machine learning in conjunction with mathematical optimization technologies

40% Investing in new mathematical optimization technologies

37% Hiring/training employees with mathematical optimization expertise

36% Engaging a consulting firm to help implement/use mathematical optimization technologies

23% Finding new use cases for mathematical optimization

Base: 162 global decision makers of optimization technology in the financial services industry
Source: A commissioned study conducted by Forrester Consulting on behalf of Gurobi, August 2021

Conclusion

Optimization techniques, technologies, and tools have always been an essential part of the analyst's toolbox. The substantial opportunity afforded by combining data analysis technologies is driving adoption of optimization. By using mathematical optimization together with machine learning and industry- and instrument-specific analytics, analysts can optimize and quickly change business strategies. This enables business leaders to automate their decision-making processes.

Leading financial services firms are creating dynamic, multidisciplinary teams that incorporate mathematical optimization techniques, technologies, and tools to achieve higher, risk-adjusted returns. With the right attention and preparation, financial services firms can modernize and tap into a competitive advantage that places them ahead of the pack.

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Forrester's Application Development And Delivery Research Group

Methodology

This Opportunity Snapshot was commissioned by Gurobi. To create this profile, Forrester Consulting supplemented this research with custom survey questions asked of 162 global decisionmakers of optimization technology. The custom survey began and was completed in August 2021.

ENDNOTES

[1] Source: "Introducing AI-Powered, Human-Controlled Digital Decisioning Platforms," Forrester Research, Inc., August 11, 2020.

ABOUT FORRESTER CONSULTING

Forrester Consulting provides independent and objective research-based consulting to help leaders succeed in their organizations. Ranging in scope from a short strategy session to custom projects, Forrester's Consulting services connect you directly with research analysts who apply expert insight to your specific business challenges. For more information, visit forrester.com/consulting.

Demographics

REIGON	
North America	**67%**
EMEA	**33%**

FINANCIAL SERVICES ROLE	
Insurance	**30%**
Fintech	**26%**
Commercial banking	**20%**
Wealth and asset management	**17%**
Hedge funds	**7%**

TITLE	
C-level	**40%**
Vice president	**26%**
Director	**25%**
Manager	**9%**

AREAS OF INVOLVEMENT	
Asset management	**59%**
Operations management	**42%**
Portfolio risk management	**17%**


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