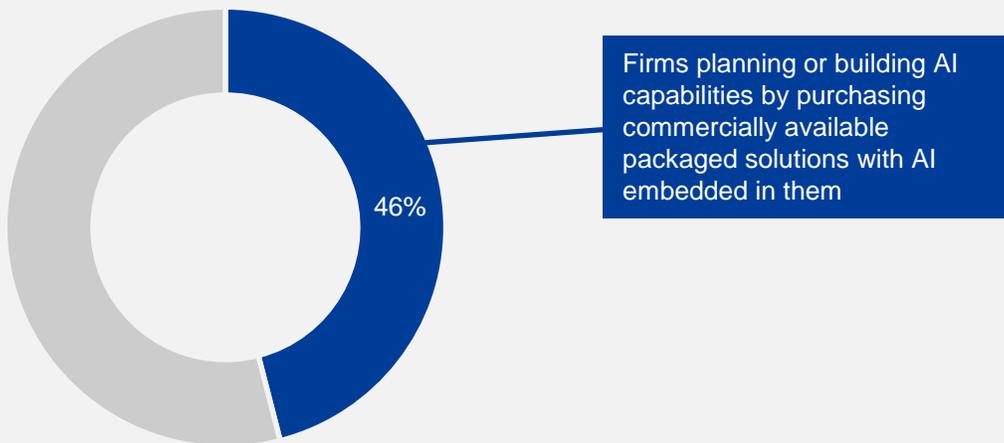


The Total Economic Impact™ Of Dell EMC Ready Solutions For AI, Machine Learning With Hadoop

Artificial intelligence (AI) is entering the mainstream, and organizations are realizing that they must adopt these technologies to remain competitive. However, designing and building the infrastructure for AI can be incredibly challenging. Every passing month brings new technologies and learnings, and internal employees struggle to keep up with the current best practices and to design systems that operate together correctly and with good performance. Further, the complexity of these systems can cause deployments to take years while the hardware and architecture becomes obsolete in as little as one year.¹ It is therefore no surprise that 46% of data and analytics decision makers turn to purchasing commercially available packaged solutions with AI embedded in them.²

Artificial Intelligence Capabilities Strategy



Base: 2,594 data and analytics decision makers whose firms are interested in using, planning to use, or currently using AI

Source: Forrester Analytics Global Business Technographics® Data And Analytics Survey, 2018

Dell EMC's Ready Solutions for AI, Machine Learning with Hadoop – with Intel inside – aims to solve this problem. Organizations that have turned to Hadoop for their big data storage and processing can adopt these solutions to achieve fast implementation of machine learning with hardware and software optimized for performance.

Forrester Consulting conducted a Total Economic Impact™ (TEI) study to provide readers with a framework to evaluate the potential financial impact of Ready Solutions for AI on their organizations. To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed six customers with experience using Ready Solutions for AI. This summary is based on a full TEI study titled "The Total Economic Impact™ Of The Dell EMC Ready Solutions For Hadoop," which can be downloaded at <https://www.emc.com/collateral/white-papers/forrester-total-economic-impact-study-dell-emc-ready-solutions-for-hadoop.pdf>.

SUMMARY

Based on a commissioned study, "The Total Economic Impact™ Of The Dell EMC Ready Solutions For Hadoop," May 2018.

METHODOLOGY

The objective of the TEI framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact of Dell EMC's Ready Solutions for AI, including interviews with Forrester analysts, Dell EMC stakeholders, and six current customers. Forrester constructed a financial model representative of the interviews using the TEI methodology.

COMPOSITE ORGANIZATION

This analysis uses a composite organization, based on the interviewees, to present the aggregate financial analysis.

RISK ADJUSTMENT

Forrester risk-adjusted the financial model based on issues and concerns of the interviewed organizations to account for uncertainties in benefit and cost estimates.

Simplify AI

Dell EMC's Ready Solutions for AI, Machine Learning with Hadoop enable organizations to quickly design and launch artificial intelligence solutions with optimized performance. Interviewees shared that they:

- › **Value Dell EMC's expertise and partnership.** "The easiest part of this entire project was working with [Dell EMC]," shared the VP of database and technology at a marketing analytics company. One financial services VP of big data emphasized that "Dell EMC is more business focused versus just technology focused. That helps us to say, 'Here's what we want to accomplish,' so Dell EMC can help us find the technology to meet those goals."
- › **Slash time-to-value.** Dell EMC's Ready Solutions made implementation of the Hadoop environment relatively quick and easy. Organizations speculated that if they had tried to implement on their own, it would have taken six to 12 months longer to hire the expertise, figure out the correct configurations, and deploy the platform. They further speculated that the learning curve would have been much more difficult after deployment, with more errors and mistakes. The VP of big data for a financial services company framed the challenge: "It used to take 12 to 18 months to architect a new solution with software, hardware, proof of concept (POC), and vendor selection. That 12- or 18-month cycle isn't affordable anymore. How do we cut that down into a six-month cycle or less?"
- › **Achieve high-level performance.** Ready Solutions help organizations achieve high performance even in the initial deployment, as one principal architect shared: "Because they [Dell EMC] did the due diligence, . . . because they understood what works, what types of workloads are optimized, and what are good use cases for different hardware configurations, we didn't have to be experts at hardware. That was huge."
- › **Optimize system capacity by 30% with a Hadoop cluster.** One organization leveraged Hadoop to build a research cluster to identify usage patterns and the types of queries being run and to understand system failures and response times. It compiled the information to improve response times by categorizing data and optimizing the nodes. This tuning process allowed it to reduce facing times and free up 30% of additional capacity.



Reduce time-to-market
by six to 12 months



Optimize capacity
and performance



Achieve payback in
under 6 months

"Dell EMC is more business focused versus just technology focused. That helps us to say, 'Here's what we want to accomplish,' so Dell EMC can help us find the technology to meet those goals."

*VP of big data,
financial services*



"The Dell EMC and Cloudera partnership provides hardware that's specifically designed and optimized for Hadoop use cases and challenges. They work in conjunction to make sure the distribution runs well on the hardware, and they certify the hardware so if you run into any trouble, you have a hardware and software team that partner with you to solve the problem."

*Chief architect,
information technology*



Accelerated Analysis

Machine learning with Hadoop enables near-real-time data analysis and slashes the time to build and run reports, ultimately improving the productivity of data scientists. The solution can:

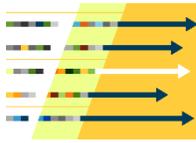
- › **Run reports in seconds.** Queries and analytics that took days could be completed in hours or less, and certain jobs could be completed near instantaneously. The chief architect of an information technology company described: "We ran one machine learning job on a single workstation, and it took three or four days. We then optimized it for Spark, ran it on a five-node cluster, and we were able to complete the same job in just a couple of hours."

"In one year, business has doubled; without Hadoop, our business would not have survived."

*VP, database and
technology,
marketing analytics*



- › **Improve data scientist productivity by 30%.** Data scientists can spend less time loading and structuring data, enabling them to devote a larger portion of their time to value-add work. Workloads run in a fraction of the time and systems function better, with failure rates for reports dropping from 10% to 2%.



Run reports in seconds with real-time analysis



Improve data scientist productivity by 30%



Reduce workload failure rate by 8%

Transform Business

Machine learning with Hadoop can drive a myriad of business outcomes from cost savings and risk reduction to new products and better service, including:

- › **Launching new and improved products.** Powerful analytics enabled businesses to improve their product offerings and build out new services and products. “Hadoop helps you understand the right data to measure,” explained one financial services company’s VP of big data, “then watch activity in real time to make virtually instant decisions and recommendations.” The chief architect for an information technology company described how streaming is essential for the internet of things (IoT) to load data fast, process it, make instant decisions, and then store it for later usage: “Spark is a great platform for machine learning and handling data that is in transition. There are many use cases where this comes into play, such as IoT, so you get a huge benefit from having the entire ecosystem bundled together.”
- › **Tightening data security and achieving Payment Card Industry (PCI) compliance.** One financial services company explained how it used machine learning with Hadoop to identify and, when possible, automatically remediate threats. For those threats that remained, Hadoop provided key insights and enabled security analysts to efficiently remediate the threats. Further, by identifying patterns, analysts could even go on the hunt and disrupt the attackers and their networks. Not only did this reduce the risk and cost of breaches, but it helped protect the company’s brand reputation and therefore its market share.
- › **Reducing fraud.** Organizations can create more accurate machine models to detect fraud in real time using Dell EMC’s Ready Solutions for AI, Machine Learning with Hadoop. By directing analytical power toward monitoring transactions, organizations could reduce fraud by up to 20% to save \$1.4 million in lost revenue.



Launch better products, driving \$4.1 million in profit



Automatically detect and remediate almost 100 million threats



Reduce fraud by 20%, saving \$1.4 million

“You need to stop the money flow in fraudulent transactions, but you only have seconds to make sure it’s not transferred. Literally seconds, that’s how fast these guys move. Hadoop enables us to tackle this challenge, and every dollar of fraud we stop goes directly to the bottom line. That’s why moving this analysis as close to the transaction as possible is very important.”

VP of big data, financial services



“We use Hadoop to monitor our systems in real time to make sure we don’t get a breach. We’ve fought tens of millions of attempts, and the ability to detect and fight them is essential to protecting our brand reputation. Ensuring that our customers feel safe and secure is a big part of getting our market share.”

VP of big data, financial services



Financial Analysis Of Benefits And Costs

For this study, Forrester conducted interviews with six customers using Dell EMC's Ready Solutions for Hadoop. Interviewed customers include the following:

INDUSTRY	REGION	SIZE	INTERVIEWEE	INFRASTRUCTURE
Marketing analytics	Global	\$8M revenue 50 employees	VP, database and technology	8 nodes 400 terabytes
Information technology	USA	\$20M revenue	Chief architect	40 nodes 150 terabytes
Retail	Global	\$25B+ revenue 100K+ employees	Architect	640 nodes 5 petabytes
Digital media services	USA	100 employees	Principal architect	65 nodes 1.8 petabytes
Information technology	Global	\$25B+ revenue 100K+ employees	Business intelligence architect	120 nodes 2 petabytes
Financial services	Global	\$1B to \$5B revenue 10K to 20K employees	VP, big data	1,000+ nodes 20+ petabytes

Forrester created a composite organization representative of the interviewed companies to present the aggregate financial analysis. This composite is a US-based B2C retailer that sells products directly to consumers in stores and online. It has \$200 million in annual revenue and 1,000 employees. Big data and Hadoop are critical to growing and staying competitive, while also protecting the company's security posture and reducing fraud.

Quantified benefits. Interviewed organizations experienced the following risk-adjusted present value benefits:

Total Benefits

REF.	BENEFIT	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Atr	Legacy hardware savings	\$3,111,459	\$6,222,918	\$9,334,377	\$18,668,754	\$14,984,562
Btr	Profit from new Hadoop-enabled business	\$400,000	\$1,600,000	\$3,200,000	\$5,200,000	\$4,090,158
Ctr	Fraud reduction	\$346,758	\$558,195	\$811,920	\$1,716,873	\$1,386,560
Dtr	Administrative cost savings	\$108,000	\$324,000	\$540,000	\$972,000	\$771,660
Etr	Improved data scientist productivity	\$126,360	\$252,720	\$336,960	\$716,040	\$576,895
	Total benefits (risk-adjusted)	\$4,092,577	\$8,957,833	\$14,223,257	\$27,273,667	\$21,809,835

Quantified costs. Interviewed organizations experienced the following risk-adjusted present value costs:

Total Costs

REF.	COST	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Ftr	Hardware costs	\$930,888	\$0	\$1,729,022	\$2,659,910	\$5,319,821	\$4,358,262
Gtr	Software license costs	\$39,690	\$0	\$110,250	\$220,500	\$370,440	\$296,471
Htr	Implementation costs	\$369,321	\$0	\$0	\$0	\$369,321	\$369,321
Itr	Hadoop operational costs	\$0	\$646,800	\$646,800	\$950,400	\$2,244,000	\$1,836,595
	Total costs (risk-adjusted)	\$1,339,899	\$646,800	\$2,486,072	\$3,830,810	\$8,303,581	\$6,860,649

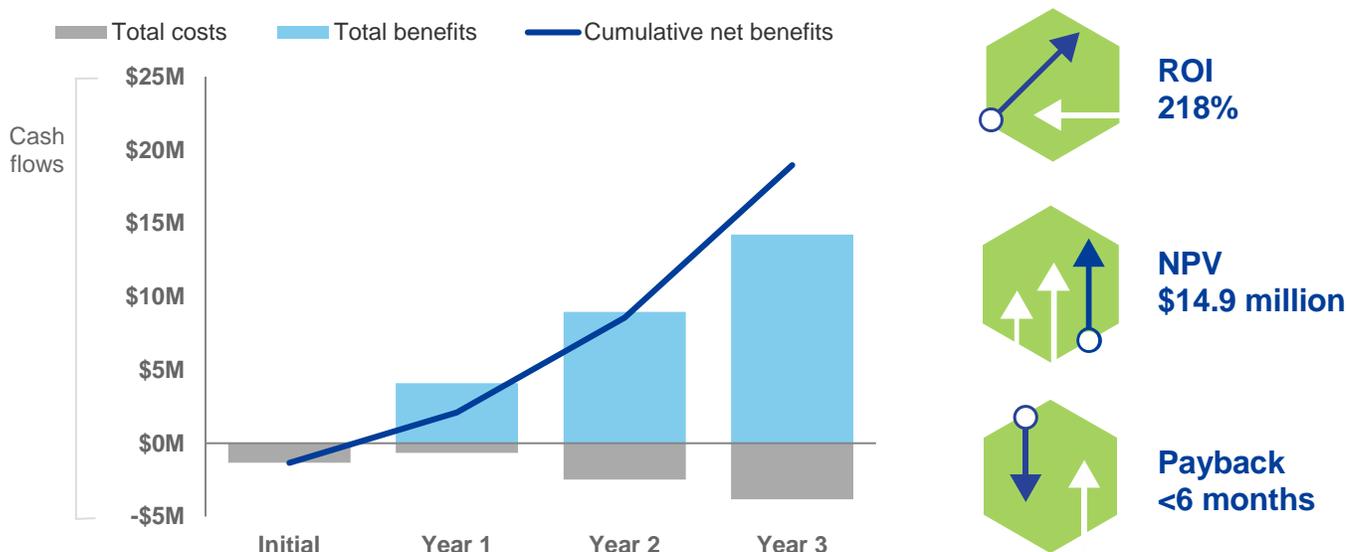
Endnotes

¹ Source: "AI Deep Learning Workloads Demand A New Approach To Infrastructure," Forrester Research, Inc., May 4, 2018.

² Source: Forrester Analytics Global Business Technographics® Data And Analytics Survey, 2018.

Financial Summary

The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, net present value (NPV), and payback period for the composite organization's investment in Ready Solutions for AI, Machine Learning with Hadoop. Forrester assumes a yearly discount rate of 10% for this analysis.



Disclosures

The reader should be aware of the following:

- › The study is commissioned by Dell EMC and delivered by Forrester Consulting. It is not meant to be a competitive analysis.
- › Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the report to determine the appropriateness of an investment in Dell EMC Ready Solutions for AI.
- › Dell EMC reviewed and provided feedback to Forrester. Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester's findings or obscure the meaning.
- › Dell EMC provided the customer names for the interviews but did not participate in the interviews.

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. <https://go.forrester.com/consulting/>

ABOUT TEI

Total Economic Impact™ (TEI) is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders. The TEI methodology consists of four components to evaluate investment value: benefits, costs, risks, and flexibility. <https://go.forrester.com/consulting/content-marketing-consulting/>

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