

Is it time to invest in Artificial Intelligence?

**Understanding the Potential Benefits
of Artificial Intelligence**

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We won't experience 100 years of progress in the 21st century — it will be more like 20,000 years of progress (at today's rate).

Ray Kurzweil
Inventor and Futurist

”

The rapid pace of technological change is driving innovation as companies embrace new technologies to gain a competitive edge. Essential business tools like laptop computing, mobile phones and broadband internet service were once the stuff of science fiction. Along the same lines, artificial intelligence (AI) has made the switch from sci-fi staple to transformative business technology.

Given its computer science roots, it's not surprising that tech companies were the early adopters of AI, but it has since expanded to a wide range of industries as more firms identify opportunities to harness the power of AI.

While many individuals outside of the tech sector have historically been wary of AI, interest is replacing fear as the applications of AI become increasingly attractive and valuable from an ROI perspective.

NOT A REPLACEMENT FOR PEOPLE

AI has the potential to disrupt many industries and a survey by the Economist found that 40% of business leaders believe that AI will start displacing humans within 5 years. However, the common perception is that AI will augment, rather than marginalize, the existing workforce.¹ In other words, AI probably won't replace your staff, but rather it will help them make better decisions and accomplish more in doing their jobs.

¹The Economist Intelligence Unit, "Artificial Intelligence in the Real World." January 2017.

WHAT IS AI?

Artificial Intelligence, AI, is the practice of using computer science techniques to enable machines to learn, react, and work like human beings.

Through programming, computers can employ reasoning, solve problems, make observations, use motor functions and more.

USING AI STRATEGICALLY: OPPORTUNITIES FOR SUCCESS

Across industries, 82% of companies report a return on AI investment. That hit rate is a key part of AI's appeal, but so are many potential applications for AI technology. While the programmatic nature of AI allows for highly specialized uses across a variety of industries, there are numerous broad applications for AI that are not industry-dependent. These include things like product development, customer service, the automation of repetitive or non-strategic tasks, process optimization, pattern recognition, data management and more.

OBSTACLES FOR IMPLEMENTING AI

While corporate interest in AI is on the rise, there are significant costs and challenges associated with pursuing AI for business applications. AI is not typically an "off the shelf" software solution. Rather, it is a highly customized application that requires a meaningful investment of time, money and human resources to develop and reap the benefits.

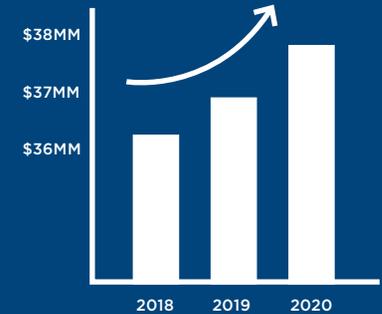
THE COSTS ASSOCIATED WITH IMPLEMENTING AI CAN INCLUDE:

- Specialized software development expertise
- Technology infrastructure to support AI
- Project management and consulting
- Integration with existing technologies
- Data gathering, cleaning and preparation for use
- Technological security measures
- Dedicated internal staff

² Protiviti, "Competing in the Cognitive Age." 2019.

³ Deloitte, "State of AI in the Enterprise, 2nd Edition." 2018.

In 2018, businesses invested an average of \$36MM each in AI. That number is expected to grow by 8% over the next two years.²



82% of companies report a return on AI investment.³



Some Examples of AI in Use Today



1. Autonomous and semi-autonomous vehicles

Tesla self-driving cars, self-parking cars



2. Chat bots and personal assistants

Siri, Alexa



3. Recommendation engines

Netflix recommendations, Pandora station generation, Amazon suggested products



4. Investment advisory

Robo-advisors



5. Medical diagnostics

Interpretation of X-rays and CT scans

LOOKING AHEAD: KEY CONSIDERATIONS FOR CORPORATE AI

The potential benefits of investing in AI are driving interest in the technology. However, the significant upfront cost and long lead time before seeing results necessitates a thoughtful approach. Organizations considering such an investment should follow these five best practices:

1. Build AI into your strategic planning process

What investment do you plan to make over what time period? What are your expected outcomes? What is your definition of success?

2. Secure funding for the investment

Budget for your initial investment, subsequent phases of investment and ongoing costs associated with implementing AI.

3. Understand your potential ROI

Calculate ROI with case studies (from your industry if possible) to learn from what others have achieved and to set internal expectations.

4. Thoroughly test and validate AI programs

As with any major software development investment, testing is critical to ensure desired outcomes.

5. Educate staff on AI and socialize the benefits

Ensure all employees understand what AI is, why the company is investing in it and how it can work for them.

At UMB, we pride ourselves on being experts in banking and in our clients' businesses. While AI remains a thing of the future for many banks and financial service providers, UMB has deployed AI technology in support functions, and our Commercial Banking team understands the changing technology landscape can have a significant financial impact to our clients. If you are considering AI as a growth strategy for your business, connect with a UMB officer to explore the financial implications.

INDUSTRY-SPECIFIC AI IMPACT AND OPPORTUNITIES

AI implementation is accelerating across industries and the impact, opportunities, and potential ROI of AI varies in different sectors. The following sections explore the potential applications for AI in a few specific industry sectors.

MANUFACTURING

Historically, manufacturing has been home to early adopters of new technologies, as companies strive to increase output, improve product quality and cut production costs. However, the high startup costs (both in terms of capital and time) associated with implementing new technologies make it impractical for manufacturers to adopt every new tech trend that comes along. AI appears to be more than just the latest shiny object. Rather, it has the potential to be one of those transformative technologies that manufacturers feel is well worth the investment.

For manufacturing firms, the annual worldwide investment in AI software, hardware and services is projected to rise from \$2.9BN in 2018 to \$13.2BN in 2025.⁴

Top AI use cases for manufacturing include:

- Increasing production quantities and reducing downtime—smart machines can operate production lines independently, without direct human oversight.
- Improving product quality—computer vision picks up quality control issues that the human eye might miss; generative design software can solve problems based on engineering parameters, finding and testing all possible solutions to optimize product design.
- Enhancing equipment performance—digital twins create a virtual model of a process, which allows for data analysis and systems monitoring in real-time; predictive maintenance allows machines to report on their own conditions in real time.

⁴ Tractica, "Artificial Intelligence for Smart Manufacturing Applications." March 2019.

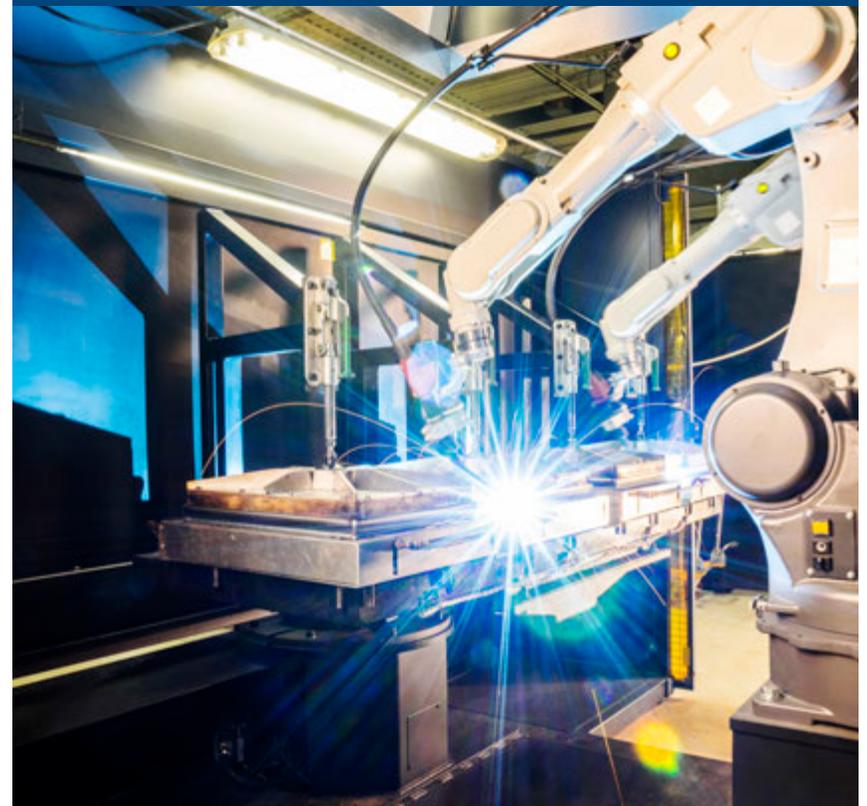
⁵ Forbes Insights, "How AI Builds a Better Manufacturing Process." July 2018.

44%

of executives from the automotive and manufacturing sectors classified AI as "highly important" to the manufacturing function in the next five years.

49%

said it was absolutely critical to success.⁵



59%
boost
by
2035

According to Accenture, AI could boost profitability rates by 59% in the wholesale & retail industries by 2035.⁷

Connected Devices: The total number of smart devices in use worldwide is projected to reach 21 billion by 2020.⁸



WHOLESALE AND DISTRIBUTION

Within the wholesale sector, AI will be important in e-commerce, where personalization and automation are key in a space with a wide range of options and choices available to customers.

Potential use cases for wholesaling include:

- Leveraging machine learning to process customer and order data – AI can be deployed to create personalized purchasing experiences, recommend products based on client purchase history, customize pricing and deliver personalized offers and discounts.
- Streamline billing and collections—optimize client contacts and channels to improve the likelihood of on time payment; reduce fraudulent transactions through intelligent monitoring.
- Improving inventory management—automated warehousing uses AI for stocking, sorting and fulfillment; AI can be used to monitor inventory levels and reorder automatically when needed; Amazon uses 80,000 robots across 25 distribution centers.⁶

CONSTRUCTION

Some of the greatest benefits AI has to offer the construction industry may come through connected devices. Given the industry's reliance on a wide range of equipment, connecting assets via AI has the potential to improve equipment management, maintenance, deployment and utilization.

In addition to connected devices, use cases for the construction industry include:

- Assisting with resource planning—identifying equipment and staffing needs based on project details and coordinating schedules accordingly.
- Improving project management—automatically generating intelligent project schedules, including key milestones, deadlines; AI can recommend approaches to engineering based on historical data from similar projects.
- Reducing cost overruns—AI can predict potential cost overruns before they occur, leading to better controls and contingency planning.

⁶ Gartner, 2019 CIO Survey, October 2018.

⁷ Accenture, reported by Business Insider, "The AI Disruption Bundle: The Guide to Understanding how Artificial Intelligence is Impacting the World." February 2018.

⁸ Technavio, "Global Artificial Intelligence (AI) In Construction Market 2019-2023." December 2018.