



Navigating the path of AI adoption

Capturing business value by identifying Critical Success Factors for AI adoption



Artificial Intelligence (AI) investments and applications are growing exponentially.



We are entering the fourth industrial revolution, where computers begin to do cogitative work and take over intricate work from humans. The rise of AI is gaining pace, moving beyond 'big tech'. Investment in AI is forecasted to triple between 2019 and 2023 to nearly \$100bn¹ as the AI business-cases increase exponentially. More than 90% of large multinational companies report some level of investment in AI, and 15% say they have widespread deployment of some form of AI²: think of shopping advisors, chatbots, advanced recommender systems, and smart manufacturing. AI adoption has further accelerated during the COVID-19 pandemic. In the contemporary era of Big Data with ever-increasing volumes of unstructured data, AI is uniquely capable of data processing and analysis in ways that traditional algorithms cannot emulate. In fact, significant business value is predicted to be created across all parts of the economy. The 'early-adopter' phase is coming to an end, and we are moving into the 'early majority' phase.

The majority of companies that are investing in AI are not getting it right.



Research shows that organizations are not transitioning towards data-driven decision-making nor fostering the right culture and failing to generate tangible business value from the AI investments. Firms mostly do not adopt core practices that would support AI adoption, and even when companies do engage with AI, it is often in an ad-hoc way with limited scope. 37% of organizations are still looking to define their AI strategies, and a similar proportion is struggling to identify suitable use cases³. Only 8% of firms engage in core practices that support widespread adoption⁴. Less than half of AI Proofs-of-Concept make it to production deployment. AI adoption is therefore significantly lagging behind its potential business value.

The key question:

What critical success factors contribute to the successful adoption of artificial intelligence?



1 IDC, 2019: Worldwide Artificial Intelligence Spending guide

2 Big Data and AI Executive Survey 2020

3 Gartner, 2018: Build the AI Business Case

4 Fountaine, T. et al., 2019. Building the AI Powered Organization, HBR

Businesses should not engage with AI for the sake of AI.



AI is a tool to solve specific problems or answer specific questions and not an end in itself. We hear this often being said and acknowledged, but what does this actually mean?

It means an adequate definition of the problem that AI is meant to solve is critical during the initial phase. However, given that customers' needs, and the business context, are constantly changing, a focus on problem-centered AI solutions throughout the AI adoption process is easier said than done. This needs to be continuously re-calibrated throughout the project. Our study found a surprisingly high level of emphasis placed on this requirement, underlining how many AI applications are being applied without a critical evaluation of the nature of the business problem and the solutions' actual value. Firms should not fall into the trap of "doing AI for AI's sake".

More data is not always the solution, but rather quality data is needed.



AI utilize 'big data' that is more often in real-time and increasingly unstructured. A direct line can be drawn between data quality and algorithm accuracy and, hence, ultimately the AI solution's effectiveness and maintainability. Therefore, data quality is crucial during every stage of AI adoption and a critical issue for developing an AI solution.



AI is transformational and so is education about AI.



Strategic training for executives and domain experts can help them identify real business challenges that AI can help solve. Education and empowerment of users will reduce fears that AI deployment will reduce jobs that would otherwise reduce appetite for adoption. In contrast, widespread education within the company and customers during scaling helps drive engagement, acceptance, and use. The focus and purpose of education and empowerment therefore changes throughout the adoption timeline. Companies should think of a clear hands-on training strategy from the outset to improve 'AI literacy'.

Exploration: Start by getting the organizational stage right.



Our study shows that identifying a clear business case is critical at the outset, combined with strong top management support, a culture that allows the freedom to experiment and iterative development, access to the necessary resources, and an identified champion. These factors contribute to a higher chance of success. Consideration for ethical and regulatory boundaries with strong AI and data governance is paramount from the start to ensure that AI solutions align with company values as well as local laws and regulation.

Implementation Stage: Get the technology right



Once an AI solution has been identified, the focus shifts to the technology: the right systems architecture and an accurate algorithm. A decision between explainable or controllable AI will increase adoption. Engaging users in the design with a diverse team, including tech and business domain experts, ensure the solution remains focused on what the business and users want. At the same time, the company should start adapting the impacted business processes readying for roll-out.



Scaling phase: Value must be created, captured, and protected



Once an AI solution has been deployed, the business value should be continuously monitored for necessary adjustments. Critical to creating value is ensuring the algorithm remains accurate when confronted with real data. As the scaling is likely to face bumps, executive management support again comes into focus. Finally, the AI and data governance must be maintained, and the company must continue to navigate the regulatory environment and ensure strong cybersecurity to protect the value created.

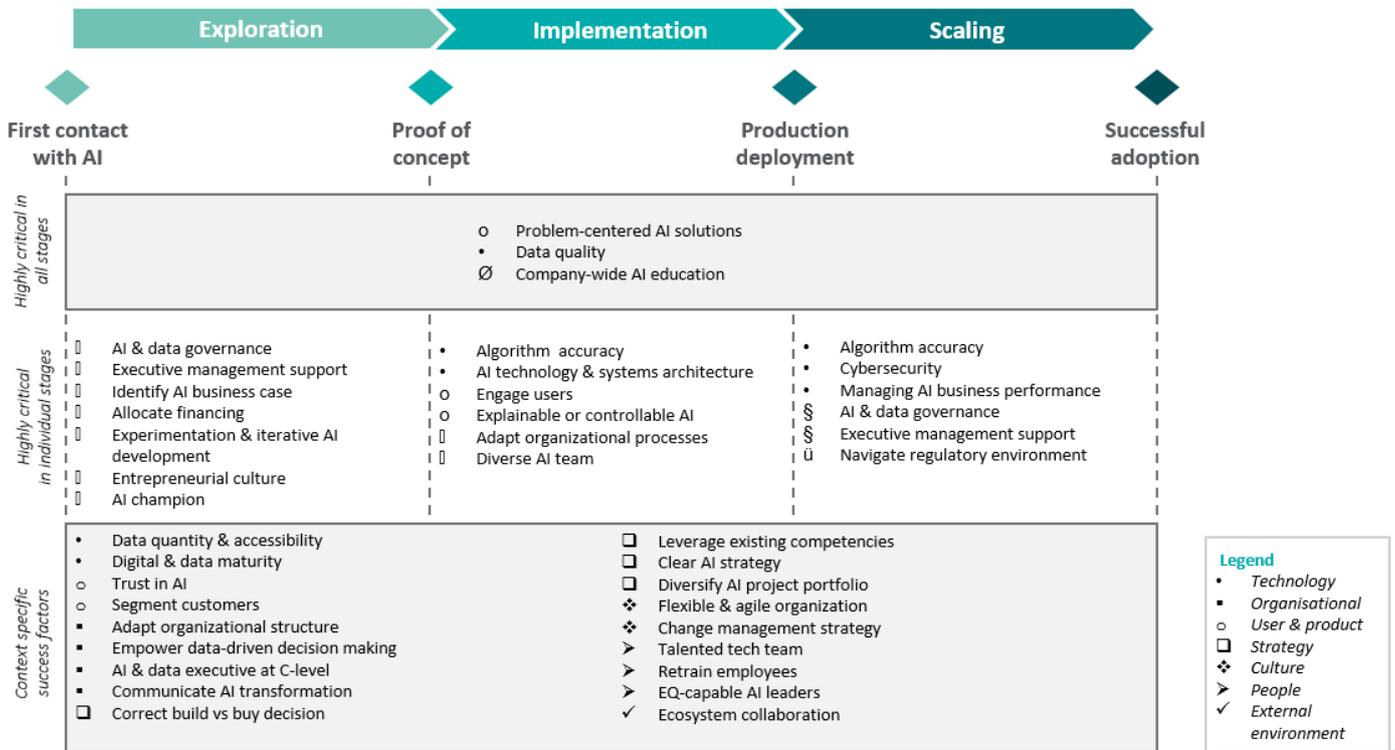
Context always matters.



Our study identified a wide range of critical success factors from literature and expert interviews. Although some were prioritized as generally applicable or more urgent, it is also found that the level of criticality of factors is highly context-oriented. For instance, the buy-or-build decision has an immense impact on the criticality of some factors. Context, therefore, always matters. Companies adopting AI must consider which factors related to their business decisions, sector, and environment are critical to success.



The final model: CSFs for AI Adoption



Research Methodology:

This study was undertaken as part of an MBA graduation project at Nyenrode Business Universiteit, guided by a Nyenrode AI/Digital transformation expert and was supported by the Deloitte Consulting sharing AI expertise, providing business insights and facilitating industry contacts.

The study was conducted using a multi-phase mixed-method approach combining quantitative and qualitative analysis. To represent the phases of AI adoption in a business, a three-stage AI adoption model was conceptualized (exploration, implementation, scaling), and critical success factors were identified, prioritized and ranked across each phase, drawing on extensive literature reviews, and input from more than 60 expert, drawn from industry, advisory and academia.

Gaining user trust by explainability or controllability?



AI is becoming more prevalent, powerful, and complex. AI decisions increasingly affect humans' lives, which creates a greater need to increase trust. However, explaining how AI arrives at an output (i.e., 'explainable AI') is often at the expense of some accuracy. However, does lack of trust come from not understanding or not being in control? Controllable AI provides a way for users to consent to use AI, notwithstanding the level of explainability. This stimulates adoption, and over time users learn by observing that the AI system's output is acceptable, leading to trust. A vital prerequisite at the outset of AI solution design is being clear about the acceptance and trust strategy.

As awareness and prevalence of AI increases, governance will be at the frontier.



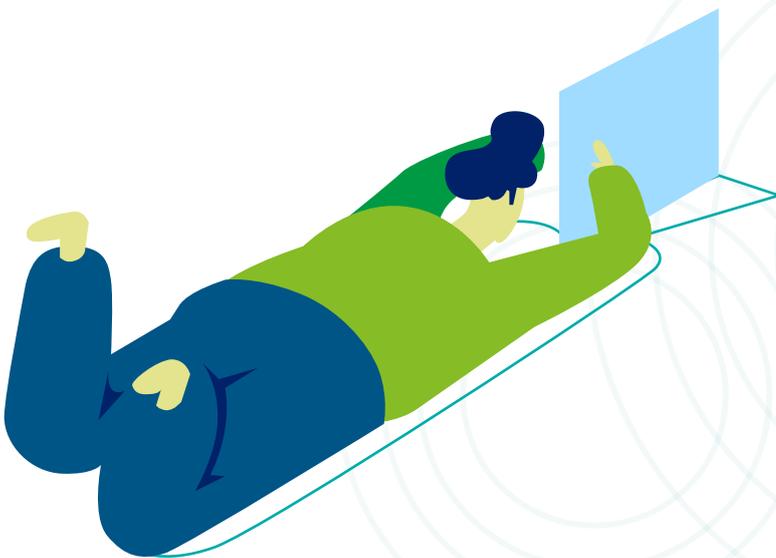
Users' and customers' perception matters. Strong internal governance could be the make or break of AI applications. Each data or algorithm scandal undermines trust. Internally this requires a strong focus on ethical, moral, and regulatory policies and practices for applying AI and data usage. Externally, regulation has not kept pace with the rapid emergence of AI; however, directives and regulations are sure to come. Operating within a safe space and pro-actively creating well-established eco-systems will ensure being on the right side in the future, for example, by the appointment of an external ethics board with varying stakeholders. Transparency towards users that some aspects will remain unknown until practically implemented also helps ward off mistrust.

Data begets more data in a constant virtuous cycle.



Even the best algorithm or solution needs engagement to grow. More users provide more data, which feeds the accuracy of the algorithm, leading to an increased likelihood of being adopted (the so-called network effect), attracting management support and funding for growth. In contrast, a vicious cycle exists for AI solutions that don't attract user engagement. Many factors, including education, trust, accuracy, and problem-driven attitude, and employee literacy, must be top of the company's agenda from the start.

In summary, our study identifies critical success factors across three common stages of AI adoption, that companies should start with setting the organizational groundwork, get the technology right, and capture and protect the value generated while scaling, and remain mindful of the context-specific factors and peculiarities that will influence successful AI adoption.



Contact:



Want to know more about AI and best practices to incorporate it in your business model? We are happy to help. Please contact:



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