

THE ROLE OF STARTUPS IN AI DEVELOPMENT AND ADOPTION

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WHITE PAPER

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INTRODUCTION

Most growing industries are being transformed by insurgent high-tech startups specializing in artificial intelligence. From capital markets to digital marketing, banking and insurance to manufacturing and wealth management, artificial intelligence is among the most promising technologies that make startup businesses grow and develop globally.

According to PwC, artificial intelligence will add \$15.7 trillion to the global economy within the next 10 years. I did a little research about the possible contribution of startups to the development and adoption of artificial intelligence and how to identify whether a given startup is ready for AI

technologies that can improve its operations, services, and activities efficiently.

My intent through this white paper is to encourage first-time founders, series entrepreneurs, and business visionaries to be as prepared as possible to take advantage of artificial intelligence development and adoption, while protecting their startups from associated technology challenges and risks.

Startups as drivers of AI development and adoption

As mentioned, AI technologies will transform and mold our world in majority industries and sectors. In this context, startups turn to be the trendsetters for the development and adoption of AI and other emerging technologies such as IoT and VR/AR that can create significant business growth.

As Oxford Insights forecasted, by 2030 artificial intelligence will bring significant changes at the societal level and the labor market will experience a revolution towards replacing some of the traditional jobs comprised of repetitive or predictable tasks with AI-enabled and intelligent robotic systems. Some predictions refer to such roles as Customer Service Representative, Truck Driver, and Lawyer, which are at risk of being either replaced or altered by widespread AI implementation and automation.

AI-ready startups will be the right place to create new work tasks, foster new roles and professions, and ultimately help people adjust to these changes. Also, AI-ready startups will play a particularly important role in investing in AI technologies and applying the benefits of artificial intelligence.

Emerging AI startups (like those in the Crunchbase list) typically accumulate extensive financial, human, technological, and data resources, the utilization of which is critical to successful AI development and adoption. For this reason, those high-tech startups with robust workforce capacity, IT infrastructure, and data security have gained the status of today's leading companies in the current development and adoption of AI technologies.

AI DEVELOPERS AND AI ADOPTERS

AI-ready startups can be divided into two groups: **Developers** (those that develop and innovate with AI) and **Adopters** (those that adopt AI-enabled systems once they become available).

According to Crunchbase's artificial intelligence startups database, the vast majority (around 85%) of AI developers are tiny and small businesses comprising up to 50 employees. Medium-sized AI developers (up to 250 employed individuals) take approximately 10%, and only a fraction of AI development startups are part of large corporations that employ more than 10,000 individuals.

As to AI adopters, there is no corresponding sharp division among startups specializing in AI adoption. Most of those startups use external AI technology platforms and services, such as Amazon Machine Learning, Microsoft AI, IBM Watson, and Google AI & ML platform to offer artificial intelligence adoption services and create specialized solutions and tools for business.

Although more giant corporations offer challenging and impressive R&D opportunities which attract top AI professionals and create a strong demand for AI skills and education, the development and adoption of artificial intelligence do not require relatively significant investments, and therefore there is a growing number of startups in this field.

CPU and GPU computational capacity can be bought from cloud service providers such as AWS or Google Cloud at affordable prices. The open-source tools and libraries for artificial intelligence and machine learning development such as TensorFlow and Torch are easily accessible. As a result, startups and small-to-medium businesses focusing on AI development and adoption have sprung up quickly in many industries, such as Healthcare, Retail, Finance, Media, and more.

AI startups have real opportunities to sustain in the fast-changing industries because artificial intelligence systems are in highly scalable, and business growth does not entail direct investments in human resources.

The heatmap shows AI startup deals across the various industries

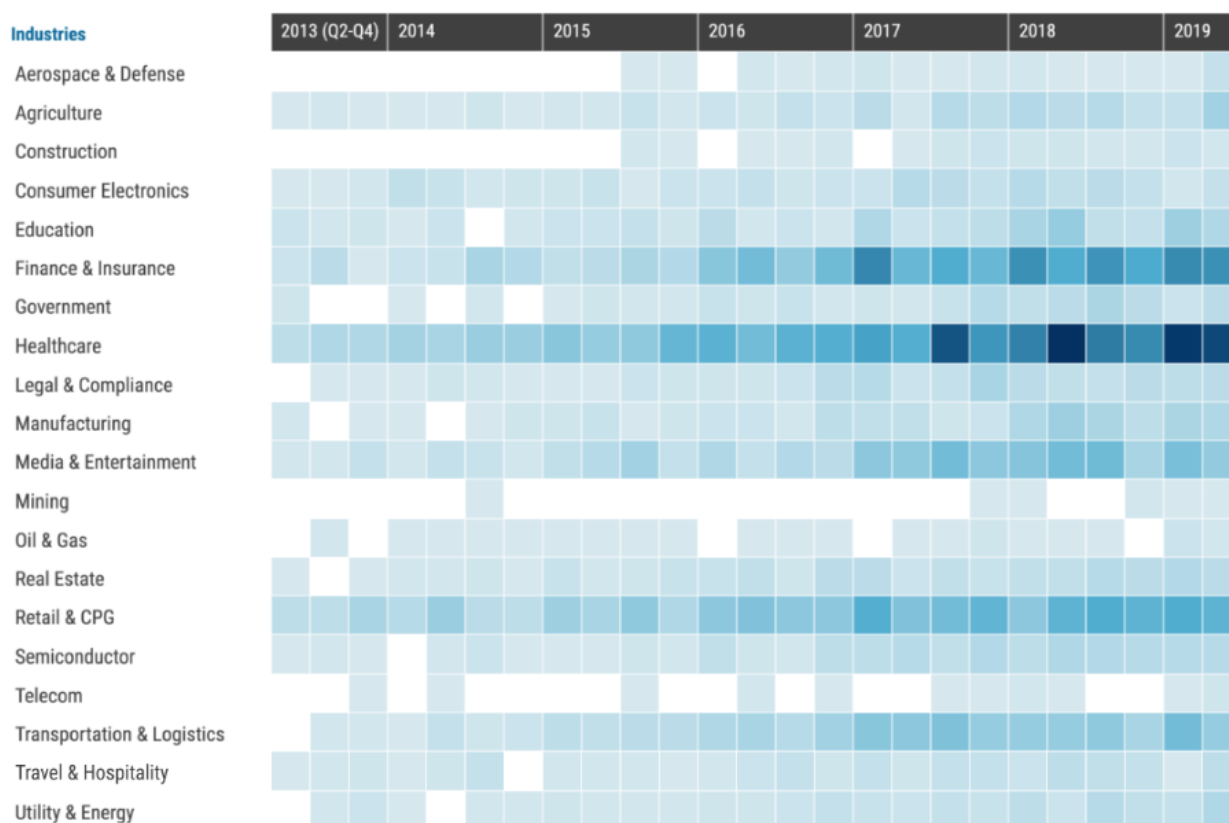


Image credit: cbinsights.com

Nine signs of AI readiness for startups

Many startups are already developing and adopting AI systems for their operations and delivery chains to improve business efficiency and provide high-quality services and products to customers. Every startup, however, should utilize AI technologies with great caution because if an AI system is implemented without due care for ethics and safety, the startup itself could be at best ineffective, and at worst, very dangerous.

Below are **nine signs** that help determine whether a given startup is ready to develop and/or adopt AI for its operations and delivery chain.

I broke down the signs into three groups: **Strategy, Infrastructure and data, and Knowledge and skills.**

STRATEGY

Emerging startups need to adopt AI in a way that ensures trust and safety, which in turn requires administrative and technological frameworks to be in place for managing and protecting business data such as the data about customers, employees, transactions, products and services, knowledge, and more. A comprehensive company-wide AI strategy is a good proxy for measuring the strengths of AI-focused business management.

Sign #1: Privacy and data protection

Existence of privacy and data protection policies shows whether a startup has put in place necessary regulations to protect the business data and make data regulations transparent (as it is the cornerstone of AI adoption in business).

Sign #2: Company-wide AI strategy

Existence of a coherent company-wide AI strategy displays a startup's readiness to make the most of AI technologies and mitigate the associated risks and uncertainties.

Sign #3: Startup's effectiveness

It helps perceive the quality of the products and services provided to consumers by a startup, the degree of the startup's independence from market fluctuations, the quality of strategy statement and implementation, and the startup's commitment to such strategies. An effective startup is more capable of delivering technological change in its operations and delivery chains.

INFRASTRUCTURE AND DATA

AI systems are built on robust server infrastructures and extensive datasets. Therefore, the quality and availability of hardware and data, as well as the ability of a company to work with these technological assets effectively, are critical to successful AI implementation.

Sign #4: Data availability

This measure displays how much data a startup can use for training algorithms and growing its AI capacity.

Sign #5: Use of advanced technology product

An AI-ready startup should foster innovation by using third-party superior technology products or/and developing its high-tech solutions in-house. This intent allows for business innovation and technical capacity to build and run AI systems.

Sign #6: Business digitalization

It reflects the level of adoption of digital technology assets and their strategic usage for new revenue and value-producing opportunities. It covers three dimensions: online services, workforce capacity, and hardware capacity.

KNOWLEDGE AND SKILLS

In order for a company to develop own AI systems or at least adopt third-parties in its operations, it should acquire and retain a sufficient pool of in-house or outsourced talents, which can be measured both through AI skills and knowledge.

Sign #7: Technology skills

It helps perceive the extent of digital skills and related education among a startup's employees.

Sign #8: Innovation

An AI-ready business will demonstrate both a robust managerial will and capacity to push for innovation. This readiness can be measured through how effectively the startup transforms its operations and activities by leveraging digital technologies, including artificial intelligence, Big Data, and business intelligence analytics.

Sign #9: Importance of AI knowledge to startup's vision of the future

AI knowledge acts as an indicator of a startup's desire to use emerging technologies as part of its vision for the future. It also acts as a driver for IT innovation and development in the startup.

