

HOW AI IS INSPIRING NEW STARTUP CONCEPTS AND DISRUPTING TRADITIONAL INDUSTRIES

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Abstract

AI is growing quickly, which is changing the way businesses work, speeding up new ideas, and opening up new opportunities in every area. This study examines the significant impact of AI on startups, emphasizing the opportunities it generates, the challenges it presents, and the complexities it introduces for both emerging and established enterprises. The study's findings show that AI's ability to analyse large datasets, automate difficult tasks, and come up with new ideas has led to the creation of new business models that have greatly improved operational efficiency and completely changed the way customers interact with businesses. Also, there are some challenges faced by enterprises while using AI, such as having trouble using AI because it costs more, retraining their workers, losing market share, having trouble integrating AI, and more. Artificial intelligence (AI) could help businesses grow, make better decisions, and compete better. However, it also raises concerns regarding its application, data privacy, and the potential displacement of traditional employment.

Keywords: Artificial Intelligence (AI), Startups, Industries, Disrupting

Introduction

AI (Artificial Intelligence) is now a major factor in deciding the future of new businesses. It is now an important part of modern business and is changing things at all levels (Bruno, 2024; Prasanth et al., 2023). With the Fourth Industrial Revolution, the effects of AI are becoming clearer in both developed and developing countries, where it is slowly changing how businesses work and how people do business (Schwab, Klaus & Park, Sang-Chul, 2017). AI has sped up the use of new strategies in business and management and made it easier to make choices. It has changed basic skills like how to keep customers happy and manage information. This change is a big deal for how businesses work, how they handle information, and how they supply customers value (Chalmers et al., 2020; Lee et al., 2019).

AI changes many industries, such as healthcare, finance, manufacturing, and retail. It automates routine tasks, finds useful information in large datasets, and helps people make better decisions (B. I. Lee et al., 2023; J. Lee et al., 2019; Monge & Soriano, 2023; Weng et al., 2024). Globally, businesses are reshaping themselves with technologies like natural language processing, machine learning, and computer vision (Kaplan & Haenlein, 2020). This trend has instigated established businesses to change. At the same time, new and adaptable AI startups say they will change the way businesses work and the industries look.

AI assists in the processing of information, including acquiring knowledge, making prudent decisions, assessing experiences, and engaging in logical reasoning by making machines and software that can learn, adapt to fit their surroundings, or do things that need human intelligence

(Shabbir & Anwer, 2018). Russell and Norvig (2012) stated that AI systems are complicated algorithms that try to mimic the way people think, see, understand natural language, and solve problems. Startups are usually the first to use new technology because they are flexible and adopt technology quickly, which helps them grow. AI helps them start new businesses and shake up old ones. But there are big problems in that only 10% of startups are expected to make it through the course. In this case, disruption stands for the significant and rapid changes introduced by new technologies such as AI. Traditional companies are forced to innovate rapidly or risk losing their competitive advantage (Ries, 2011; Christiansen, 1997).

The aim of this research is to analyze the impact of AI on both startups and established companies, while also addressing the ethical, legal, and resource-related issues associated with its adoption. This analysis aims to clarify the transformative impacts of AI technologies on traditional industries and the opportunities they offer for newcomers. It seeks to educate entrepreneurs, business executives, and policymakers as they traverse a rapidly changing environment.

Research Objective

To examine how Artificial Intelligence (AI) simultaneously inspires new startups and disrupts traditional industries.

Methodology

This study examines how artificial intelligence (AI) has impacted both startups and established industries using both qualitative and secondary research methods. The study's foundation is thematic content analysis, which is done manually, and examines numerous scholarly articles (Google Scholar, JSTOR, and Scopus), business reports, case studies, and insights into international markets that were released between 2017 and 2024.

Selection Criteria: Studies that explicitly address AI influence on startups or traditional industries are included.

Analytical Process (Thematic Content Analysis)

- Reading the selected document in depth
- Coding the repeated concepts like (AI opportunities, challenges, and disruption)
- By clustering code theme is developed
- Combining everything into a final theme that fits with the research goal

AI as a Catalyst for New Startup Concepts

Artificial intelligence excels at processing and analysing extensive datasets, enabling startups to identify opportunities for innovation by uncovering market gaps and consumer demands that conventional methods may overlook and analysing vast quantities of data to identify patterns, behaviours, and preferences (Perez - Vega et al., 2020). At a CAGR of 19.20%, the worldwide AI market is expected to rise from \$757.58 billion in 2025 to \$3,680.47 billion by 2034 (Fig. 1). Experts predict that the adoption of artificial intelligence, with its economic influence, will lead to a 21% net rise in US GDP by 2030. With 64% of companies stating increased productivity as a result of AI integration, artificial intelligence has been demonstrated to raise efficiency and productivity in many different sectors. Driven by beneficial government policies and technological innovation, the North American AI market alone will exceed \$235.63 billion in 2024.

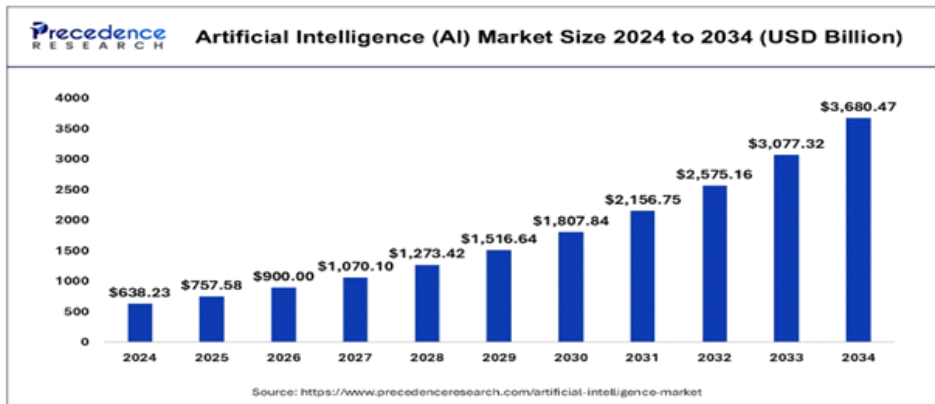


Figure 1: Showing Market Trend

Artificial intelligence can analyse consumer purchasing behaviour, social media activity, and emotional responses to identify unmet needs in product or service categories where existing options are inadequate (Davenport & Ronanki, 2018). This feature helps startups stand out in competitive markets by allowing them to focus on particular markets and provide customized solutions.

AI-powered solutions simplify the process of launching new companies by automating numerous crucial steps, including conducting market research, creating a business plan, and the initial stages of product development. This allows entrepreneurs to devote more time and resources to strategic innovation (Pfau & Rimpp, 2020). AI market research tools allow us to acquire accurate information more quickly by combining and analyzing all pertinent customer data at a highly sophisticated level of interaction. Businesses can use artificial intelligence (AI) to monitor social media trends in real time with a software platform like Crimson Hexagon. This permits them to learn about their customers' preferences and business practices (Gonzalez-Cabañas & Morcillo, 2016). An artificial intelligence tool like ChatGPT can even assist users in visualizing their future companies. An AI-powered tool called "The Grid" makes it easier than ever to design and develop websites. This saves startups a significant amount of liquid capital in addition to valuable time. AI has altered how startups provide customized products and services by using machine learning algorithms to examine how customers behave, what they like, and how they interact with the business in real time. Stitch Fix, an AI-driven fashion startup, employs machine learning to provide customers with tailored clothing recommendations based on their style preferences and previous purchases (Shin & Hwang, 2022). Similarly, Netflix employs artificial intelligence to recommend films and television series based on typical viewing patterns, thereby enhancing user engagement and satisfaction. Personalisation enhances the customer experience significantly, fostering greater loyalty and increasing the likelihood of continued patronage. This provides startups a competitive advantage over conventional companies that depend on more generic products.

Several new enterprises have successfully utilised AI to identify unmet needs and address market deficiencies. Coursera and Duolingo utilise AI to enhance personalised learning by adapting course content according to each student's pace and performance. PathAI employs AI to assist pathologists in achieving more precise disease diagnoses through the analysis of medical images (Ehteshami Bejnordi et al., 2017). A fintech startup named Zest AI employs machine learning to assess

creditworthiness. This enhances the equity and accessibility of lending by utilising non-traditional data, such as social media engagement and utility payments, to more accurately assess loan default risk compared to conventional credit scores (Maple et al., 2023).

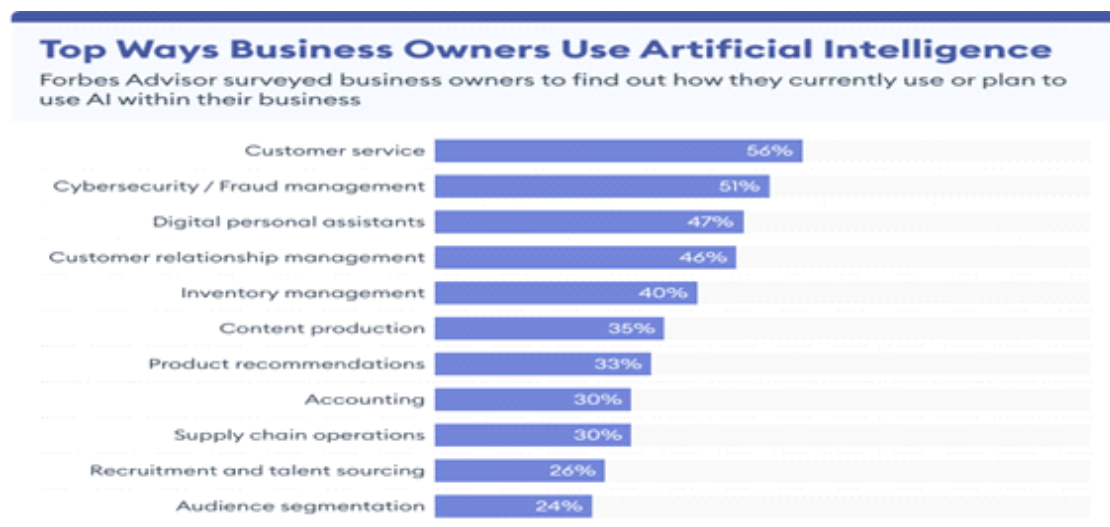


Figure 2: Showing how AI helps in different kinds of Activities

Disrupting Traditional Industries with AI

In conventional industries, AI is crucial for optimising operations and enhancing efficiency. AI-driven automation reduces human participation while enhancing productivity in sectors such as manufacturing, logistics, and customer service. In manufacturing, AI-powered robots and automation systems can perform repetitive tasks with greater speed and precision. Production can occur continuously, 24 hours a day, seven days a week, resulting in fewer errors. AI-driven predictive maintenance, such as Siemens' systems, enables real-time monitoring of manufacturing equipment, predicting failures and reducing downtime and maintenance expenses (Rojek et al., 2023). AI chatbots, like IBM's Watson, respond on their own to common customer questions. This helps businesses serve more customers and lets human workers concentrate on more complicated tasks.

Business operations are significantly changing with the help of AI. It can analyze large amounts of data and improve their strategies, which helps companies make better choices, leading to more success, new ideas, making accurate predictions, managing risks, and using resources more effectively.

In today's world, AI algorithms are used for examining market data to predict price movements and determine optimal trading times by financial industries like Kensho, Goldman Sachs' AI platform, which analyzes global financial markets in real time to assist users in making data-driven decisions (Aboshosha et al., 2023).

Additionally, AI improves logistics by providing the best delivery routes based on traffic and weather data and also helps businesses to understand how to use their resources effectively by predicting

demand and forecasting the appropriate inventory levels based on past sales data and industry trends.

AI is helping businesses operate more effectively. It is also enabling the creation of business models that once seemed impossible. AI-as-a-Service (AlaaS) exemplifies this shift. It allows companies to access powerful AI tools without needing to develop their own infrastructure. Platforms like Microsoft Azure AI and Amazon Web Services (AWS) simplify AI adoption for businesses. These platforms enable the use of machine learning, natural language processing, and predictive analytics without requiring AI experts (Ashta & Herrmann, 2021). The expansion of these platforms has fostered the growth of ecosystem-based models. For example, Uber employs AI algorithms to quickly identify optimal routes and connect drivers with passengers. These new business models are transforming traditional practices by offering services that are faster, cheaper, and more tailored to individual customers.

AI is also driving change in various fields. In finance, companies like Betterment and Wealthfront use AI-driven robo-advisors to provide automated investment guidance. This means that people who previously could not afford wealth management services can now access them (Au et al., 2021). In healthcare, AI is revolutionizing medical imaging. For instance, Zebra Medical Vision analyzes CT scans and MRIs using AI to detect diseases at an early stage. This not only improves diagnostic accuracy but also eases the workload for healthcare professionals (Ehteshami Bejnordi et al., 2017). Transportation is also evolving. Waymo is developing self-driving cars that utilize AI to plan routes intelligently, which could reduce traffic accidents and optimize fuel usage (Bimbraw, 2015). These examples illustrate how AI is profoundly altering the way businesses operate, creating new business models and transforming entire industries.

Table 1: A Comparative Table Outlining AI's Disruption Across Sectors

Sectors	Key Applications	Advantages	Challenges
Healthcare	Disease diagnosis, personalized medicine	Improved accuracy, faster treatments	Data privacy, ethical concerns
Finance	Fraud detection, algorithmic trading	Enhanced security, optimized investments	Cybersecurity risks, regulatory hurdles
Retail	Personalized recommendations, inventory management	Increased sales, better customer experience	Data dependency, implementation costs
Education	Adaptive learning platforms, virtual tutors	Personalized learning, accessibility	Digital divide, infrastructure disparities
Transportation	Autonomous vehicles, route optimization	Reduced accidents, fuel efficiency	Safety concerns, legal frameworks
Energy	Smart grids, predictive maintenance	Efficient resource use, reduced downtime	High initial costs, adoption barriers

Table 2: Effect of AI on Startups and Traditional Businesses

Aspects	Startups	Negative Impact on Traditional Businesses
Operational Costs	Reduced by up to 30% through AI-driven automation	Increased costs for adopting AI systems and retraining employees
Funding Growth	Global AI startups raised \$110 billion in 2024, a 62% increase from the previous year	Competition from AI-driven startups has led to reduced investment in traditional sectors
Market Expansion	AI-enabled startups scaled faster, achieving 100k+ users/month within a year	Loss of market share as AI startups disrupt traditional business models
Productivity	Improved efficiency by 40% through AI optimization tools	Struggles to integrate AI, leading to inefficient workflows
Revenue Generation	Revenue growth rates of AI startups exceed 25% annually in sectors like healthcare and finance	Traditional businesses face declining revenue due to outdated processes
Innovation Speed	Faster product development cycles, reducing timelines by 50%	Difficulty adapting to rapid innovation cycles set by AI startups
Ethical Concerns	AI startups face fewer legacy barriers to ethical AI adoption	Traditional businesses struggle with legacy systems and ethical AI integration
Workforce Impact	Creation of new roles in data science and AI development	Workforce displacement as AI replaces traditional jobs

Challenges and Considerations

AI brings many benefits, but it also brings some problems that need to be solved to ensure that it is used in a fair and responsible way. Some of these ethical problems include the need for rules and regulations, as well as the challenge of finding the right resources. These issues negatively affect both new and established businesses.

Ethical Implications

One of the primary ethical concerns about artificial intelligence (AI) is that its decision-making may not be fair to everyone. AI systems, especially those that rely on machines, need large datasets to help them learn. If these datasets contain biased or unrepresentative data, AI can reinforce and even worsen these biases. This issue is concerning in areas like hiring algorithms, facial recognition, and predictive policing, as biased AI systems can lead to unfair treatment of certain groups (O'Neil, 2016). For example, biased hiring algorithms can create an unfair process that favors men. This kind of bias often occurs when algorithms are trained on outdated data that reflects past hiring practices, which may have favored men for many roles. As a result, these algorithms might unintentionally make it harder for women to obtain jobs.

Another significant ethical issue is job loss. As AI systems improve, they automate more routine and repetitive tasks. This raises concerns that many jobs will disappear in fields like manufacturing, retail, and customer service. Some argue that AI will generate new industries and jobs, but this transition could be difficult. If there aren't enough programs to help them learn new skills, many workers could fall behind (Ford, 2015). Data privacy is also a critical moral issue. AI systems often use a lot of personal information, particularly those designed for consumer purposes. This data is collected and used, raising questions about how it is stored, who has access, and what it is used for. Following high-profile data breaches and the misuse of personal information, people are demanding stronger data protection and more ethical AI practices (Zuboff, 2019).

Regulation and Governance

As AI technologies improve faster than the rules and regulations can keep pace, many moral and social issues remain unresolved. We need solid regulatory and governance frameworks now to promote responsible AI development. These frameworks aim to make AI systems more accountable, open, and fair. For example, there is growing interest in creating explainable AI, which ensures that people can understand and question AI decisions (Doshi-Velez & Kim, 2017). Additionally, since AI technologies are used globally, countries must collaborate to ensure that AI laws are consistent across borders. Without coordinated governance, AI could be misused for harmful purposes, like building autonomous weapons or spying on many individuals. The EU's proposed AI Act has already made strides. Its goal is to regulate dangerous AI systems to protect people and society (European Commission, 2021). But rules that are too strict could stop people from coming up with new ideas, especially startups. It is extremely difficult for policymakers to strike a balance between novel concepts and the ethical application of AI. Startups struggle to comprehend and adhere to complex regulations, which hinders their capacity to compete with larger businesses that have greater resources and personnel.

Obtaining Resources

AI systems use a lot of datasets to learn and provide results, a challenge for startups because they do not have excess funds to access the data and recruit talent. Effective AI model training may be more difficult for startups due to their limited access to high-quality datasets, but big tech companies have an advantage due to their extensive user bases and data collection capabilities (Rosa & Bechler, 2024). For the development of AI models and to train them, a lot of processing power is needed, particularly for deep learning models. Startups, particularly new ones, lack the advanced computing power they require, even though some cloud computing services are reasonably priced (Sze et al., 2017). To attract top talent, big companies pay more and provide better benefits. The rapid pace of AI development makes this talent gap worse because AI professionals must constantly learn and change (Bessen et al., 2018; Manyika, 2017). Startups struggle to innovate or compete without skilled AI experts.

Conceptual Framework

The Dual-Impact AI Business Transformation Framework shows how AI can change things by automating tasks, analyzing large amounts of data, engaging customers more personally, and creating new business models. These channels help startups grow quickly, attract funding, stay competitive, and find the right solutions. In contrast, traditional industries face high integration costs, job loss, and outdated systems. This business ecosystem speeds up innovation, opens new markets, and supports data-driven decision-making. However, it also results in job loss, data privacy issues, and regulatory challenges. Policy and governance must ensure the responsible use of AI, according to the framework. It emphasizes balancing innovation with ethics and finding ways to reduce risks while promoting fair growth.

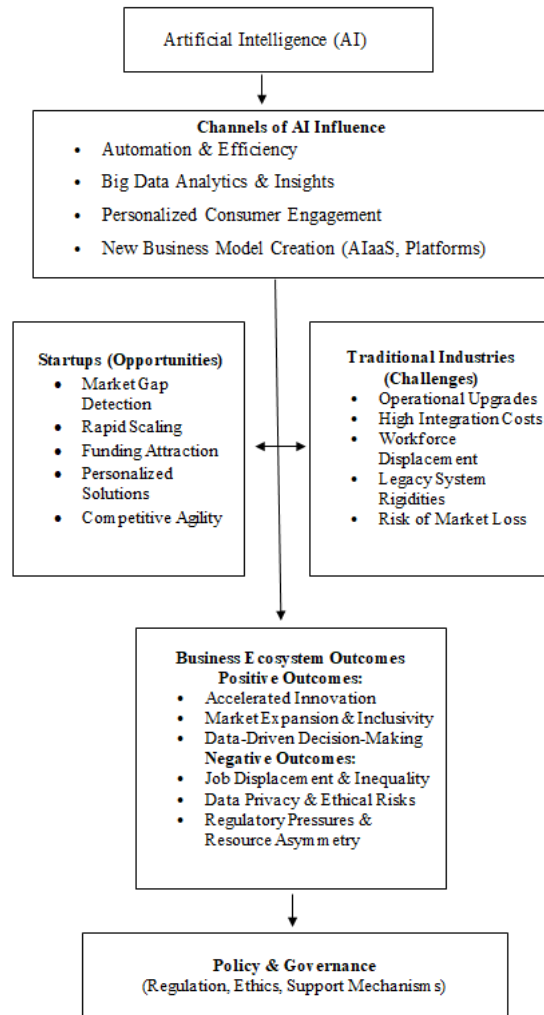


Figure 3. Dual-Impact AI Business Transformation Framework

Following organizations are incorporating AI for solving & challenging problems, accelerate development, and generate value highlight.

IBM Watson's Health

By enabling simpler organisation and analysis of enormous volumes of medical data, Watson Health has had a significant impact on the healthcare sector. Watson analyses unstructured data research papers, patient records, and clinical trial data by using artificial intelligence. Better outcomes follow from doctors making more individualised treatment recommendations and improved diagnoses based on this analysis. In this field, the smart use of artificial intelligence saves time and improves patient care by reducing the chances of human error in difficult decisions.

Google DeepMind's Alpha

Google DeepMind's AlphaFold represents an important advancement in computational biology. For years, scientists struggled to build protein structures. This AI model finally solves that problem. Understanding how proteins fold will help us discover new drugs and fight diseases. By addressing this issue, AlphaFold has accelerated pharmaceutical research. Researchers can now create new treatments more quickly and at a lower cost. Its effect on scientific discovery will continue to influence biology and medicine.

Sephora's AI chatbots

Sephora now interacts with its customers in a new way by using AI chatbots in its stores. These chatbots schedule appointments, suggest products based on customer preferences, and let users virtually try on makeup. This technology makes shopping more enjoyable and increases conversion rates, leading to higher sales. Sephora was one of the first retailers to use an AI customer support tool. Its use of AI shows how companies can balance growth and personalization.

Coca-Cola's AI-powered automation

Coca-Cola has begun using artificial intelligence to create new ideas and improve its business processes. Using AI for data analysis and supply chain management has helped the company operate more efficiently. AI models, for example, predict product demand and evaluate consumer preferences to design better marketing campaigns. This approach has made Coca-Cola more competitive and efficient in the market. It demonstrates how traditional business processes can benefit from artificial intelligence.

Conclusion

The study emphasises AI's ability to change things by sparking new business ideas and shaking up established industries. AI has helped startups solve challenging problems in retail, agriculture, healthcare, and finance. Startups are using AI's automation, data analysis, and predictive modelling skills to make things run more smoothly, offer more personalised solutions, and open up whole new markets. At the same time, AI is changing traditional industries by automating tasks, lowering costs, and making decision-making better through real-time data analysis and optimisation of operations (Kaplan and Haenlein, 2020). Despite AI's great potential, the study demonstrates how challenging it can be to use because of unequal access to resources, lax regulations, and ethical dilemmas.

To ensure that everyone benefits equally from AI, a strong governance framework is necessary to prevent AI abuse and promote responsible use and also carefully consider concerns like algorithmic bias, job loss, and data privacy. Additionally, startups struggle to get the data, processing power, and AI expertise to compete with larger, more established businesses (O'Neil, 2016; Rosa & Bechler, 2024).

Future Trajectory of AI in Business

AI will become more prevalent in business and transform industries as it advances because it has the potential to spur further innovation in fields such as personalized healthcare, self-driving cars, and AI-powered services in various industries. As artificial intelligence (AI) technologies like machine

learning, computer vision, and natural language processing advance, startups should push themselves to explore the possibilities.

However, businesses should provide training for workers, develop simple AI systems, and encourage cooperation among regulators, businesses, and tech experts for the changes (Ford, 2015; Doshi-Velez & Kim, 2017).

The increasing use of AI in traditional fields indicates a fundamental shift in business models. Companies that start using AI early on will probably be able to compete better. On the other hand, companies that don't want to change may have a hard time staying in business. AI-as-a-service (AlaaS) platforms are likely to grow in importance. They make it easier for small businesses and new businesses to use AI tools even if they don't have many AI experts on staff (Lee et al., 2019).

10. Call to Action

In summary, AI changes some fundamental characteristics of industries, both emerging and mature industries (Bessen et al., 2018). There's work to do to develop AI so that it can one day reach its full potential, having most of the benefits and few of the downsides, but research and responsible development should be accompanied by preparation for disruption. To address these ethical challenges, AI cannot be developed in isolation; it requires businesses, policymakers, and technologists to work together to ensure that the benefits of artificial intelligence reach everyone and develop appropriate regulations. If companies and startups want to remain competitive, they have to adapt fast. This requires remaining current with updates within AI as well and integrating new technology into their operations.

Finally, the global AI landscape should be welcoming to everyone by giving startups the tools, talent, and support they need to do well in an economy driven by AI. We should promote teamwork, creativity, and responsible AI development if we want to build a fair, innovative, and long-lasting future.

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