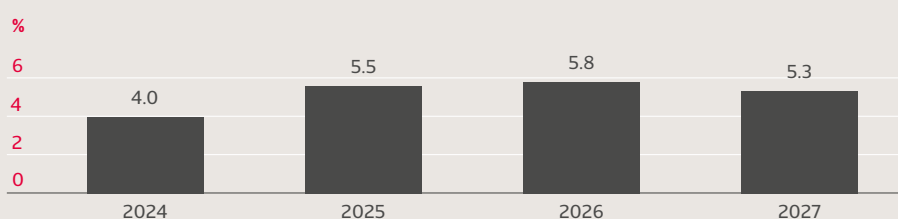


Will AI transform the way we all do business?

AI (Artificial Intelligence) is one of the most important drivers of growth within the ICT (Information and Communications Technology) industry. This is no small thing as ICT is currently enjoying one of the fastest growth trajectories in the world. The influence of AI on industry growth can be seen in the increased demand for AI in a wide range of applications. However, its impact also stretches far beyond this, with many businesses and segments experiencing an uptick in sales or demand because of their use of AI.

As the influence of AI is now being felt further beyond the walls of computing labs than ever before, we wanted to look more closely at the areas where AI's effect might be felt most keenly. How is AI driving rapid growth within the electronics and ICT industries? How is AI enhancing manufacturing processes? What risks and challenges could be posed by the rise of AI and how vulnerable is it to factors such as geopolitics and international trade relations?

Global output growth rates IT programming, consultancy, & information services



Source: Oxford Economics / Atradius.



What is AI and GenAI and why are they appearing on boardroom agendas right now?

It makes sense to start with a solid understanding of what AI is. An acronym for Artificial Intelligence, AI simply refers to a computer’s ability to perform cognitive functions that could previously only be done by humans. For example, AI is increasingly used in diagnostics applications where previously a doctor would be needed to read a scan. Today, an AI application can be ‘taught’ to see the signs a doctor may be looking for and identify these with a speed that a human would not be able to match.

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With transformative power available at the click of a button, businesses throughout the world are exploring the potential of AI.
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Kyle Kong

GenAI refers to Generative Artificial Intelligence and includes any AI that is capable of generating new forms of creative content including text, images, audio, code or video. ChatGPT and Bard (text) and DALL-E (images) are all examples of GenAI.

In the same way that AI can be found in healthcare settings to read scans, AI can also be used in business applications. These range from tracking and designing more efficient supply chain journeys, to analysing enormous amounts of data and even predicting business trends. With such transformative power available at the click of a button, it’s no wonder that businesses throughout the world are exploring the potential that AI could bring to their operations.

How important is AI in the development of computer chips for specialist applications?

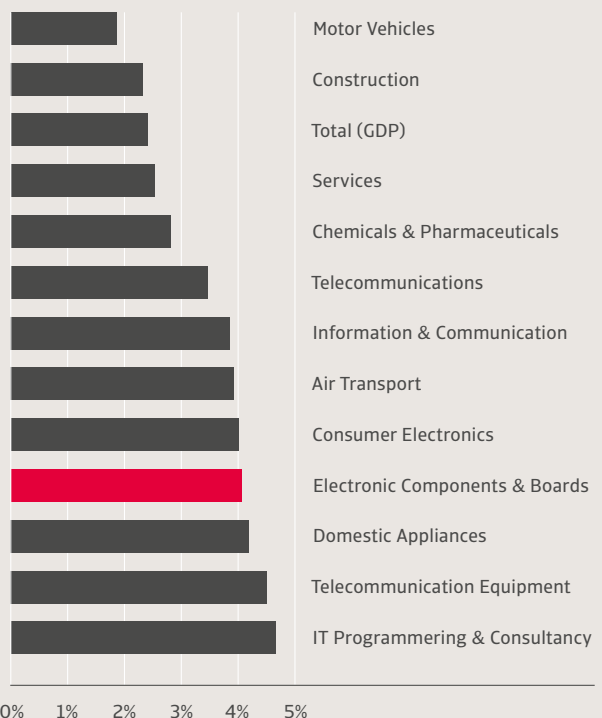
The ICT industry and AI are inextricably linked. This is especially apparent in the design and manufacture of specialised semiconductors. As AI’s generative capabilities grow, so does the need for faster, more efficient computer chips to support AI’s need for greater computing power. High-end processing chips are set to improve rapidly, enabling advancements in computing and processing power. Therefore electronic components and boards, which includes semiconductors, is expected to be one of the fastest growing sectors in the coming years.

What is the fastest and most efficient way to develop such AI chips? According to computing giants including Google and Nvidia, the answer is through the use of artificial intelligence itself. Nvidia’s ‘superchips’, the H100 and more recent upgrade H200, are sought after for their ability to accelerate the performance of computing products and support the demands of generative AI.

What’s more computer companies are increasingly producing their own AI chips. Google DeepMind uses AI to design specialised semiconductors. They point, in particular, to the efficiency savings AI brings where thousands of designs could be developed by AI in one week, whereas one human engineer could take several weeks to work on a single design. Amazon, Baidu, Meta, IBM, Huawei, Tesla and others have also reported production of their own AI chips.

Electronic components & boards among the fastest growing industrial sectors 2022-2035

Global: Long term growth prospects by sector (selected)



Gross Value Added, CAGR: 2022-2035

Source: Oxford Economics/Haver Analytics.

What is Edge Computing and how important will it be for AI and businesses in the future?

Edge Computing describes data storage and computing at, or close to, the site where it is produced, as opposed to being sent to a data centre for processing. It has been developed as an antidote to bandwidth issues that can impact real-time applications where speed is an issue. As the use of AI grows, so does the production of massive amounts of data, which presents the risk of network disruption when bandwidths begin to struggle with volume.

For example, a manufacturer may want to use AI with IoT (the Internet of Things) to monitor equipment performance in real time, detect issues and predict the need for maintenance to reduce downtime and increase productivity. The manufacturer may choose to operate with an Edge system to minimise latency issues or network limitations.

As the use of AI increases in the future, the deployment of Edge Computing solutions is also likely to grow and offer further support to timely decision-making.

How is AI enhancing the functionality (and potentially the selling features) of current consumer electronics?

AI can be found in a wide array of consumer electronics and applications from smart TVs and smartphones to GPS maps, virtual assistants and even real-time language translators. AI is often employed as the differentiator in an already crowded and deeply competitive market.

The latest Samsung Galaxy phones have an AI-powered camera that reduces shooting time in order to improve image quality. Floor cleaning robots and automated lawnmowers already use AI to support the identification of obstacles and to plan routes. Virtual Assistants including the Amazon Alexa, Google Home and Apple's Siri use GenAI and natural language processing to tune into human conversations and to respond to verbal cues.

For the most part, AI is being used in a bid to enhance consumer experience, with the newest tech ranging from products such as smartglasses that 'see' for the blind and self-driving cars.

Why is AI important to businesses selling servers, server space and cloud solutions?

The growing demand for consumer products, changing work habits, the growth of cloud-based technologies and other AI applications has resulted in an explosion in demand for

cloud services, data centres and more powerful servers. This has been further fuelled by companies seeking out specialised servers, high performance computing hardware and private cloud services to ensure security and business continuity in the event of potential network disruption. According to McKinsey, data centre power consumption in the US is expected to reach 35 gigawatts (GW) by 2030, up from 17 GW in 2022.

How does AI support businesses that manufacture electronics?

AI is increasingly used to enhance manufacturing processes. Product lifecycle management systems are being integrated with AI in order to optimise product design and deliver operational efficiencies. AI algorithms can quickly analyse vast quantities of data and note areas for design improvements and other productivity issues, such as the identification of skills gaps or the prediction of maintenance needs.

AI connected sensors in a manufacturing plant can be used as part of an IoT system. This can gather real-time data on everything from materials identification and tracking to environmental conditions such as temperature or humidity and production scheduling. The AI system can then use this data to predict issues or identify areas for improvement.

What is the role of AI in international relations, international trade and geopolitics?

Advanced semiconductors are critical to the development and operation of AI and have become increasingly central to talks on trade and international relations. The US president, Joe Biden, has explicitly stated that US export controls preventing the sale of advanced semiconductor chips to China are to limit China's ability to develop advanced military systems using AI. China rebuffs this and states the US is politicising trade and destabilising global supply chains.

While this could be seen as yet another example of ongoing trade tensions between the US and China, it could pose a risk to the sector. Japan and the Netherlands also currently have export controls in place that curb the supply of chips available to the Chinese market. As semiconductor chips are a vital component in the computers and electronic equipment, prolonged or additional distortions of trade flows could impede the information sector's growth. The latest data from the China's General Administration of Customs show that China's import of semiconductor equipment reached record levels as it stockpiled equipment prior to the implementation of the export bans.

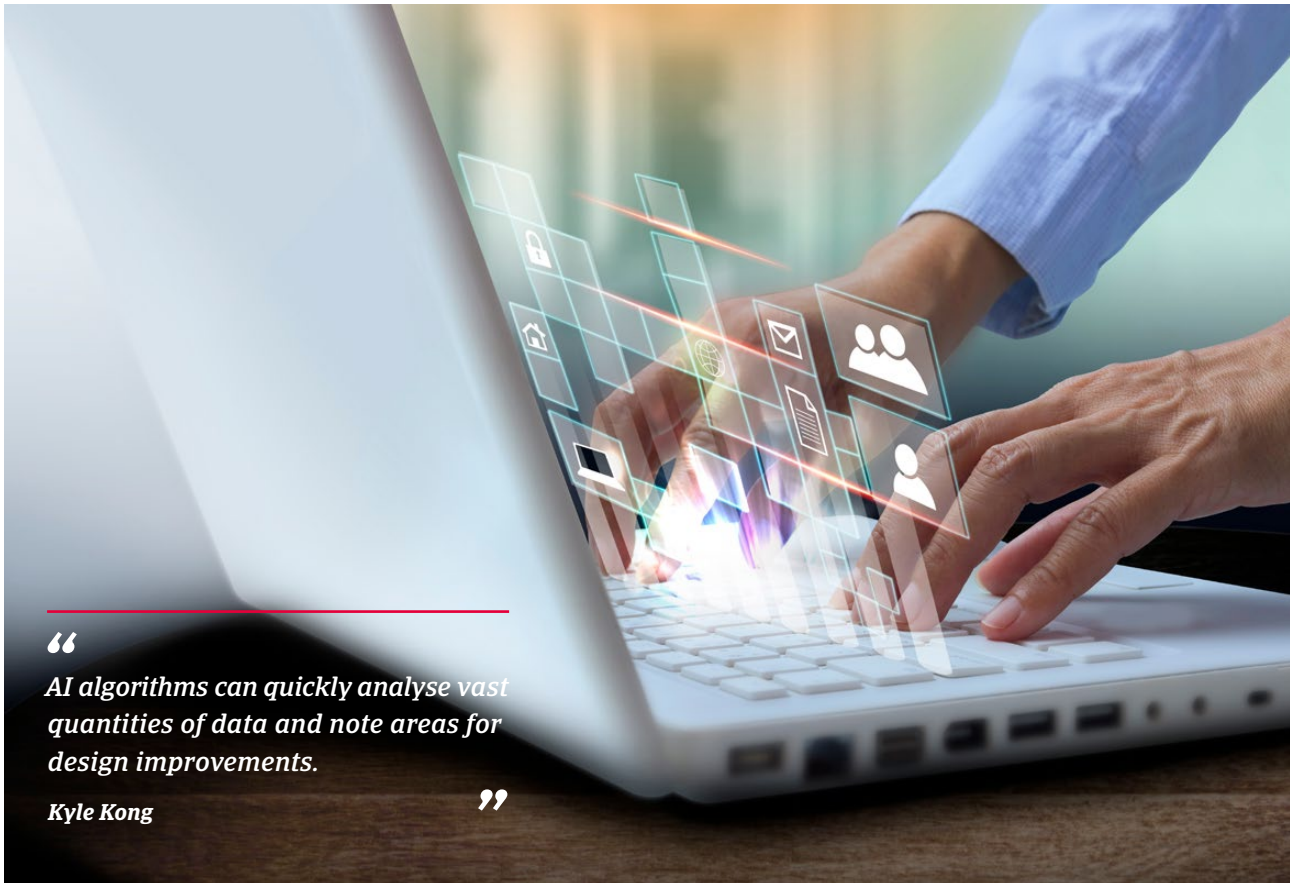


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Edge Computing solutions are likely to grow alongside the increased use of AI.

Kyle Kong

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What are the risks and potential challenges posed by AI growth?

The US-based non-profit organisation Center for AI Safety (CAIS) groups potential AI risks into four categories: malicious use, loss of control caused by the race to develop or adopt AI, organisational risks such as catastrophic accidents caused by an organisation's AI, rogue AIs that have drifted from their original goals.

The first laws designed to regulate AI are likely to be implemented by the EU. A provisional deal has been agreed by officials, including proposals to ban specific applications, and the European Parliament is voting on the Artificial Intelligence Act in 2024. In addition, China, the US and the UK are all developing their own AI legislation. In 2023 almost 30 countries signed the Bletchley Agreement to establish a shared understanding of the opportunities and risks posed by artificial intelligence.

The proposed legislation is being met with caution by the industry. Non-EU firms will need to consider whether it is worth operating in the EU, with the risk being that if they consider compliance to be too complex or costly they may choose to ignore the EU market. Other commentators, including the trade association Digital Europe, have expressed concerns about the cost of compliance with funds spent on lawyers rather than on AI engineers.

Outside of potential safety and compliance risks, the rise of AI could pose additional risks to businesses, especially in the area of cost. AI systems are complex and require skills and resources to develop, maintain and operate. It can be costly to use AI to enhance manufacturing processes. In addition, businesses that rely on AI could be at risk of algorithmic bias. If training data for machine learning is biased, it can lead to biased result with areas such as quality control at risk of missing things such as defects or contaminants.

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