

## The impact of Artificial Intelligence on Advancing Innovation within Commercial Enterprises

Benkaba Mohamed<sup>1</sup>

<sup>1</sup>PHD in Business Law, Tlemcen University (Algeria).

The E-mail Author: [benkabamohamed1@gmail.com](mailto:benkabamohamed1@gmail.com)

Received: 06/11/2024

Published: 14/04/2025

---

### Abstract:

Artificial intelligence represents a significant leap in the trajectory of technological innovation, manifested in the creation of artificial minds and systems that can simulate human cognitive abilities. This has had an impact on the business environment, particularly in the commercial sphere, opening up vast opportunities for companies to develop products and innovate services. However, these advanced capabilities raise questions about whether current regulatory frameworks are adequate in the face of emerging legal and commercial challenges.

While some advocate establishing new regulatory frameworks that align with the nature of this emerging technology, others prefer relying on existing rules with limited modifications. This creates a challenge in striking a balance between encouraging innovation and protecting commercial interests. Any changes to current legislation could disrupt the existing business environment, so careful consideration is needed to ensure that the maximum benefit is gained from artificial intelligence without compromising the stability of commercial transactions.

**Keywords:** Artificial intelligence, robotics, commercial enterprises, algorithms, process automation, innovation.

---

### Introduction:

Artificial intelligence is one of the most significant outcomes of the Fourth Industrial Revolution and is driving innovation in the digital age. The emergence of smart applications has impacted various aspects of life, particularly in commercial fields, reshaping the entire business landscape. AI contributes to serving humanity and enhancing its well-being by automating processes and improving efficiency through intelligent programs that think in ways similar to the human brain. This has enabled AI to open new horizons for commercial enterprises, allowing them to develop innovative products and services, improve customer experiences and gain a competitive advantage in the market.

Consequently, there have been notable developments in economic sectors, especially vital industries, in recent years, driven by the use of artificial intelligence

and robotics. This has occurred against the backdrop of big data emerging as a new leveraged tool for developed countries. Other applications have also become instrumental in advanced societies, particularly in the United States, Japan, China, France and Germany. This new technology has become a valuable asset to commercial companies seeking to innovate and grow in the digital era. However, it has also raised a host of philosophical, ethical and legal questions.

This study is timely, coming at the onset of the digital revolution and the widespread adoption of AI systems across all economic sectors, particularly in commerce, where the ability to create intelligent systems that mimic human thought has reached new heights. This advancement has enabled independent strategic decision-making. This study is important because it affirms AI's potential for innovation and creativity in the trade sector, particularly among commercial companies, and its ability to create unique offerings that can dominate global markets. In the coming years, we are likely to see powerful commercial enterprises emerge based on advanced technological methods, whether in aviation (e.g. General Electric), the automotive industry (e.g. Ford) or pharmaceuticals (e.g. Exentia). This will coincide with traditional, non-automated companies finding it increasingly difficult to enter the advanced business landscape.

From this perspective, the aim of this study is to highlight the theoretical framework of artificial intelligence, which is considered one of the key variables when studying innovation enhancement. Through this framework, commercial companies can determine their approach towards competitors in the market, improving their efficiency and services to ensure sustainability.

To achieve the study's objectives, the main research question was formulated as follows: How can artificial intelligence assist companies in accelerating the innovation process and reducing risks?

To fulfil these objectives and reach the best possible results, revealing the most important smart technologies used by commercial companies that align with their business environment specifics, we will rely on a descriptive analytical approach. This approach will focus on understanding the knowledge material related to the study's concepts, alongside an examination of the key artificial intelligence technologies adopted by companies to enhance their operations and develop new products and services, ultimately giving them a competitive advantage in the market.

Accordingly, the study is divided into two main sections. The first section covers the theoretical framework of artificial intelligence and innovation. The second section discusses how artificial intelligence is used to enhance innovation within commercial companies as a strategy to ensure superior long-term performance.

Section One: The Theoretical Framework of Artificial Intelligence and Innovation

Artificial intelligence and innovation are in a strong strategic partnership that propels commercial companies forward. AI provides systems and programmes that mimic human intelligence in order to perform tasks that require logical thinking. Meanwhile, innovation transforms new ideas into products and services that add value, enhance performance and meet market needs.

In this section, we will first address the concept of artificial intelligence (Subsection One), then the concept of innovation and its importance in commercial enterprises (Subsection Two), before exploring the relationship between artificial intelligence and innovation (Subsection Three).

### **Subsection One: The Concept of Artificial Intelligence**

Today, AI represents a pivotal technological phenomenon that transcends mere mechanisms to effect positive change. This development signifies a qualitative leap, reflecting machines' ability to simulate human intelligence. This capability is evident in various applications that perform routine tasks and complex operations traditionally reserved for human minds. This raises questions about the nature of intelligence itself and the limits of machines' ability to replicate it. Is artificial intelligence merely a simulation of human intelligence<sup>1</sup>, or does it represent an innovative new form that surpasses human capabilities?

Despite the increasing prevalence of AI technologies in various fields, particularly in business, ambiguity remains surrounding the concept of AI, specifically with regard to its types and applications in commercial transactions. This necessitates a deep understanding of the concept and its various dimensions. In this context, we will define artificial intelligence and review its most important types and applications within commercial enterprises, focusing particularly on commercial applications.

### **Subsection One: Definition of Artificial Intelligence**

Despite significant interest in artificial intelligence, particularly in academic circles, there is no widely accepted definition of the term. This has led scholars and researchers to offer a variety of definitions, each attempting to capture its essence and nature. These definitions often focus on AI from different perspectives, such as its status as a research field, an advanced independent system or a comparison to human intelligence. They also consider the various technologies and applications that comprise it.

In this context, the American computer scientist John McCarthy defined artificial intelligence as 'the science and engineering of making intelligent machines, especially

---

<sup>1</sup> - Stuart Russell. *Human Compatible: Artificial Intelligence and the Problem of Control*, Narrator Raphael Corkhill, Edition Penguin Publishing Group, 2019, P. 200.

smart computer programs'. McCarthy believed that artificial intelligence was concerned with using computers to understand human intelligence<sup>1</sup>.

Another definition describes artificial intelligence (AI) as a branch of computer science dedicated to developing systems capable of performing tasks traditionally associated with human intelligence, such as thinking and decision-making. However, this definition has been criticised, with some arguing that AI is limited to simulating specific aspects of human intelligence and represents a new model of intelligence that surpasses human capabilities<sup>2</sup>.

AI is also defined by its ability to perform cognitive tasks and functions typically carried out by humans, including thinking, decision-making, executing routine tasks and solving problems.

Some define artificial intelligence more narrowly as “weak artificial intelligence”, which is designed to perform a specific task such as searching the internet, driving a car or recognising a person’s face<sup>3</sup>.

Based on these definitions, we can define artificial intelligence as a term composed of two words: ‘intelligence’, referring to the capacity for thought, and ‘artificial’, meaning something created by humans or resulting from mimetic design. Thus, artificial intelligence can be characterised as a technology or machine designed to mimic human intelligence or replicate its capabilities in order to make decisions and accomplish tasks quickly<sup>4</sup>.

### **Subsection Two: Types of Artificial Intelligence**

The term ‘artificial intelligence’ is frequently encountered in contemporary society and represents a significant milestone in human history. It is a broad concept that encompasses the simulation of human intelligence by machines and computer systems. AI has evolved beyond merely executing programmed tasks to include the ability to analyse data deeply and make independent decisions, resulting in diverse classifications and capabilities. In this section, we will address the general classifications of artificial intelligence and summarise the main types used within commercial enterprises.

#### **First: Categories of artificial intelligence by capability**

1. Narrow AI (ANI): Also known as weak AI, this type is used to perform specific tasks such as chatbots, image recognition systems or text translation.

---

<sup>1</sup> -Dartmouth Symposium 1956: This seminar was a foundational event in the field of artificial intelligence, where John McCarthy defined artificial intelligence for the first time. [Link](<https://home.dartmouth.edu/about/artificial-intelligence-ai-coined-dartmouth>)

<sup>2</sup> -Margaret Boden. Artificial Intelligence: A Very Short Introduction, Oxford University Press, 2018, P. 77.

<sup>3</sup> -Pedro Domingos. The Master Algorithm: How the Quest for the Ultimate Learning Machine Will Remake Our World, Basic Books, United States, 2015, P. 78.

<sup>4</sup> -Stuart Russell and Peter Norvig. Artificial Intelligence: A Modern Approach, Pearson PLC, London, fourth edition, 2020, P. 123.

2. General AI (AGI): This type aims to develop systems capable of performing any intellectual task that humans can perform. AGI remains in the research and development phase.

3. Superintelligent AI (ASI): This type of AI surpasses human intelligence in all aspects, envisaging a future where machines could exceed human capabilities. This raises questions about the relationship between humans and machines<sup>1</sup>.

### **Second: Categories of Artificial Intelligence in Commercial Enterprises**

In addition to the general types of artificial intelligence, there are other classifications adopted within commercial companies based on their ability to improve performance and achieve competitive advantages in the market. These include automating production processes, using chatbots to enhance customer service and support, and providing security and monitoring to detect fraudulent transactions. Among the recognized types, we mention:

#### **A. Robotic Process Automation (RPA)**

Most commercial companies utilize artificial intelligence to perform tasks by employing software to automate duties typically carried out by employees. This includes automating various routine tasks such as scheduling appointments, processing invoices, tracking shipments from receipt to delivery, inventory management<sup>2</sup>, and improving supply chain efficiency.

#### **B. Generative AI**

This recent type of AI is associated with innovation and creativity. It aims to create personalised marketing content and, more importantly, design new products, such as new drug molecules, and develop natural conversations for customer service. Notable global companies that use generative AI to improve their services and attract more customers include:

Microsoft: A global technology company that manufactures and develops software. Microsoft uses generative AI in products such as Microsoft Copilot, which helps users to create content, summarise documents, produce images and videos, and respond to enquiries within applications such as Microsoft 365 and Teams<sup>3</sup>.

Expedia: As an online travel company, Expedia uses generative AI to offer booking services for flights, hotels and car rentals, thereby improving customer experience. Its website can answer customer questions based on their travel history and preferences, offering personalised, relevant responses<sup>4</sup>.

---

<sup>1</sup>- Nick Bostrom. Superintelligence: Paths, Dangers, Strategies, Oxford University Press, 2014, P. 88.

<sup>2</sup>- Here we find Amazon using Warehouse Management Systems (WMS) that integrate with technologies like barcode and RFID to track shipments within the warehouse. It also uses Transportation Management Systems (TMS) to track shipments during transport and provide information about the shipment's location and expected delivery time.

<sup>3</sup>- Digital Economy Gateway: Microsoft launches the Copilot Chat application for businesses to enhance AI adoption, available on the site: [Link](<https://followict.news/%D9%86%D8%B4%D8%B1%D8%A9-%D8%A3%D8%AE%D8%A8%D8%A7%D8%B1-%D8%A7%D9%84%D8%B0%D9%83%D8%A7%D8%A1-%D8%A7%D9%84%D8%A7%D8%B5%D8%B7%D9%86%D8%A7%D8%B9%D9%8A-14/>)

<sup>4</sup>- Expedia and New AI Features: Available on the site: [Link](<https://www.tech-mag.net/%d8%b4%d8%b1%d9%83%d8%a9-expedia-%d8%aa%d8%b6%d9%8a%d9%81->)

- Bentley Systems: A software company focused on construction and engineering projects, Bentley Systems continually seeks to innovate and excel in its creations. The company uses generative AI in its construction software to analyse structures and building codes, helping to create more efficient designs in the future<sup>1</sup>.

- Ooredoo: The global telecommunications group has collaborated with NVIDIA to deploy thousands of NVIDIA Tensor Core GPUs in AI-enhanced data centres to support the region. This collaboration aims to meet the growing demand for accelerated computing infrastructure, fostering innovation and investment in advanced AI models<sup>2</sup>.

**SAP:** The German software company SAP uses generative AI to produce personalised marketing content, helping businesses to communicate more effectively with their customers<sup>3</sup>.

#### **D. Machine learning**

Machine learning is a set of techniques and algorithms used by commercial companies to analyse large amounts of customer and sales data, extracting patterns and insights to inform decision-making. It is clear, therefore, that data is crucial for operating machine learning, which is integrated into existing company systems and software, such as Customer Relationship Management (CRM)<sup>4</sup> and Enterprise Resource Planning (ERP)<sup>5</sup> systems, as well as e-commerce platforms. Key applications of machine learning in commercial enterprises include:

- Sales forecasting: Predicting product sales, especially for items experiencing increased customer demand, and forecasting market trends.

Customer behaviour analysis: Analysing customer behaviour to provide personalised experiences.

- Fraud detection: Identifying fraudulent financial transactions, particularly credit card fraud, by using machine learning programs to analyse spending patterns and detect abnormal activity.

#### **E. Natural Language Processing (NLP):**

---

<https://www.bentley.com/>

<sup>1</sup>- For more on Bentley Systems: Please visit the site: [Link](<https://www.bentley.com/>)

<sup>2</sup>- Ooredoo Group drives AI revolution in the MENA region through collaboration with NVIDIA. See the link available on the site:

[Link]([https://www.ooredoo.com/ar/media/news\\_view/ar%D9%85%D8%AC%D9%85%D9%88%D8%B9%D8%A9-ooredoo-%D8%AA%D8%AF%D9%81%D8%B9-%D8%AB%D9%88%D8%B1%D8%A9-%D8%A7%D9%84%D8%B0%D9%83%D8%A7%D8%A1-%D8%A7%D9%84%D8%A7%D8%B5%D8%B7%D9%86%D8%A7%D8%B9%D9%8A-%D9%81/](https://www.ooredoo.com/ar/media/news_view/ar%D9%85%D8%AC%D9%85%D9%88%D8%B9%D8%A9-ooredoo-%D8%AA%D8%AF%D9%81%D8%B9-%D8%AB%D9%88%D8%B1%D8%A9-%D8%A7%D9%84%D8%B0%D9%83%D8%A7%D8%A1-%D8%A7%D9%84%D8%A7%D8%B5%D8%B7%D9%86%D8%A7%D8%B9%D9%8A-%D9%81/))

<sup>3</sup>- Official SAP site: Available at the link: [Link](<https://www.csiamerica.com/products/sap2000>)

<sup>4</sup>- Customer Relationship Management (CRM): A technical tool that allows industrial companies to track customer orders, plan production, and monitor product sales to improve performance and efficiency and increase competitiveness.

<sup>5</sup>- Lwati Khatima: Enterprise Resource Planning System as a Modern Management Tool, Algerian Journal of Economic and Administrative Studies, Vol. 01, No. 01, 2021, p. 37.

Natural language processing (NLP) is a branch of artificial intelligence that enables computers to understand and interpret human language. Its applications in commercial enterprises include:

**Chatbots:** Companies use chatbots to provide customer service, for example, telecommunications firms use them to respond to customer enquiries about bills and services 24/7.

**Social media analysis:** Analysing social media posts and customer comments to understand opinions about products and services.

**Text translation and data extraction:** Companies use NLP technology to translate texts and documents, and to extract data through neural networks that are trained to retain customer data, such as purchase records and browsing behaviour. This data is then collected and stored for use by these models. Notable companies using NLP technology include Google (as a search engine), Amazon and IBM, the latter of which relies heavily on NLP in its services and products, particularly the Watson system<sup>1</sup>.

In conclusion, understanding the different types of artificial intelligence helps us to appreciate their capabilities and diverse applications. This opens up new avenues for innovation and development in a variety of fields. These types of AI are transforming how companies operate, enhancing efficiency, boosting revenues and improving customer experience.

## **Section Two: The Concept of Innovation and Its Importance in Commercial Enterprises**

Technological advances in the business world have given rise to many cutting-edge technologies that are the primary drivers of innovation and stability for global companies operating in a competitive environment. Such companies are keen to adopt the latest technologies, including artificial intelligence, big data analytics and the Internet of Things, in order to develop innovative products and services that meet the ever-changing needs of their customers. Those investing in technological innovation have demonstrated their ability to gain a competitive edge, increase their market share and generate substantial profits. This indicates that innovation plays a crucial role in the success of commercial enterprises in the digital age.

Accordingly, this subsection will first attempt to define the term ‘innovation’ (see Subsection One) and then highlight the role of innovation in achieving a competitive advantage for companies (see Subsection Two).

### **Subsection One: Definition of Innovation**

The scope of the definition of innovation has expanded to encompass social business models and innovations. In the context of commercial enterprises, innovation refers to the generation of new ideas within the organization and the efforts to implement and develop them, from the initial idea generation to successful application.

---

<sup>1</sup>- Kariman Sadqi Abdul Aziz: Investing in AI Technologies to Develop Research and Information Retrieval Methods, Egypt, Vol. 05, No. 16, 2023, p. 101.

According to economist Joseph Schumpeter, the concept of innovation fundamentally relies on radical technological changes that significantly enhance productivity, stimulate economic growth, create businesses across various vital industrial and service sectors, and improve social welfare<sup>1</sup>.

Professor David Jan defines innovation as the application and realisation of new ideas to achieve added value, benefiting both society and the economy<sup>2</sup>.

In his book *Innovation*, Professor David Jan defines innovation as the application and realisation of new ideas to create added value for both society and the economy. He emphasises that successful innovation requires continuous improvement of products and services to keep pace with ongoing market changes.

Thus, it is clear that innovation is a crucial driver of success and sustainability for commercial enterprises, granting them a competitive advantage over traditional companies in the face of rapid market changes and evolving customer expectations. Companies strive for innovation in order to adapt to these changes and leverage technology. This leads us to assert that innovation is a fundamental renewal process that is essential for a company's survival and continuity.

It is important to note that, in today's business landscape, relying solely on creativity and development is no longer sufficient. They must also consider the benefits that innovative ideas bring to the company. This highlights the need to protect innovation through patents, trademarks and copyright, as these rights give companies the right to use their innovations, thus encouraging investment in research and development. However, this raises the issue of corporate responsibility regarding innovations that may harm consumers or the environment<sup>3</sup>. Companies must therefore conduct risk assessments before launching any new innovation to ensure consumer safety and protect competition.

### **Machine learning**

Machine learning is a set of techniques and algorithms used by commercial companies to analyse large amounts of customer and sales data, extracting patterns and insights to inform decision-making. It is clear, therefore, that data is crucial for operating machine learning, which is integrated into existing company systems and software, such as Customer Relationship Management (CRM) and Enterprise Resource Planning (ERP) systems, as well as e-commerce platforms. Key applications of machine learning in commercial enterprises include:

---

<sup>1</sup>- Kanaan Abdul Ghafour Al-Maamari: *Economics of Agricultural Production*, 1st edition, Dar Wael for Publishing, Jordan, 2010, p. 78.

<sup>2</sup>- David Jean is a professor and president of the Centre for Innovation and Entrepreneurship at Imperial College London. He also holds an executive position in a major international engineering construction company, Laing Orrock Public Limited, and is Chairman of "Think, Play, Du Group." Innovation is one of David Jean's prominent works, exploring the concept of innovation and its profound impact on our lives and work.

<sup>3</sup>- Atallah Fahd Sarhan: *The Role of Innovation and Creative Marketing in Achieving Competitive Advantage for Jordanian Commercial Banks*, PhD Dissertation in Marketing Philosophy, College of Financial Studies, University of Amman, 2005, p. 102.

- Sales forecasting: Predicting product sales, especially for items experiencing increased customer demand, and forecasting market trends.

Customer behaviour analysis: Analysing customer behaviour to provide personalised experiences.

- Fraud detection: Identifying fraudulent financial transactions, particularly credit card fraud, by using machine learning programs to analyse spending patterns and detect abnormal activity.

In this context, innovation plays a crucial role in creating a competitive advantage, especially given the challenges posed by today's economic conditions, including intensified competition, rapid technological advancement, changing consumer preferences and shorter product life cycles.

In this context, innovation is crucial for creating a competitive advantage, particularly in light of the challenges posed by today's economic conditions. These include intensified competition, rapid technological advancement, changing consumer preferences and shorter product life cycles. Recognising this, companies are adopting innovative strategies to deliver high-quality, low-cost products, enabling them to excel and remain competitive<sup>1</sup>.

Thus, developing new products or improving existing ones has become essential for enhancing companies' competitive capabilities and increasing their market share compared to competing firms. In this regard, marketing innovation has emerged as an effective tool for achieving a competitive advantage. Pricing innovation has become increasingly important in recent years as price is one of the most critical factors affecting companies' revenues and sales volume, and therefore their profitability.

### **Subsection Three: The Relationship Between Artificial Intelligence and Innovation**

Artificial intelligence is experiencing unprecedented development, driven by rapid technological advancements that have led to the emergence of various techniques such as deep learning and artificial neural networks. These technologies have enabled systems to learn and adapt, paving the way for innovations that we could not have imagined before.

Today, artificial intelligence represents the pinnacle of technological innovation, embodying the ability to simulate human cognition and transform data into intelligent decisions. This unique field has opened vast opportunities for developing innovative solutions across various domains, redefining our interaction with technology and the world around us.

The core of the relationship between artificial intelligence and innovation lies in its ability to empower commercial companies to enhance their performance, offer diverse services to their customers, and provide immediate and effective support.

---

<sup>1</sup> -Salim Botros Jalda and Zainab Munir Aboudi: *Managing Creativity and Innovation*, Dar Kunooz for Publishing, Jordan, 1st edition, 2006, p. 45.

Innovation, in turn, works to improve the internal processes of a company by fostering the creation and implementation of new ideas within the business landscape. This is evident in e-commerce companies that utilize AI-powered recommendation systems to provide personalized product suggestions to customers. Similarly, Tesla Motors employs artificial intelligence to innovate and develop self-driving cars and enhance the performance of its electric vehicles<sup>1</sup>.

This brings us to discuss the extent to which artificial intelligence contributes to stimulating innovation within various commercial enterprises (Subsection One) through a range of advanced technologies it relies on (Subsection Two).

### **Subsection One: The Contribution of Artificial Intelligence to Stimulating Innovation**

Artificial intelligence plays a significant role in creating an innovative environment within global commercial enterprises. The focus is on continuous creativity and development of services and products to secure a prominent market position without facing competition. This is evidenced by the fact that companies, especially multinationals, are using artificial intelligence in various innovation methods to drive their business operations. AI helps employees and customers focus on creative tasks and develop strategic ideas, while handling repetitive routine tasks.

A prime example of this is chatbots, which respond to customer queries and provide round-the-clock technical support.

In recent years, there has been a growing interest in technology conferences focusing on artificial intelligence and innovation. In this context, Vodafone has taken a leading role in fostering collaboration by bringing together experts and specialists in AI by participating in technology conferences that bring together developers, investors and start-ups to create an incubation environment for innovation. For example, Vodafone Egypt launched a hackathon for AI technologies aimed at assisting people with disabilities. Similarly, Vodafone Oman collaborated with Elefatos to enhance recruitment efforts using AI, while Vodafone Qatar won three awards at the 8th Global Artificial Intelligence and Analytics Summit in 2024<sup>2</sup>.

Regarding European efforts to enhance cooperation in AI and innovation, Merkel highlighted that Germany and France are working towards close cooperation in AI and strategic projects, culminating in the Paris Summit on AI, which will be co-chaired with India<sup>3</sup> on 10-11 February 2025. Technological innovations, especially those related to

---

<sup>1</sup>- Tesla, founded in 2003, is an American leader in the electric vehicle industry and sustainable energy technologies. The company was founded as "Tesla Motors" by Martin Eberhard and Mark Training. Elon Musk joined in 2004, became CEO in 2008, and led it to a broader vision beyond just electric vehicles.

<sup>2</sup>- For more information, see the link available at: [Link](<https://m.lusailnews.net/article/155412>)

<sup>3</sup>- AI Summit on February 10-11, 2025: Available at the following site: [Link](<https://dz.ambafrance.org/%D9%85%D8%A4%D8%AA%D9%85%D8%B1-%D8%A7%D9%84%D9%82%D9%85%D8%A9-%D8%A8%D8%B4%D8%A3%D9%86->)

artificial intelligence and big data, herald a future in which traditional economic relationships may collapse due to a radical shift in trade relations between companies, suggesting a reconfiguration of the global economy.

### **Subsection Two: Technologies on which AI relies to support innovation**

Artificial Intelligence relies on a number of foundational technologies that enable its operation. In order to support innovation, it is important to focus on the technological aspects through which AI operates. We have previously detailed the key technologies that AI relies on to support innovation, including machine learning, natural language processing, computer vision, and generative AI, among others.

#### **Real-world examples of AI technologies**

1. Autonomous vehicles: Companies such as Waymo, a subsidiary of Google, are using AI to innovate and develop self-driving cars. They use sensor technology to measure distances, and computer vision techniques to ensure safe navigation in urban environments<sup>1</sup>.

2. Telecommunications: Recent news has revealed that Tesla is planning to launch the Tesla Model Pi smartphone, which will incorporate solar charging technology and global internet connectivity via satellite. This development aims to address connectivity issues in remote areas and marks a significant advancement in the smartphone industry<sup>2</sup>.

3. Product development: In particular, AI technologies are used by companies to analyse customer data to understand their needs and preferences. This analysis helps to innovate and design new products that meet market demands, a topic we will discuss in more detail in the next section.

### **Section Two: Applications of artificial intelligence to enhance innovation in commercial enterprises**

Companies that embrace innovation based on the latest advanced technologies ensure their leading position in global markets and achieve sustainable growth in our digital age. We will explore this as follows:

#### **Subsection One: The role of AI technologies in improving business processes**

The technologies that underpin artificial intelligence are what make its applications within commercial enterprises possible. In other words, these technologies summarise the technological aspect of AI to achieve the commercial objectives of competing companies in the business environment. This can only be achieved by

---

[%D8%A7%D9%84%D8%B9%D9%85%D9%84-%D9%81%D9%8A-%D9%85%D8%AC%D8%A7%D9%84-%D8%A7%D9%84%D8%B0%D9%83%D8%A7%D8%A1\)](https://www.autoexpress-eg.com/2024/08/25/%D9%88%D8%A7%D9%8A%D9%85%D9%88-waymo-%D8%B3%D9%8A%D8%A7%D8%B1%D8%A7%D8%AA-%D8%A3%D8%AC%D8%B1%D8%A9-%D8%B0%D8%A7%D8%AA%D9%8A%D8%A9-%D8%A7%D9%84%D9%82%D9%8A%D8%A7%D8%AF%D8%A9-%D8%AA%D9%88/)

<sup>1</sup>- Waymo Company for Developing Self-Driving Cars:For more, see the site available at the following link: [Link](<https://www.autoexpress-eg.com/2024/08/25/%D9%88%D8%A7%D9%8A%D9%85%D9%88-waymo-%D8%B3%D9%8A%D8%A7%D8%B1%D8%A7%D8%AA-%D8%A3%D8%AC%D8%B1%D8%A9-%D8%B0%D8%A7%D8%AA%D9%8A%D8%A9-%D8%A7%D9%84%D9%82%D9%8A%D8%A7%D8%AF%D8%A9-%D8%AA%D9%88/>)

<sup>2</sup>- Lwati Khatima: Previous Reference. p. 40.

understanding the foundation on which the aforementioned applications (technologies) are built in relation to achieving profitable outcomes.

Therefore, the role of these technologies is summarised in helping commercial companies to analyse data to make informed decisions (subsection one) and to improve the quality of their services (subsection two).

### **Subsection One: Data Analysis and Decision-Making**

Data analysis is fundamental to making informed and significant decisions within commercial enterprises. This includes information about competitors, economic conditions affecting the market, sales data, points of sale and financial information relating to the company<sup>1</sup>.

Processing all this data requires smart programs and systems, reducing human error and enabling the management of large datasets from which vital insights can be drawn to identify a company's strengths and weaknesses and forecast future trends. Artificial intelligence technologies play a key role here, processing vast amounts of data to enhance performance. AI algorithms can analyse complex information with a speed and accuracy that surpasses human capabilities<sup>2</sup>.

In e-commerce, for example, companies are using AI algorithms to analyse customers' browsing data and purchase history to predict which products they are likely to buy. Major retailers with e-commerce platforms, such as Target, rely on this analysis to offer personalised promotions, thereby increasing sales and customer satisfaction<sup>3</sup>.

Similarly, airlines analyse weather data, aircraft movements and previous delays to predict the likelihood of flight delays and inform passengers in advance. This proactive approach, known as predictive analytics, allows companies to take action to minimise disruption. AI technologies help make proactive decisions before incidents occur, particularly in sensitive sectors that require intelligent systems to prevent suspicious activity, such as financial services.

In banking, for example, there is an urgent need for intelligent systems powered by AI to detect fraud by analysing various financial transactions and identifying suspicious activity. This not only helps protect customers, but also reduces financial losses. Banks are using AI for fraud detection and risk assessment, illustrating the critical role of AI in improving decision-making across industries<sup>4</sup>.

### **Sub-section two: Improving service quality and marketing**

---

<sup>1</sup>- Margaret Boden, p. 80, Op. cit.

<sup>2</sup>- Qutaiba Mazen Abdul Majid: Using Artificial Intelligence in Electrical Engineering Applications, A Comparative Study, Master's Thesis, Arab Academy University, Denmark, 2009, p. 54.

<sup>3</sup>- Target is a major American retail company founded in 1902, headquartered in Minneapolis, Minnesota. It is the eighth largest retail company in the U.S. and part of the S&P 500, known for offering a unique blend of stylish products and competitive prices, along with a pleasant shopping experience. Its distinctive logo is "BullsEye," meaning "the red eye." For more, visit: [Link]([www.target.com](http://www.target.com))

<sup>4</sup>- American Bank JPMorgan Chase: Uses AI in multiple areas, including fraud detection, by analyzing vast amounts of real-time transaction data to identify suspicious activities and prevent fraud on credit cards and bank accounts. It also uses chatbots and algorithmic trading.

Artificial intelligence can fundamentally change the way companies deliver their services and market their products. Commercial organisations are increasingly using AI-powered chatbots to promote products and services that customers are interested in, enabling targeted and personalised marketing campaigns. This increases effectiveness while reducing costs. For example, online clothing retailers use chatbots to answer questions about sizes, measurements and shipping options. Techniques are also being used to analyse customer images posted on social media to identify influencers wearing their products and engage them in collaborative marketing campaigns.

Various intelligent technologies are also being used to automate tasks such as scheduling social media posts, sending marketing emails and analysing campaign performance<sup>1</sup>, saving time and effort for marketing teams. AI technologies are also being used in manufacturing, particularly to monitor production lines and predict failures, and in logistics to improve inventory management and reduce shipping costs.

### **Subsection Three: The role of artificial intelligence in product and service development**

As the backbone of digital and technological advancement, artificial intelligence has revolutionised commercial enterprises and other organisations operating in the business environment. The rapid development and expansion of AI applications has led to the creation of large-scale projects that contribute to economic development. These projects adapt services and customise their delivery to ensure they meet customer expectations.

By continuously developing products and services to meet customer needs, companies can achieve customer satisfaction and loyalty, and ultimately promote sustainable development.

#### **Subsection One: Product Development**

Artificial intelligence plays a crucial role in the product development process by using advanced technologies to identify market needs. This includes analyzing market changes and consumer preferences to pinpoint unmet demands. For example, Netflix, initially a DVD rental service<sup>2</sup>, analyzed its subscriber data and discovered dissatisfaction with its offerings. In response, it shifted to streaming services and invested in producing original series and films, leading to significant profitability. This illustrates how AI can identify product flaws and enhance quality.

---

<sup>1</sup> One of the most important techniques used in predictive maintenance:

- Sensors
- Vibration Analysis
- Infrared thermal imaging
- Oil analysis
- Ultrasound analysis
- Electrical circuit analysis
- Artificial intelligence and machine learning
- Industrial IoT.

<sup>2</sup> Netflix is a leading American online entertainment service provider. Founded in 1997 by Reed Hastings and Mark Randolph, it originally began as a DVD mail rental service in the U.S. See the link: [Link](<https://g.co/kgs/b4KkZAa>)

AI also accelerates the design process using tools known as AI-assisted design, which help engineers and designers create prototypes more quickly and efficiently. The ultimate goal is to meet individual needs based on preferences and desires<sup>1</sup>.

Thus, AI serves as a driving force for product development in commercial enterprises, especially those embracing innovation. It provides various mechanisms and technologies that enhance efficiency, reduce costs, and open new avenues for creativity. AI is not merely a tool but a powerful catalyst for innovation in product development, as leading companies continually strive to deliver better products, effectively meet customer needs, and maintain a competitive advantage in the market<sup>2</sup>.

### **Subsection Two: Personalising services and meeting customer needs**

Personalising services and meeting individual customer needs is one of the key success factors for businesses. This can only be achieved with the help of AI technologies and tools. Personalisation means providing services tailored to each customer based on their preferences and needs. Companies aim to understand each customer's desires by analysing large data sets, including the pages a customer has visited and their engagement on social media.

AI technologies play a critical role in understanding individual needs. Based on this understanding, companies can offer specialised services and make personalised recommendations for products, services and promotions that customers are likely to find appealing.

It is important to note that before these services can be personalised, companies need to tailor their offerings to individual customers. This can be seen in the hotel industry, where AI is used to analyse previous guests' preferences, such as room type, food choices and favourite activities. As a result, personalised services are offered on their next visit. In this case, AI effectively tailors services to customers based on historical data, fostering stronger and more loyal relationships between businesses and their customers.

### **Subsection Three: Challenges for Artificial Intelligence in Commercial Enterprises**

Despite the significant efforts made by commercial enterprises, especially large ones, to keep pace with the digital age and achieve innovation in their services, products and marketing processes, this ambition faces numerous challenges. These challenges stem from the very nature of artificial intelligence and its ability to learn and make independent decisions. These challenges are summarised below:

#### **Subsection One: Technical and managerial challenges**

Despite the immense potential of artificial intelligence, companies face several technical and managerial challenges when trying to integrate it into their operations.

---

<sup>1</sup>- Asmaa Maqri and Fatiha Ben Azzouz: The Role of Artificial Intelligence in Enhancing Corporate Governance. Journal of Legal and Political Research, Vol. 08, No. 03, 2023, p. 136.

<sup>2</sup>- Abdullah Moussa and Ahmad Habib Bilal: Artificial Intelligence: A Revolution in Modern Technologies, 1st edition, Dar Al-Kutub Al-Masriya for Publishing and Distribution, Cairo, 2019, p. 30.

Several factors contribute to these challenges, including a lack of understanding of the technology. Many companies remain sceptical about AI programmes and continue to rely on outdated technological solutions, which hinders progress towards the desired economic development, especially for economic enterprises<sup>1</sup>.

This reliance on legacy systems means that they are missing out on the opportunities for integration and the many benefits that AI can offer. It is essential to encourage and invest in the use of these technologies, as they add value to company profits and the economy as a whole.

In this regard, it is crucial to raise awareness about artificial intelligence and support companies in their digital transformation. The challenge of using AI applications, such as big data, requires learning and improvement. Policies should therefore be established for the fair collection, use and sharing of data, while respecting privacy. This approach can enhance the reputation of commercial enterprises and ensure their stability in the business environment.

### **Subsection Two: Legal Challenges**

The use of artificial intelligence in commercial enterprises faces numerous and increasingly significant legal challenges, particularly in the areas of liability, privacy and intellectual property rights. Here are some of the more prominent challenges:

#### **Intellectual property rights**

A major issue revolves around the intellectual property rights of creative works generated by artificial intelligence. In such cases, it is unclear who owns the intellectual property rights to the work: is it the programmer or the company that owns the AI system? This ambiguity can lead to infringements of existing copyrights, trademarks or patents, making it difficult to determine the company's liability for such infringements.

In this context, UNESCO member states adopted a Recommendation on the Ethics of Artificial Intelligence in November 2021. One of its main objectives is to guide the ethical development and use of AI, while respecting human rights and fundamental freedoms, and emphasising principles such as transparency and legal accountability<sup>2</sup>.

#### **Automated decision-making**

There are also challenges related to the automated decisions made by AI, particularly in large companies that delegate a significant proportion of routine tasks - such as credit decisions, hiring or targeted marketing - to AI applications. This raises concerns among customers and employees about transparency, bias and discrimination.

Recognising the seriousness of this challenge, the European Union published its Artificial Intelligence Act on 1 August 2024, the first law aimed at regulating the use

---

<sup>1</sup>- Ahmed Daqah and Ahmad Hanesh: Using Modern AI Technologies in Arab Countries. Journal of Economic and Financial Studies, Algeria, Vol. 17, December 2024, p. 244.

<sup>2</sup>- Maria Rosaria Taddeo and Luciano Floridi. Ethics of Artificial Intelligence: Global Perspectives, Philosophy & Technology 34(886):1-23, 2021, P. 19.

of AI based on the level of risk it may pose<sup>1</sup>. The law bans certain applications that are deemed to pose unacceptable risks. In addition, many countries are enacting legislation to facilitate the adoption of AI applications within companies and institutions, ensuring that data is stored legally and ethically, while regulating its use and protection in accordance with data protection laws<sup>2</sup>.

### **Subsection Three: Financial and human challenges**

Despite the potential benefits of artificial intelligence in commercial enterprises, the lack of skilled labour and inadequate infrastructure are significant barriers to its implementation. Bill Gates, the founder of Microsoft, has highlighted that innovations in the field suggest that human labour could be reduced to just two days a week in the coming years as a result of advances in AI. In an interview with Jimmy Fallon on *The Tonight Show*, Gates explained that AI could fundamentally change the concept of work and help address global challenges such as the shortage of medical and mental health professionals.

He noted that there will be less need for human intelligence in certain tasks because AI can provide high-quality services in areas such as healthcare and education, potentially making exceptional services available to everyone in the future.

As a result, AI faces numerous challenges due to the inability of companies to fully grasp various advanced technologies. Implementing these technologies requires significant financial resources and specialised human skills in data science and machine learning. This limitation can hinder companies from achieving profitability, increase financial risks, and lead to a loss of competitive advantage.

### **Conclusion:**

The study of the role of artificial intelligence in enhancing innovation within commercial enterprises has made it clear that innovation is vital for achieving development and growth. This requires an understanding of smart technologies, how to apply them and strategies for establishing innovative start-ups.

The use of AI systems enhances the performance of companies and increases their productivity, leading to improved competitiveness in the business environment. The challenges faced by companies in the past have not only been related to service delivery methods or product quality, but also to understanding and meeting changing customer demands - an issue that AI can effectively address.

---

<sup>1</sup>- The European Union's Artificial Intelligence (AI) Act: Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonized rules on artificial intelligence and amending various regulations and directives.

<sup>2</sup>- See Algerian Law No. 18-07, dated June 10, 2018, concerning the protection of natural persons in the processing of personal data, establishing a law to respect privacy and fundamental rights.

In exploring the relationship between AI technologies and innovation, we have identified their role in improving performance and competitive advantage. To successfully integrate into the digital economy and keep pace with developments, companies need to foster technological creativity and innovation.

This study therefore concludes with the following recommendations:

1. Implement AI systems early: We suggest incorporating AI systems from the inception of commercial enterprises to automate transactions with minimal human intervention, ensuring speed and accuracy while attracting customers.

2. Provide financial support to innovative start-ups: We propose providing significant financial support to innovative startups in the digital technology sector using AI, enabling them to develop cutting-edge technologies for various active companies in the market.

3. Legal framework: The study recommends the creation of specific legal texts to regulate commercial companies that rely on AI systems, particularly with regard to legal accountability and proof of fault in the event of damage to customers.

While AI offers many opportunities to support innovation in commercial enterprises, it also poses challenges and risks, particularly in terms of legal liability for its applications. In cases of error or harm, it is crucial to establish frameworks to manage these risks and their potential negative impacts.

## **References:**

### **First: Arabic references**

#### **Books:**

- Abdullah Moussa and Ahmad Habib Bilal, *Artificial Intelligence: A Revolution in Modern Technologies*, 1st edition, Dar Al-Kutub Al-Masriya for Publishing and Distribution, Cairo, 2019.
- Kanaan Abdul Ghafour Al-Maamari, *Economics of Agricultural Production*, 1st edition, Dar Wael for Publishing, Jordan, 2010.
- Salim Botros Jalda and Zainab Munir Aboudi, *Managing Creativity and Innovation*, Dar Kunooz for Publishing, Jordan, 1<sup>st</sup> edition, 2006.

#### **University theses:**

- Qutaiba Mazen Abdul Majid: *Using Artificial Intelligence in Electrical Engineering Applications: A Comparative Study*, Master's thesis, Arab Academy University, Denmark, 2009.
- Atallah Fahd Sarhan: *The Role of Innovation and Creative Marketing in Achieving Competitive Advantage for Jordanian Commercial Banks*, PhD dissertation in marketing philosophy, College of Financial Studies, University of Amman, 2005.

#### **Scientific articles:**

- Asmaa Maqri and Fatiha Ben Azzouz: 'The Role of Artificial Intelligence in Enhancing Corporate Governance', Journal of Legal and Political Research, Vol. 8, No. 3, 2023.
- Ahmad Daqah and Ahmad Hanesh: 'Using Modern Artificial Intelligence Technologies in Arab Countries', Journal of Economic and Financial Studies, Algeria, Vol. 17, December 2024. 'Using modern artificial intelligence technologies in Arab countries', Journal of Economic and Financial Studies, Algeria, Vol. 17, December 2024.
- Khatima Lawati: 'Enterprise Resource Planning Systems as a Modern Management Tool', Algerian Journal of Economic and Administrative Studies, Vol. 1, No. 1, 2021.
- Kariman Sadqi Abdul Aziz: 'Investing in artificial intelligence technologies to develop research and information retrieval methods', Egypt, Vol. 5, No. 16, 2023.

**Laws:**

- Algerian Law No. 18-07 dated 10 June 2018 concerning the protection of natural persons in the processing of personal data and establishing a law to respect privacy and fundamental rights.

**Websites:**

- [www.target.com](http://www.target.com)
- <https://g.co/kgs/b4KkZAa>
- <https://followict.news/%D9%86%D8%B4%D8%B1%D8%A9%D8%A3%D8%AE%D8%A8%D8%A7%D8%B1%D8%A7%D9%84%D8%B0%D9%83%D8%A7%D8%A1%D8%A7%D9%84%D8%A7%D8%B5%D8%B7%D9%86%D8%A7%D8%B9%D9%8A-14/>
- <https://www.tech-mag.net/%d8%b4%d8%b1%d9%83%d8%a9-expedia%d8%aa%d8%b6%d9%8a%d9%81%d9%85%d8%b2%d8%a7%d9%8a%d8%a7%d8%b0%d9%83%d8%a7%d8%a1%d8%a7%d8%b5%d8%b7%d9%86%d8%a7%d8%b9%d9%8a-%d8%ac%d8%af%d9%8a%d8%af%d8%a9%d9%84%d8%aa/>
- <https://www.bentley.com/>
- [https://www.ooredoo.com/ar/media/news\\_view/ar%D9%85%D8%AC%D9%85%D9%88%D8%B9%D8%A9-ooredoo-%D8%AA%D8%AF%D9%81%D8%B9-%D8%AB%D9%88%D8%B1%D8%A9-%D8%A7%D9%84%D8%B0%D9%83%D8%A7%D8%A1-%D8%A7%D9%84%D8%A7%D8%B5%D8%B7%D9%86%D8%A7%D8%B9%D9%8A-%D9%81/](https://www.ooredoo.com/ar/media/news_view/ar%D9%85%D8%AC%D9%85%D9%88%D8%B9%D8%A9-ooredoo-%D8%AA%D8%AF%D9%81%D8%B9-%D8%AB%D9%88%D8%B1%D8%A9-%D8%A7%D9%84%D8%B0%D9%83%D8%A7%D8%A1-%D8%A7%D9%84%D8%A7%D8%B5%D8%B7%D9%86%D8%A7%D8%B9%D9%8A-%D9%81/)
- <https://www.csiamerica.com/products/sap2000>

- <https://dz.ambafrance.org/%D9%85%D8%A4%D8%AA%D9%85%D8%B1-%D8%A7%D9%84%D9%82%D9%85%D8%A9-%D8%A8%D8%B4%D8%A3%D9%86-%D8%A7%D9%84%D8%B9%D9%85%D9%84-%D9%81%D9%8A-%D9%85%D8%AC%D8%A7%D9%84-%D8%A7%D9%84%D8%B0%D9%83%D8%A7%D8%A1>

**References in foreign language:**

- Dartmouth Symposium, 1956: This seminar was a seminal event in the field of artificial intelligence, during which John McCarthy first defined the term.
- <https://home.dartmouth.edu/about/artificial-intelligence-ai-coined-dartmouth>
- Margaret Boden. Artificial Intelligence: A Very Short Introduction, Oxford University Press, 2018.
- Maria Rosaria Taddeo and Luciano Floridi. ‘Ethics of Artificial Intelligence: Global Perspectives’, Philosophy & Technology, 34(886): 1–23, 2021.
- Nick Bostrom: Superintelligence: Paths, Dangers, Strategies. Oxford University Press, 2014.
- Pedro Domingos. The Master Algorithm: How the Quest for the Ultimate Learning Machine Will Remake Our World, Basic Books, USA, 2015.
- Stuart Russell and Peter Norvig. Artificial Intelligence: A Modern Approach, Pearson PLC, London, 4th edition, 2020.
- Stuart Russell. Human Compatible: Artificial Intelligence and the Problem of Control, narrated by Raphael Corkhill, published by Penguin Random House, 2019.