The Rise of Artificial Intelligence In Business And Industry.

Abstract:

The ongoing development of business and the most recent advances in artificial intelligence (AI) allow for the many business practices to be improved by the capacity to establish new forms of collaboration, which is a significant competitive advantage. This rapidly developing technology enables to offer brand services and even some new forms of business interactions with consumers and personnel. The digitalization of AI concurrently emphasized for businesses that they need concentrate on their present strategies while also routinely and early pursuing new chances in the market. Not only in business but also in different industry sectors, Al techniques are being used and revolutionized different industry sectors. This review focuses on application of AL techniques in business and different industries.

1. Introduction:

Artificial intelligence (AI) is causing a revolution in business as well as the economy and society as a whole by changing the interactions and relationships that exist between stakeholders and individuals. The roots of artificial intelligence may be traced back to mythology from ancient Chinese, Greek, and other civilizations, where it was believed that automatons have true brains and were able to think and experience emotion. This is where the concept of artificial intelligence first emerged. However, according to Nilsson, the term "artificial intelligence" was first used in public during a workshop held in 1956 at Dartmouth College in the United States[1]. Since then, researchers from a variety of academic fields have made contributions to the field of artificial intelligence. Researchers in business management have been looking at how AI affects customers, businesses, and stakeholders in an increasingly automated and interconnected business world [2]. Computer scientists have created sophisticated deep learning algorithms [1, 3]. Social scientists have been debating the ethical and legal ramifications of AI. In spite of this, most of these advancements in AI research have been carried out in isolated enclaves with

relatively little collaboration between different fields of study. In a same vein, it has not been easy to settle on a single definition of AI that is generally recognized by the majority of people. The many concepts of AI systems have been organized by Russell and Norvig [4] into four categories along two dimensions: the human performance-rationality dimension and the reasoning-behavior dimension. Systems that act like people, systems that think rationally, systems that think like humans, and systems that think like humans are all examples of these types of artificial intelligence. Natural language processing, knowledge representation, automated reasoning, the use of the stored information to answer questions and draw new conclusions, and machine learning should all be included in AI systems [4-6]. Natural language processing, knowledge representation, automated reasoning, and the use of the stored information to answer questions and draw new conclusions should also be included. Because of these skills, AI systems will soon be able to engage in natural language with people and other machines. The global spread of research into fresh applications of AI, on the other hand, has not been hindered by the absence of a definition that is generally recognized.

The market for cognitive and AI systems has been progressively developing over the course of the previous several years, as seen by the global expenditure of $24.0 billion on such systems in 2018. According to IDC's 2019 projections, this investment will reach 77.6 billion dollars in 2022 [7]. Researchers and practitioners of AI will benefit from having a comprehensive understanding of what has been explored and used in a variety of business domains (for example, manufacturing to services) and in a variety of disciplinary subjects, such as marketing, tourism, management, sociology, psychology, and so on. This is due to the fact that research on commercial applications of AI typically requires a perspective that draws from other disciplines. With the use of such in-depth knowledge, researchers will be able to prioritise their study topics, and practitioners will be able to make prudent investments in essential business-related AI aspects [8].

It is interesting to note that a number of academics have made an attempt to carry out a comprehensive literature review on the use of AI in business. For example, Côrte-Real, Ruivo, and Oliveira [9] carry out a methodical mapping of the diffusion stages of business intelligence and analytics (BI&A) deployment and make a recommendation for more research in the post-adoption stages, which were mostly disregarded at the time of the study's original publication.

Moro, Cortez, and Rita [10] did a literature study that focused on business intelligence in banking between the years 2002 and 2013. Business intelligence uses particular AI algorithms for predictive analysis. Tká and Verner [11, 12] noticed, throughout the course of their analysis of 20 years' worth of research on the use of artificial neural networks in business, that the majority of the papers they looked at mentioned expert systems with applications. This was one of the findings from their investigation. As a final step, Duan, Edwards, and Dwivedi [13] conduct an analysis of relevant papers from the International Journal of Information Management. Their goal is to identify issues and challenges connected to the application of artificial intelligence (AI) for decision-making in the era of big data, as well as to provide theoretical advancement and AI implementation. While these projects do provide useful information on the latest advancements in business research and artificial intelligence, the majority of their focus is on certain applications (such as BI&A or decision support systems) or domains. The purpose of this study is to address this vacuum by providing an overview of the present research on artificial intelligence (AI) in business. This will be accomplished by doing a comprehensive analysis of the history and state-of-the-art research on AI, as well as by projecting future trends in order to make useful ideas for further research on the subject.

1.1. Artificial intelligence:

It is necessary to provide a definition of the word "artificial intelligence" before analysing the ways in which AI technologies are influencing the business sector. The phrase "artificial intelligence" is a generic one that may be used to describe any variety of computer software that participates in tasks that are analogous to those performed by humans, such as learning, planning, and problem-solving. To refer to certain applications as "artificial intelligence" is like to referring to a car as a "vehicle"; while this is technically accurate, it does not encompass any of the nuances of the topic. We need to delve further if we want to learn which kind of artificial intelligence is most commonly used in business [14, 15].

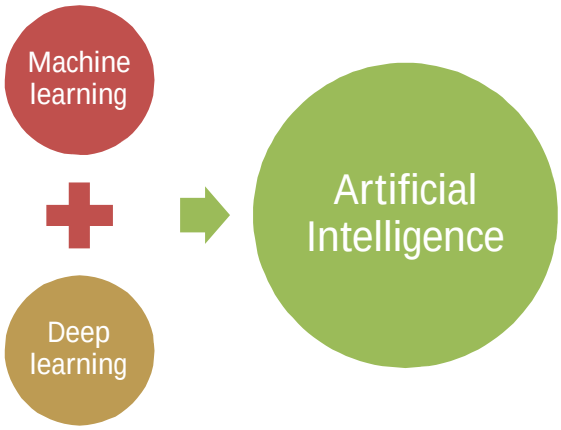

Figure 1 Artificial intelligence

1.1.1. Machine learning:

One of the most prevalent forms of artificial intelligence (AI) currently being developed for use in business is known as machine learning. The primary goal of machine learning is to process vast volumes of data in a relatively short amount of time. The algorithms that make up these sorts of artificial intelligences give the impression that they "learn" over time[16, 17]. If you give an algorithm for machine learning additional information, the modeling it produces should get better. The Internet of Things and linked gadgets are producing ever-increasing amounts of data, which can be difficult for humans to comprehend without the assistance of machine learning [18]. For instance, if you are the manager of a manufacturing company, the equipment in your facility is probably connected to the network. A centralized location receives a steady flow of information regarding the functionality, production, and other aspects of an organization's connected devices. Unfortunately, there is far too much information for a person to ever be able to sort through all of it, and even if they did, it is probable that they would overlook the majority of the patterns [19]. Machine learning can detect trends and abnormalities in real time. A machine-learning system can alert decision-makers that a manufacturing plant machine is underperforming and needs preventative maintenance [20, 21]. Machine learning is vast. Deep learning emerged from artificial neural networks, a network of artificial intelligence "nodes." [22]

1.1.2. Deep learning

Deep learning uses neural networks for nonlinear thinking. Fraud detection requires deep learning. It does this by analyzing many factors [23]. Self-driving automobiles must concurrently identify, analyze, and respond to multiple elements. Deep learning algorithms assist self-driving cars contextualize sensor data including object distance, speed, and 5-10-second predictions. A self-driving automobile calculates all this information at once to decide whether to change lanes[24]. Deep learning is promising in business and may be utilised increasingly. Deep learning models advance with additional data, but older machine-learning algorithms plateau. Deep learning models are more scalable, detailed, and independent [25].

1.2. AI in business

Artificial intelligence supports human intelligence and inventiveness rather than replacing it. AI can process and analyse large amounts of data quicker than a human brain, but it struggles with basic tasks. Then, AI software may offer synthesised actions to humans. Thus, AI can help us predict the outcomes of each action and simplify decision-making [26, 27]. Amir Husain, creator and CEO of SparkCognition, called artificial intelligence the second coming of software. “It’s software that makes its own decisions and acts in situations the programmers didn’t anticipate. AI can make more decisions than traditional software.” [28] AI is useful in numerous sectors, from helping visitors and staff navigate a corporate site to monitoring a wind turbine to forecast maintenance [29].

2. AI Applications In Business:

There are several uses for artificial intelligence in business, but the most of them are focused on fostering expansion. Companies are discovering novel methods to improve company performance by integrating artificial intelligence (AI) and machine learning (ML) [30]. The following is a list of some of the commercial benefits of AI:

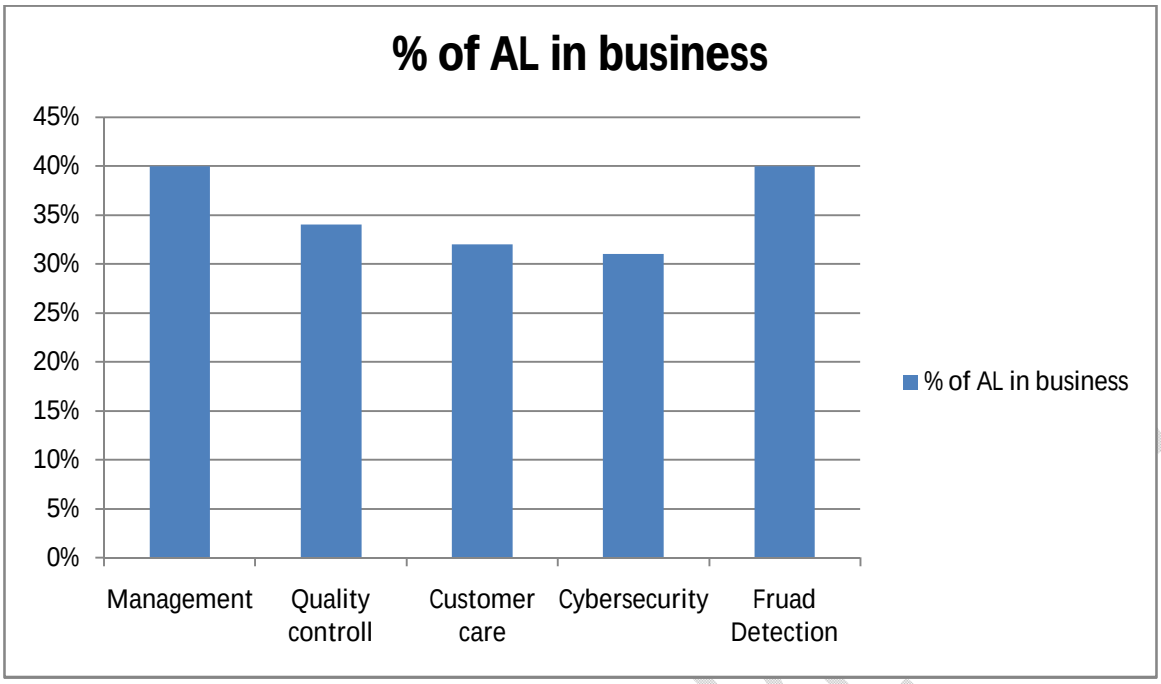

Figure 2 AL in business

2.1. Machine learning

Massive data systems employ machine learning. Smart energy management systems take data from asset sensors. Machine-learning algorithms contextualize the data for your company's decision-makers to better comprehend energy use and maintenance needs [31].

2.2. Cyber security:

Husain said artificial intelligence is essential for finding computer network security weaknesses. AI systems can detect cyber attacks and other cyber threats by analyzing data trends. It may pinpoint the source of a danger in your data and prevent future threats. Your infrastructure will benefit from AI's vigilant and constant eyes [32]. “Because of scale and increasing complexity, you really can’t have enough cyber security experts to look at these problems,” Husain said. “AI is becoming more important here.”[33]

2.3. Managing customers:

AI is also revolutionizing CRM systems. Sales force and Zoho need frequent human updates. AI turns a CRM system into a self-updating, auto-correcting relationship management system [34].

- Increasing Productivity Through the Automation of Processes
- Improving either the rate at which service is provided or its consistency
- Utilizing information gleaned from customers as a basis for decision-making
- Discovering new markets for existing and potential products and services

The use of AI is compatible with virtually any business tactic. To get started with AI, it is essential to first obtain a grasp of how data collecting and analysis factor into artificial intelligence. This is because artificial intelligence relies heavily on data. You will be better equipped to identify how artificial intelligence could be able to aid your sector if you examine the technique underlying AI first. Anyone interested in learning more about how AI is revolutionizing the world of business might consider enrolling in an introductory AI course such as the one offered by Wharton Online's Artificial Intelligence for Business program. This can be an excellent place to start [35, 36].

2.4. Case Studies of Businesses Utilizing Artificial Intelligence

You may not be aware of how frequently firms employ AI, but the frequency may surprise you. The uses of artificial intelligence are virtually limitless, ranging from marketing to operations to customer service. The following are some instances of how artificial intelligence is utilised in various business settings[37, 38].

2.5. Improving One's Service to Customers

Have you ever gone to a website and were greeted by a chatbot when you went there? Customers may have direct interactions with AI most frequently through chatbots. This type of interaction is becoming increasingly widespread. Chatbots make it possible for businesses to automate many of the procedures involved in providing customer care and free up staff' time to focus on problems that call for a higher level of individualised attention. The ability to comprehend user requests is often accomplished by chatbots through a synergy of natural language processing, machine learning, and artificial intelligence [39]. Clients can also be sent to a real-life employee

who is better able to answer their inquiries by using chatbot technology, which can also aid clients [40].

2.6. Providing suggestions for various products

AI may be used by businesses to provide product recommendations to clients that will both satisfy their needs and keep them interested in what they have to offer. You are able to provide clients with items that are comparable to those that they have already viewed on your website if you follow the behavior of your customers on your website. Companies who operate in the e-commerce market might benefit tremendously from utilizing this strategy [41]. Streaming services provide yet another illustration of personalized suggestions in action. Streaming platforms are able to keep you on their app for longer lengths of time by showing you with titles that are similar to the movies and program that you click on the most frequently. This analysis is performed by looking at the sorts of movies and shows that you click on the most [42].

2.7. Segmenting audiences

In a manner not dissimilar to that of making product recommendations, advertising departments may utilize AI to divide consumers into distinct groups and develop campaigns that are specifically geared towards those groups. When working in a field that is known for its high level of competition, it is of the utmost importance to present one's work to the appropriate audience. Companies utilize data to determine which sorts of people will see which advertisements in order to make their marketing initiatives more effective. When it comes to forecasting how clients would respond to certain adverts, artificial intelligence comes into play[43].

2.8. Examining the level of happiness of the customers

The usage of sentiment analysis, also known as emotion artificial intelligence (AI), is a strategy that businesses employ in order to evaluate the responses of their clients. The use of artificial intelligence (AI) and machine learning allows businesses to collect data about how consumers view their brand. One example of this is the use of artificial intelligence to comb through reviews, ratings, and postings on social media platforms that reference the brand. Companies are

able to find chances for improvement as a result of the insights that were gathered through this investigation [44].

2.9. Identifying fraud

AI may also assist businesses in identifying potential instances of fraud and devising effective countermeasures. Utilising various types of machine learning algorithms, there are already accessible solutions in the banking and finance sector that can identify potentially fraudulent transactions. The application will prevent the transaction from going through if it determines that there is a potential for fraud and will notify the relevant parties[45].

2.10. Increasing efficiency throughout the supply chain activities

AI could be able to assist your firm if it has trouble meeting its deadlines for the delivery of its products on a regular basis. AI-driven solutions may be of assistance to businesses in a number of ways, including anticipating how quickly items will be able to move through the supply chain and predicting the cost of materials and shipping. These kinds of insights provide supply chain experts with the information they need to make decisions on the most efficient manner to distribute their items. On a more localised basis, artificial intelligence may be utilised to assist delivery trucks in locating speedier routes [46].

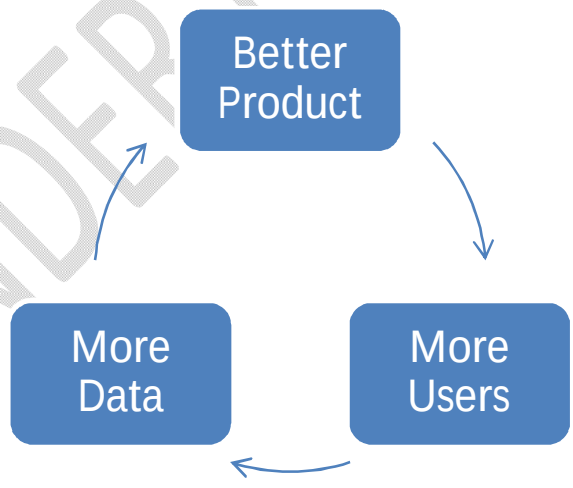

Figure 3 the Virtuous Cycle Of AI

3. Artiical Intelligence in supply chain management:

Over the course of the past several years, the globe has been inching closer and closer to a digital future, and the technologies of Industry 4.0 are widely regarded as the wave of the future. Artificial intelligence (AI) is one of the most prominent of these technologies (including blockchain, IoT, cloud computing, and so on) [47]. AI is defined as the power of computers to interact with and emulate the capabilities of people [48]. Blockchain is one of the most prominent of these technologies. Problems can be solved more accurately, more quickly, and with a greater number of inputs when artificial intelligence is used. AI is not a new subject and it is not a new academic field of study [49]; however, only recently have technological developments shown that AI has a vast set of applications[50]. AI is making headlines by adapting processes in numerous diverse areas [51], including supply chain management (SCM). According to Thow-Yick and Huu-Phuong [52], artificial intelligence technology is developing as a competitive advantage at a time when other aspects of information technology are moving closer and closer to the position of a competitive need. In this regard, many businesses are transitioning from remote monitoring to control, optimisation, and eventually, sophisticated autonomous AI-based systems in order to increase their functioning [53]. This move comes as a result of the growing popularity of AI.

This presence has had an effect on many fields, such as business research, which has picked up on the topic, and AI is now researched from a more holistic perspective [54], with supply chain management being recognised as one of the fields that stands to benefit the most from AI applications. There is a need to investigate the contribution that AI has made to the area of supply chain management (SCM), despite the fact that interest from practitioners and academics is thus strong [55, 56].

4. AL in marketing:

Despite the growing interest in AI in the marketing sector, it is still a young subject with many untapped research possibilities. Recent times have seen a number of important classification attempts for ML and AI applications in marketing, especially from 2017 forward. For instance, in a study conducted in collaboration with Deloitte, Davenport, and Ronanki[57], projects utilising AI-based technologies across a range of business tasks and processes have been studied, with fascinating findings. According to the study, Davenport was able to divide AI applications into three categories: (1) Robotics and cognitive automation, which uses robotic process

automation to automate back-office financial and administrative tasks; (2) Cognitive insights, which uses machine learning algorithms to find patterns in data and turn them into knowledge; and (3) Cognitive Engagement, which uses chat to engage customers and workers. More widespread classifications based on marketing strategies, such as segmentation, targeting, and positioning (STP), and marketing activities, such as product, price, place, and promotion (4Ps), are provided by other initiatives to systematise AI and ML applications in marketing.

Accordingly, segmentation, targeting, and positioning are three critical areas where marketers and managers might benefit from using AI and ML [58]. Personalised advertising is an illustration of an ML application in this framework. By identifying patterns that human intuition and experience alone would not have seen, data mining can assist in defining segments. The four categories of marketing actions—Product, Price, Place, and Promotion—are referred to as the marketing 4Ps, or "marketing mix," which McCarthy first articulated in 1960. Numerous instances of AI applications in marketing were analysed by Jarek and Mazurek [59], who demonstrated how the examples reflected the marketing mix. Jarek cites hyper-personalization, automated suggestions, and the creation of new products as examples of applications for AI in product activities. Apple Pay, Google Pay, and PayPal are just a few examples of payment automation tools that leverage AI technology. Reinforcement learning algorithms are able to dynamically modify pricing by taking into consideration customer preferences, competition activity, and supply characteristics. Regarding price actions, IoT can optimise retail operations [60]; frontend presence can be automated with 24/7 customer care chatbots[61, 62]; and both can be used to automate frontend presence. Finally, AI technologies can automate the planning of advertising media, keyword research, real-time bidding, and social media targeting in many of their applications, including social media marketing, mobile marketing, and search engine optimization [63]. By combining the marketing mix discussed above with the various AI intelligences—mechanical AI, thinking AI, and feeling AI—Huang and Rust [64] have developed an intriguing taxonomy of AI applications. Mechanical AI, the first level of AI intelligence, automates routine tasks; thinking AI deals with data processing to produce insights that support decision-making and contribute to competitive advantage; and feeling AI engages in a two-way conversation with people by analyzing their needs and emotions.

5. AL In Industries:

A more flexible version of the definition for industrial AI offered in [65] is suggested in the context of this study. Industrial AI may be characterised in this context as a systematic discipline that focuses on the creation, validation, deployment, and maintenance of AI solutions (in its many forms) for industrial applications with long-term performance[66]. Therefore, Industrial AI is a multidisciplinary field of study that integrates robotics, machine learning, and natural language processing. Over the past several years, significant research has been done on how to integrate and embed these principles into the current Industry 4.0 manufacturing value chains[67, 68]. Combining these domains gives the system the ability to adapt and address issues through a certain amount of autonomous activity within pre-defined system bounds [69]. Within the topic of AI, industrial AI stands out in five specific ways:

- Infrastructures: Real-time processing capabilities are highly prioritised in terms of hardware and software, guaranteeing industrial-grade dependability with strict security standards and interconnection [70];
- Data: Industrial AI requires data that comes from a range of units, products, regimes, etc. and is enormous in volume and fast-moving[71].

- Algorithms: It necessitates the fusion of heuristic, digital, and physical knowledge. high complexity caused by model deployment, governance, and administration [72].
- Making decisions: Given the industrial environment's often low tolerance for mistake, addressing ambiguity is crucial. Efficiency is especially crucial for complex optimisation issues [73].
- Objectives: Through a mix of elements like scrap reduction, higher quality, enhanced operator performance, or shorter ramp-up times, industrial AI primarily focuses on concrete value generation [74].

6. Applications:

Although the field of artificial intelligence (AI) has been studied academically and scientifically since the 1950s, the technology has only just begun to achieve significant traction. The current boom in AI research, funding, and practical commercial applications is unparalleled, which hardly needs to be said. Grand View Research estimates that at a 38.1% CAGR, the worldwide

AI industry would grow from $136.6 billion in 2022 to $1,811.8 billion by 2030 [75, 76]. Applications of AI not only promise to produce better commercial outcomes but also enhance overall human experience.

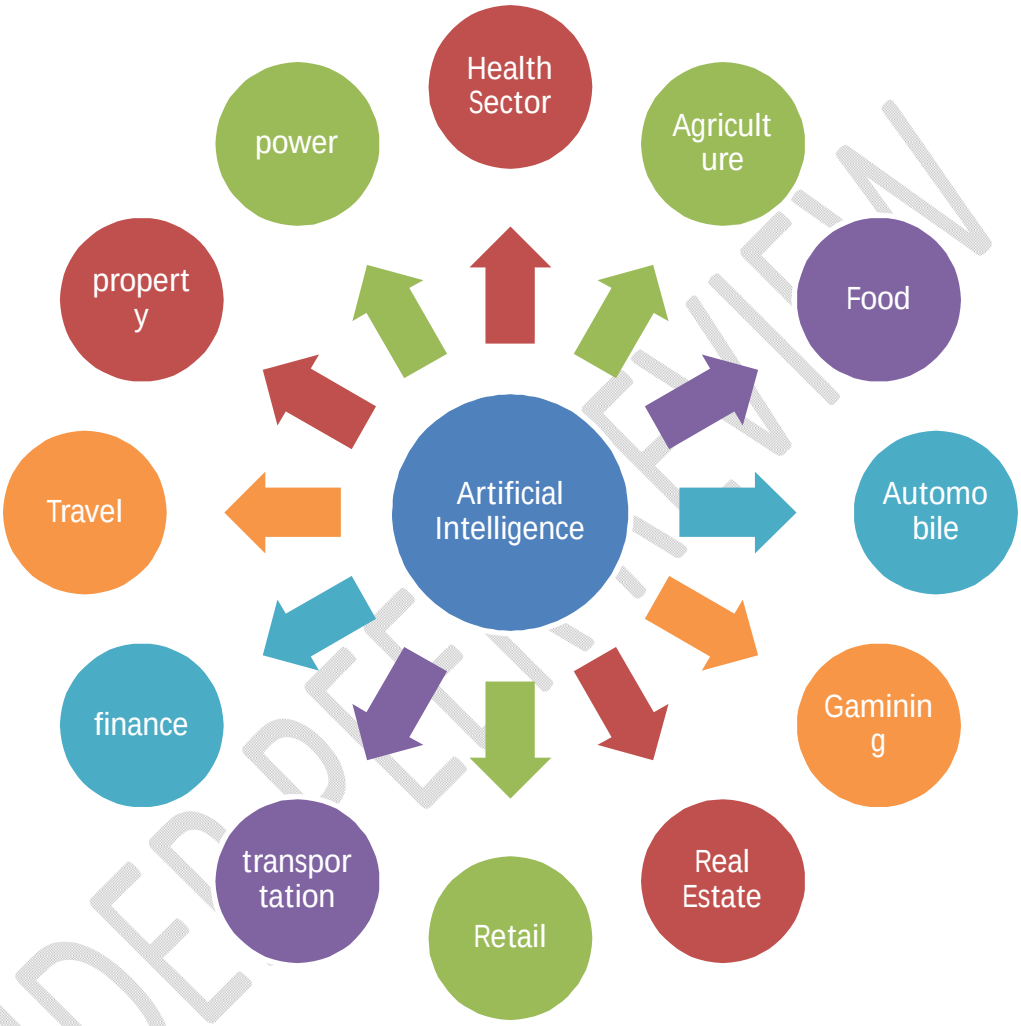

Figure 4 Applications of AL in industries

6.1. Health Care

It is crucial for the industry that technological behemoths like Microsoft, Google, Apple, and IBM contribute to the healthcare sector. AI is now being used for a variety of healthcare services, including medical imaging, medication management, drug development, robotic surgery, and data mining for pattern recognition and subsequently carrying out more precise diagnosis and treatment of medical disorders [77-79].

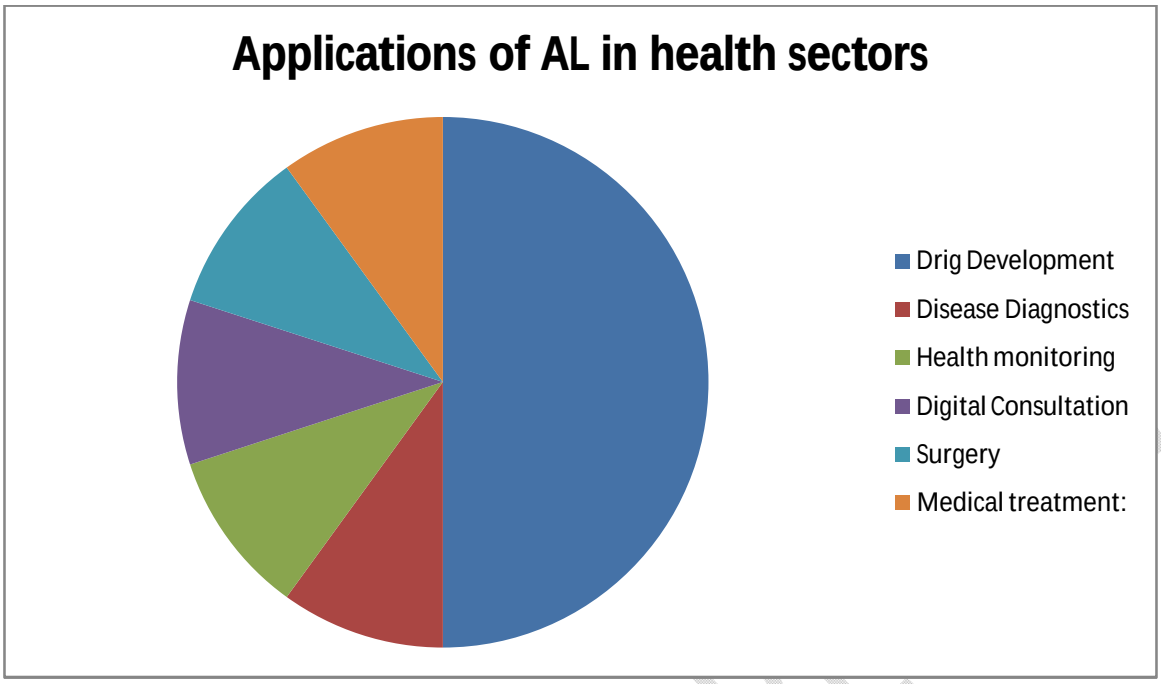

Figure 5 Statistics of AL in health

For instance, IBM Watson (an AI tool) may be used to analyse a patient's medical record to find prospective treatments after determining the meaning and context of a combination of structured and unstructured data that may be important for choosing a treatment plan. In other words, IBM Watson behaves like a real physician[80]. Similar to this, a platform created by the biopharma business NuMedii called Artificial Intelligence for Drug Discovery (AIDD) uses big data and AI to identify the relationship between illnesses and medications at the systems level[81-83].

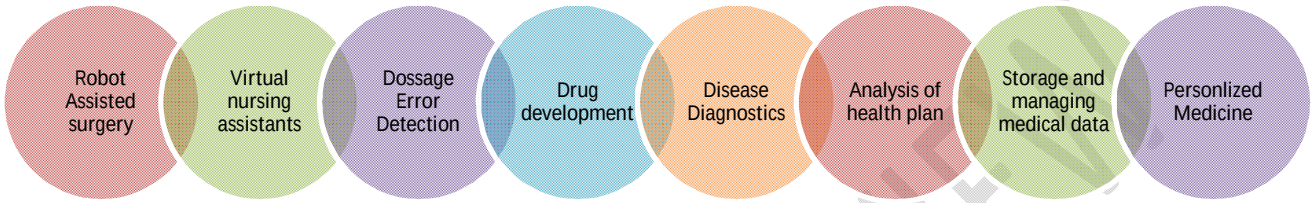

Figure 6 Applications of AL in Health sector

6.2. Retail and online shopping

Perhaps the only industry where the majority of end consumers can see the deployment of AI in action is retail and e-commerce. Retail businesses always search for methods to identify trends in customer behaviour in order to better align their strategy and outwit rivals in this highly competitive industry[84]. It's safe to say that in the grand scheme of things, AI has reached its sweet spot. Your Amazon account's product suggestions are nothing more than the real-time use of sophisticated AI algorithms to identify the goods you are most likely to purchase [85]. Applications of AI are also being employed more often to improve the consumer experience. For instance, a lot of the chatbots that can be seen on e-commerce websites are AI-powered and built to instantly respond to a variety of frequent client questions [86].

6.3. Food Science

The food business has benefited from the use of AI. Have you ever considered a robot making your tea? Hi Arya, a culinary technology firm, has created a robotic tea maker in partnership

with LeewayHertz using AI and IoT technologies. Users of the smart tea maker may develop their own recipes using the equipment itself, a smartphone app, and a web interface [87]. In essence, consumers utilise a web interface, machine, or smartphone app to order their cup of tea. When a user placed an order, the tea maker immediately begins to make it, and the user may take use of live-feed features to see their tea being made[88]. In a similar vein, AI advancement has also impacted the commercial food processing industry. Taking the market for french fries, peeled potatoes, and chopped and ground beef as an example, Tomra Systems ASA has created AI-based food sorting machinery. Food processing businesses may use Tomra's food processors to automate operations like gauging the size, shape, and colour of fries or figuring out how much fat is in a piece of meat [89, 90]. In the field of agriculture, Sentient is using AI to study how factors like UV radiation, salt, heat, and water affect basil. With the information at hand, they are creating the procedures for growing the ideal crops[91]. In the farming industry, where we have witnessed a rise in the usage of intelligent tractors and intelligent plucking machines, AI applications have also been introduced [92].

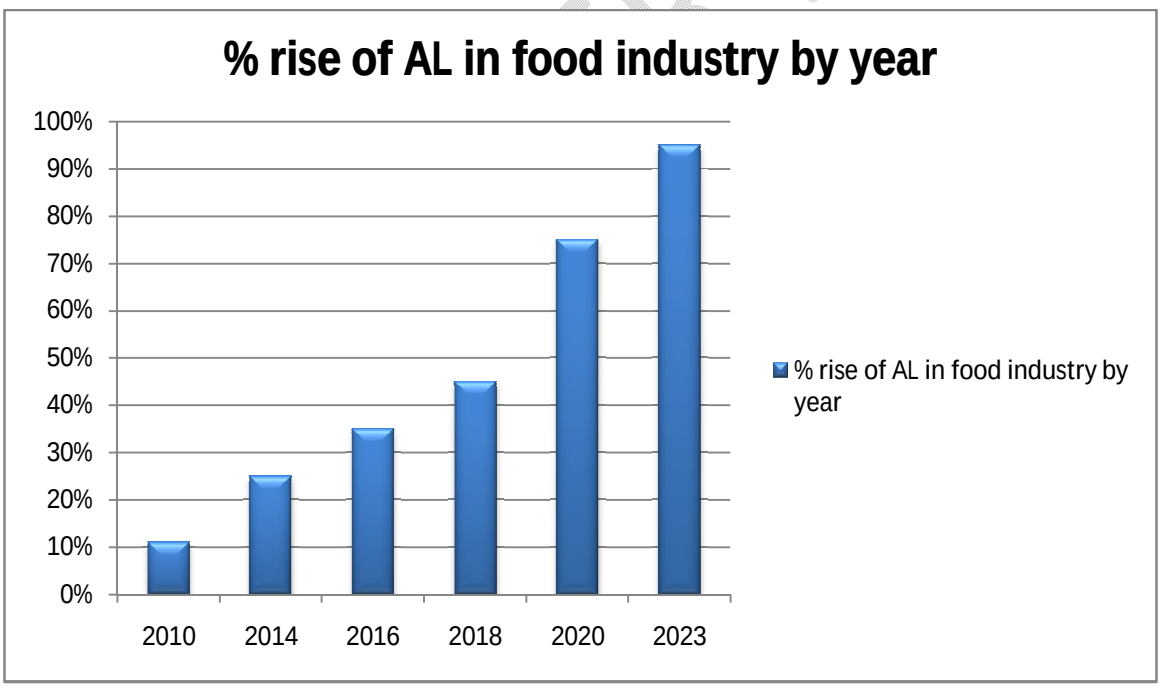

Figure 7 Rise of AI technologies in Food industry

6.4. Financial and Banking Services

The emergence of AI applications has caused a significant upheaval in the banking and financial services sector. There are a tons of AI application cases in this field. In many cases, sophisticated software robots are replacing human workers to handle loan applications in milliseconds. Similar to this, robo-financial advisers quickly sort through several levels of data to suggest the best investments for clients [93]. In order to find the industries and businesses most closely associated with your long-term requirements and aspirations, these Robo-advisors can also analyse your social media activity, emails, and other personal data [94, 95]. In order to enhance the customer experience and develop insurance plans and solutions based on consumer data, AI-based chatbots are also being used in the insurance industry. The processing of claims has been sped up greatly thanks to the introduction of AI-based tools, benefiting both customers and insurance providers [96].

Fraud detection is a crucial use of AI in the banking industry. For instance, Mastercard analyses multiple data points to identify fraudulent transactions using AI-based Decision Intelligence technology [97].

6.5. Transportation and Logistics

The logistics and transportation sector is about to undergo a transformation powered by AI. Supply chain management has already undergone significant change and become a smooth operation thanks to the application of machine learning and predictive analytics. Robots with AI capabilities are widely used in warehouses to sort and package merchandise. The fastest shipping route and last-mile delivery are two more tasks that are increasingly supported by AI algorithms [98, 99]. Self-driving cars will surely be the next big thing in the transportation sector. Artificial intelligence-based self-driving vehicles have the potential to replace manual driving and improve road safety, even if they are still in the research and testing stages in many nations. The leaders in this research are Tesla, Uber, Volvo, and Volkswagen [100]. Research is also being done on how AI algorithms may be used to schedule, route, and even operate traffic lights for public transportation [101].

6.6. Travel:

The adoption of AI-enabled chatbots is expected to have a substantial positive impact on the travel sector. Because they are available around-the-clock and provide prompt answers to questions, chatbots have been shown to be an effective way to increase customer satisfaction and engagement [102]. Chatbots are being powered by increasingly effective AI algorithms, enabling them to respond to client inquiries with more accuracy. In order to create their own AI-based mobile applications and chatbots for enhancing the client experience, several sizable travel organisations are turning to AI businesses [103]. Furthermore, by recognising client behaviour and purchase trends, machine learning and predictive analytics assist travel firms in increasing their conversion rates [104].

6.7. Property

AI's use in the real estate sector is creating new opportunities for brokers, clients, and agents alike. Brokers are becoming more strategic, clients are feeling more in control, and agents are becoming more productive and efficient. Brokers and agents may assist clients wanting to purchase, rent, or sell a property discover the ideal match with the use of AI-powered bots [105, 106]. The real estate sector may use AI in the following ways.

- Artificial intelligence may be used by real estate experts to analyse market circumstances, property valuations, and other factors to identify trends and investment possibilities [107].
- Lease agreements, mortgages, and title deeds may all be handled and processed automatically using artificial intelligence [108].
- Rental revenue, property values, and other factors impacting the real estate market may all be predicted using AI's predictive modelling component.
- AI may be combined with smart home technologies, such as thermostats and security systems, to improve security and energy efficiency. Additionally, AI-based chatbots may work around-the-clock to assist users of real estate websites in finding the answers to their questions [109].

6.8. Gaming and entertainment

Entering the entertainment sector, AI is assisting broadcasters and programme makers in determining which shows or programmes they should suggest to certain consumers based on

their behaviour. It enables companies like Netflix and Amazon to provide people a more individualised experience [110]. Machine learning algorithms are frequently used to analyse user behaviour, and these algorithms are getting smarter over time to the point where they can now tell whether a user is buying something for themselves or as a gift, or whether different family members have different viewing preferences [111]. Artificial intelligence (AI) is being used in the film business to improve digital effects, reduce costs, and hasten pre- and post-production. For instance, data is utilised to determine the best timetable for filming, or Natural Language Processing (NLP) is used to organise a screenplay for storyboarding [112].

Large organisations in the music sector, such Apple and Spotify, employ AI to comprehend user interaction patterns and provide the appropriate music to the appropriate listeners at the appropriate moment. The AI-driven computer accompaniment technique in music creation enables a machine to create music in real-time in reaction to a live musician's performance [113].

One of the first industries to embrace AI was the gaming sector, and it has had a significant influence on user experience. AI is utilised in gaming for a variety of purposes, including directing the behaviour of non-player characters (NPCs) who are important in moving the plot along. The gaming experience of such characters is significantly improved by AI-driven behaviour modeling [114].

6.9. Production

There is no question that the industrial sector is setting the pace for the use and acceptance of AI technologies. AI is being used in manufacturing at all levels and lines of operations, from labour planning to product design, enhancing productivity, product quality, and worker safety [115]. Machine learning and artificial neural networks are used in factories to enable predictive maintenance of essential industrial equipment that can foresee asset failure accurately. It enables management to take prompt action to repair the equipment and avoid expensive unscheduled downtime [116]. Robots play a crucial role in the manufacturing process. Most industrial robots remain immobile most of the time, yet they still run the risk of colliding with neighbouring things. The use of AI to robotics has ushered in the idea of collaborative robots, sometimes known as "cobots," which can follow orders from people and collaborate effectively with them.

AI algorithms are being utilised in quality control to alert manufacturing facilities to potential production errors that might affect the quality of the final product. Process variations, minor machine behaviour abnormalities, changes in raw materials, and other errors are examples of faults. As AI advances, it is progressively assuming the role as the single most important factor behind the evolution of technology. We live in a time when computers are beginning to comprehend human behaviour and make predictions about it. It has opened up a world of opportunities, and what we have seen so far and what we could predict for the future just scratch the surface of AI's full potential. The industries that will have the fastest growth in AI investment over the next five years are those in healthcare, pharmaceutical research, retail, marketing, finance, and intelligent process automation [117, 118].

6.10. Automotive :

The automotive sector might benefit from the use of AI in a number of ways, including self-driving cars, driver support systems, and traffic prediction to increase safety and decrease traffic congestion. It may be used to power autonomous vehicles, assisting them in making deft judgements, navigating through traffic, and dodging hazards. Artificial intelligence may be used to improve driver assistance systems like adaptive cruise control, lane departure warning, and automated emergency braking. These systems monitor and account for traffic conditions using cameras, radar, and other sensors, making driving safer and more effective [119]. To improve traffic flow and lessen congestion on the roads, artificial intelligence may be used to update traffic lights, signage, and other infrastructure in response to changes in traffic conditions. AI is able to predict when maintenance will be required, even when a component may break, by analysing data from automobiles. Automakers and fleet operators may cut costs and downtime by planning maintenance before a problem arises [120].

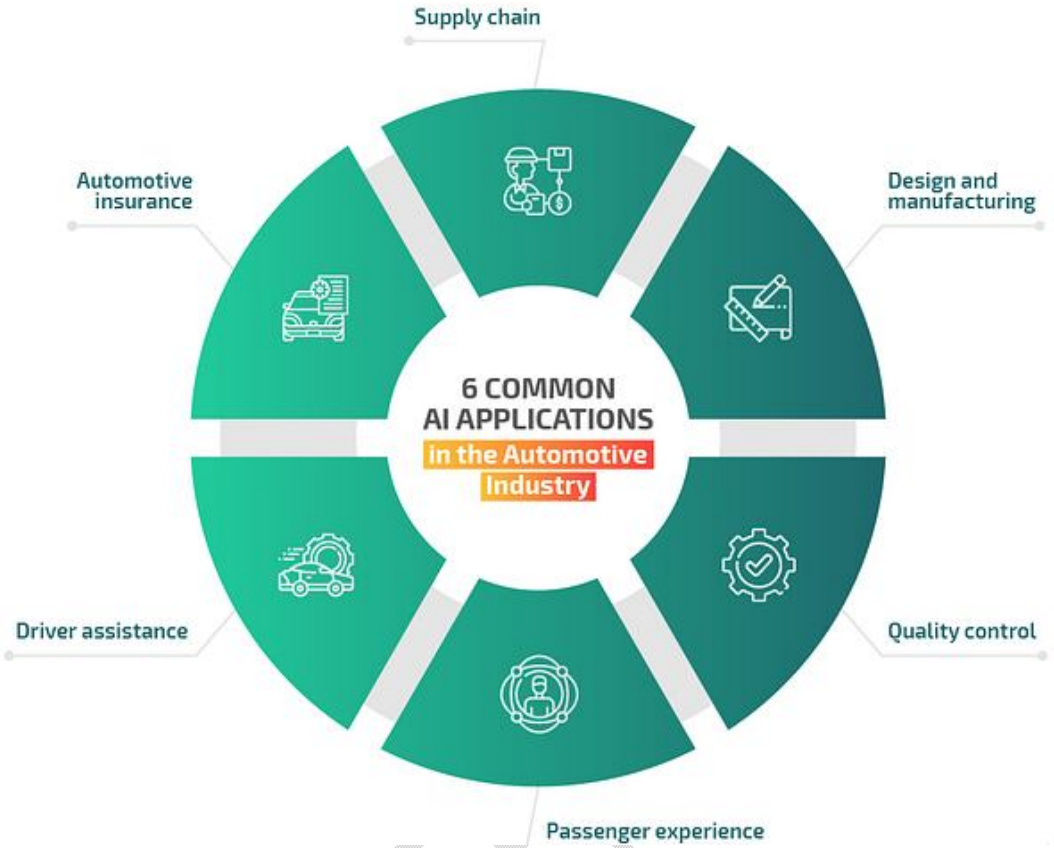

Figure 8 L in automotives [121]

6.11. Power

AI is being used in the energy sector to increase energy efficiency and reduce costs in areas including energy management, demand forecasting, and the integration of renewable energy sources. In order to determine how frequently maintenance should be performed, data from energy infrastructure, such as transmission lines and power plants, can be examined. This enables businesses that produce energy to schedule repair before a problem arises, cutting costs and downtime [122]. The power grid may be made more efficient with the use of artificial intelligence by analysing data on energy supply and demand and changing power plant output accordingly. Artificial intelligence may be used in buildings and other facilities to analyse energy consumption data and find ways to increase energy efficiency, such as by altering lighting, heating and cooling systems, and other equipment. In addition, the energy sector may apply AI algorithms to spot dishonest behaviour like metre tampering and billing mistakes [121, 123].

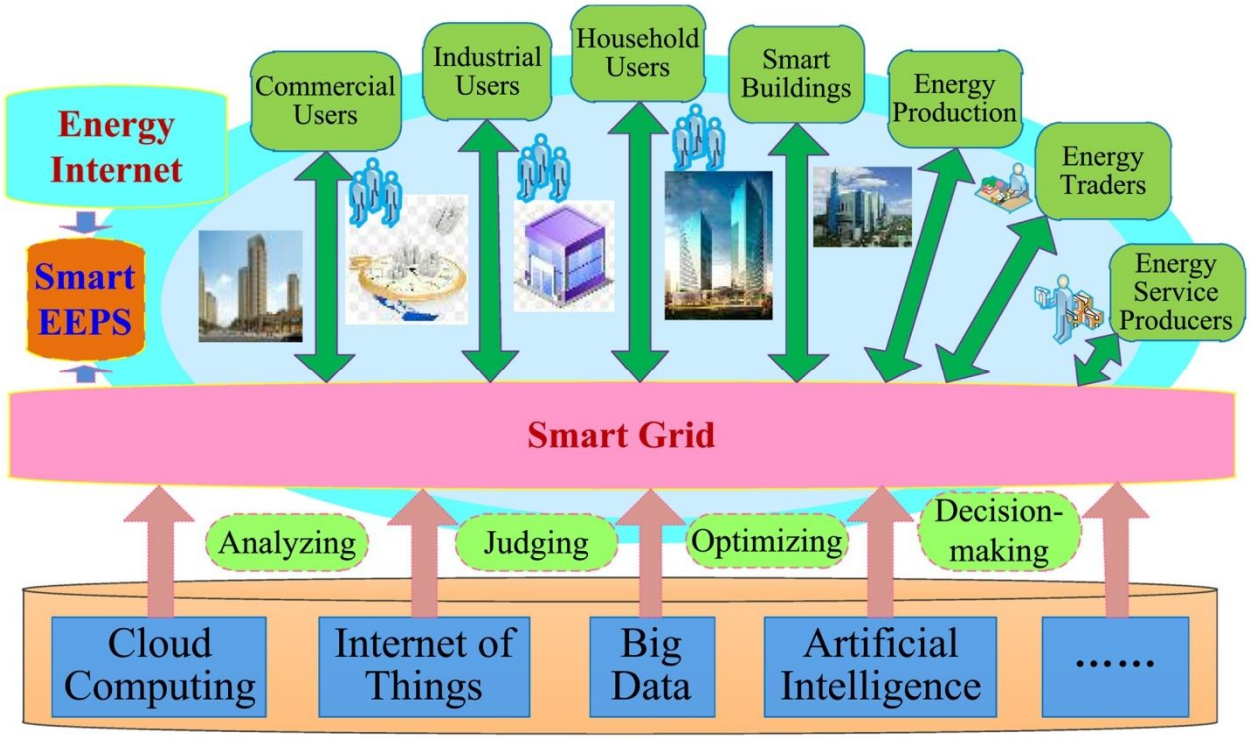

Figure 9 AL in generating smart energy power [124]

Conclusions:

Artificial intelligence (AI) is now driving a revolution in business, as well as in the economy and society as a whole. This revolution is being driven by AI's ability to change the interactions and connections that already exist between stakeholders and individuals. It is conceivable to trace the roots of artificial intelligence back to the mythology of ancient Chinese, Greek, and other civilizations. Other cultures' mythologies may also hold clues. It was believed, according to these myths, that automatons have genuine minds and were able to think for themselves and experience emotions. Because of this, artificial intelligence came into being. This is where the concept that would eventually develop into what is now known as artificial intelligence first emerged. Many company practises now have the potential to be improved by the formation of new forms of collaboration, which is a considerable advantage over other organisations as a result of the ongoing evolution of business as well as the most recent breakthroughs in artificial intelligence (AI). In addition, this advantage is made possible by the most recent advancements in artificial intelligence (AI). Because of the rapid advancement of technology, it is now feasible to offer branded services and even to experiment with new forms of corporate contact with both

consumers and staff. The digitalization of AI has simultaneously brought to the notice of businesses the demand for businesses to focus on their present strategies while also regularly and quickly investigating new prospects in the market. This is a necessity that these businesses must fulfil in order to remain competitive. The use of AL techniques has not only altered the corporate world but also a wide range of other industrial sectors as well. The major focus of this review is on the application of AI approaches to a wide variety of subfields within the business and economics sectors.

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