

THE TRANSFORMATIVE ROLE OF AI IN CRITICAL DECISION-MAKING: A CORPORATE PERSPECTIVE

KURUMSAL BİR PERSPEKTİFTEN, KRİTİK KARAR ALMA SÜRECİNDE YAPAY ZEKANIN DÖNÜŞTÜRÜCÜ ROLÜ

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ÖZET

Bu çalışma, yapay zekanın gelişim tarihini belirli yıllara ayırarak, kavramın kökeninden başlayarak geçmişten günümüze, kritik karar verme yaklaşımı konusunda iş hayatına adaptasyonunu örneklerle açıklamayı, gelecek araştırmalara bilgi sağlamayı amaçlamaktadır. Bu inceleme aynı zamanda yapay zekanın endüstriyel iş bağlamındaki evrimine, ilk kavramsallaştırmasından Endüstri 4.0'daki mevcut uygulamalarına kadar kısa bir genel bakış sunmaktadır. Bu alan, on yıllar boyunca veri odaklı yaklaşımlara, makine öğrenimine ve yapay zekanın endüstriyel süreçlerle entegrasyonuna artan vurguyla önemli gelişmelere tanık oldu. Bu bağlamda geleneksel literatür taramasından elde edilen bulgular geçmişten günümüze 5 ila 10 yıllık periyotlarda incelenerek tarihsel ve örgütsel örneklerle açıklanmıştır. İnsan kaynakları, pazarlama, yönetim, üretim ve lojistik gibi yapay zekayla iç içe çalışabilecek bölümler kavramlarla günümüz iş hayatında bir ihtiyaçtır. 'Yapay zeka' uygulamaları, sektörün tüm alanlarıyla entegre çalışabilen kodlama ve algoritmalar aracılığıyla, daha düşük maliyetler ve sürdürülebilirlik açısından daha verimli bir çalışma ortamı yaratılmasına yardımcı oluyor. Sonuç olarak araştırma, insani duygular, etik, ahlak veya vicdan gibi faktörleri ortadan kaldırarak durumu analiz edebilen, olasılıkları hesaplayıp sonuçları raporlayabilen yapay zeka uygulamalarının iş hayatında

ABSTRACT

This study aims to explain the adaptation of AI to business life regarding critical decision-making approach with examples, starting from the origin of the concept from past to present, by dividing the development history of AI into certain years, to provide information for future researches. The study proceeded with a classic literature review as a method to understand and in order to shed light on the historical development of artificial intelligence and explains its impact on decision-making authority in business management in different sectors with examples. This review also provides a brief overview of the evolution of AI in the industrial business context, regarding from its early conceptualization to its current applications in Industry 4.0. In this context, the findings obtained in the literature review were examined in periods of 5 to 10 years from past to present and explained with historical and organizational examples. AI designed concepts in such as human resources, marketing, management, production and logistics is a need in today's business life. 'AI' applications, through coding and algorithms that can operate in integration with all areas of the industry, help create a more efficient working environment in terms of lower costs and sustainability. In conclusion the research, aims to reveal the effect of artificial intelligence applications, which can analyse the situation by eliminating factors such as human emotions, ethics, morality or conscience, and calculate the probabilities and report the results, on decision-making in business life with exemplary applications of leading companies in their sector.

Keywords: Literature Review, Artificial Intelligence, Algorithm, Management, Critical Decision Making.

JEL Codes: M1, L2, D8, O3.

INTRODUCTION

"Artificial Intelligence" has evolved in various forms from the past to the present. The Word as a term has brought also the action within a gradually and made its way into every country globally including Türkiye. Nowadays one of the most popular companies, leaders respected and well-known in the sector of Global Business are strengthening and upgrading their business game to rule the market with no doubt by engaging as much as possible with Artificial Intelligence (Haigh, 2003). We encounter AI more often by seeing how it is integrated in the systems of the leaders in their sector; such as Google, Apple, Tesla, Amazon etc. This leads also to visible results for each business approach from organising to producing or to packaging to logistics and of course to finance (Bishop et al., 2020). All with self-programming and organising computers combined in the daily business life calendar, self-driving cars, robots packing the products or cameras watching as 24-hour security duty around duties that has been done by mankind for over a decade. What can only lead to groundbreaking developments, especially in the service sector.

The path is simple: To understand the aim of AI in the life of Business, first we need to define what artificial intelligence exactly is, and how it is used to be successful in the "Business Industry"? Artificial intelligence, in its most practical form, is a concept that has become widespread throughout the world, derived from English World itself (Forredellas and Gallestegui, 2021). The strengthening of this concept and its increasing presence in human life has paved the way for mechanization in various fields, especially in industry, from production to logistics.

Artificial Intelligence, is a form of intelligence, that is distinct and different from the natural intelligence found in humans and animals, and it refers to the intelligence displayed by machines (Persson, 1964). Basically AI, can be also determined as a simulation of human intelligence processed via machines or the algorithms of the computers. The studies starting to impel AI are going back to the 1950's, where machine learning as a concept came to the surface as a study field for scientist and engineers.

The reason of the sudden impact of the ideal concept of AI-designed became efficient in the early 1950s, where computers started to become more accessible to humans, the possibility of creating algorithms and coding systems for machines became evident. The starting point of the concept in general machine intelligence has been shown in early 1950s thanks to "Alan Turing", who has published the work "Computing Machinery and Intelligence", in which he aimed to measure the functional intelligence of machines through the "Imitation Game." After this research, more and more engineers, scientist, where interested in artificial intelligence not as term, but as a concept to gain a position in the life of human being (Council of Europe, 2023).

The scientist Arthur Samuel, who was a popular computer scientist in 1952 has, also developed a program, that plays checkers independently, and succeeded marking the first program in history that could learn the game on its own. This was a game changer for other scientist and after this finding Allen Newell and Herbert A. Simon took a big step introducing their so called "Logic Theorist" as the first artificial intelligence program. to World in 1955.

As an outcome of the program scientists could prove that 38 out of 52 mathematical theorems and found also new and elegant proofs for some theorems. Between the years 1950 to 1960 the concept of AI has been in the focus of the philosophers, mathematicians, scientists and other individuals. One of these individuals was Alan Turing, who explored mathematical probability of an AI as a young British scholar (Benbya and Pachidi, 2020). Turing had a different perspective about how AI should be handled and tried to change the idea of the society by arguing about specifically mentioning to focus on human as the starting point of everything (Ambati, 2020). This made in the future lot of things possible as a solution option for organizations act in different fields, such as Ford led by Harrison Ford one of the biggest car manufacturers in his time. The questions about how humans solve their problems starting by the usage of reasoning and decision making, as well as utilizing available information and

this became the breaking point of all the thoughts holding humanity back from the understandings form of evolving integrating with AI for the man-kind. ‘Turing went against the idea of why machines couldn't process information in the same way and, contrary to prevailing thought, he discussed how intelligent machines could be constructed and how their intelligence could be tested in his article "Computing Machinery and Intelligence"' (Jarrahi, 2018). After the successful integration of the tests has shown, that machines can learn with the right algorithms and coding system.

In current topics and approaches, this concept, originally adapted in personal areas, has become a part of a larger picture in socio-cultural areas. Indeed, artificial intelligence applications have rapidly increased and diversified in recent years, but the capacity to expand and develop these applications has become a prerequisite for their implementation (Wiederhold and McCarthy, 1992). Technological change that adds a new dimension to national competition in various fields such as health, the military, education, and more is becoming increasingly important in terms of national security and economic power.

In recent years, many countries and regions have published their plans and adaptation processes under the name of "artificial intelligence strategy" in line with their global leadership aspirations in the field (Persson, 1964). At this point, three highlighted and important issues related to the topic can be listed as follows: First the creation, research, and development of "artificial intelligence" workforce and the establishment of investment programs to create a suitable environment in this field (Dirican, 2015). Governments and companies in private and general co-operations started to find alternative solutions for the organic and inorganic changes that "artificial intelligence" so the adaptation of AI can bring to business life in terms of management and economics. The analysis that leads to financial and ethical impacts in the industry in help of AI, that provides faster information for use in critical moments easily that also allows for managers to calculate and evaluate with the help of AI in Daily risks of business management decision making approach in organizations.

The research includes the background of AI regarding the previous effective historical events that allows a brief overview the evolution of AI. Most important in the industrial business context, from its early conceptualization to its current applications in Industry 4.0. Particularly with Industry 4.0, the transition from human labour to machine power has become evident in Türkiye as well.

This in general helps to improve the quality of the work by also reducing personal stress of the employee after the adaptation of the system with AI. Saving time and coasts ad mentioned before and also keeping manpower usage in minimum is saving life quality of the employee in a way with these adaptations (Haigh, 2003). Human resource, marketing, public relations, management, producing process and all together the strong parts of an organization are deeply connected to the decision-making approach in business, because wrong decisions can lead to big loss in the sector for the specific organizations. Leaders need to be aware of the popular and useful concepts that are adaptable to their business easily and help them to reach their goals in total for the business inquires (Nelson, 2023).

In this study the ethical side of AI usage is also discussed to give researchers an idea about the implement of AI-designed concepts in business. There are also the future trends in organizational structure to take advantage of in right time to be one step ahead in the market.

2. METHOD

In this part, the methodology of the research is explained with the content given in the figure, showing the starting point of the research (Bishop et al., 2020). The method contains the basic needs of the literature review as a ‘qualitative interpretation of prior knowledge’ by collection of the secondary data via scientific articles, thesis’, online pages and the combination of those.

The research questions are given below in two paragraphs and the importance of the research is also explained regarding these questions. First question is: ‘How AI affects

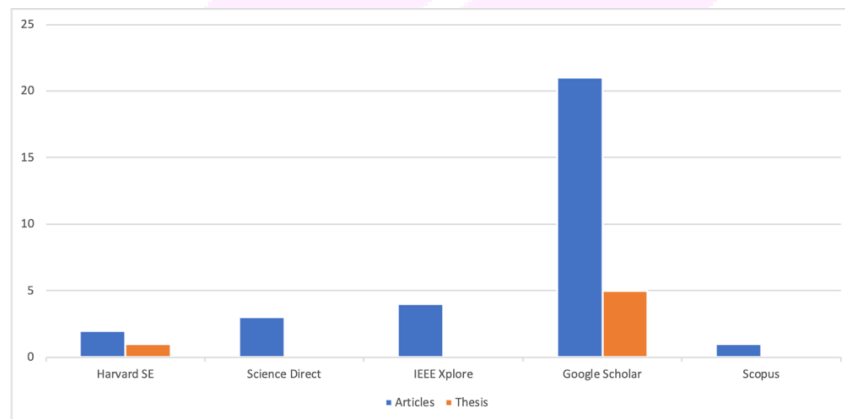
executives in the decision- making approach especially in the critical decision-making path?’’ and second: ‘‘What are the important points to work on, while designing AI integrated work environments for employees and customers for ethical and fair business understandings regarding to protect human rights?’’ (Benbya and Pachidi, 2020). Also, the research aims to show how organizational areas, such as HR, logistics, marketing, sales, production process parts of the business can work more efficient by building an AI-designed system with cooperate culture (Jarrahi, 2018).

Another important and the third question that took time to answer was: ‘‘How the society- symbolized as the consumer and customer by cooperation’s- took part in the AI-designed world of business for executives to take action for growth to read the market and to make the external also internal analysis without disrespecting the cooperate vision working with own bias and ethical responsibilities as human-beings?’’.

The research contains all materials showing answers to the questions shared and gives future researchers a new and actual starting point. The information gathered to answer these questions summarized after categorising the primarily selected data such as the academic papers, articles, books, proceeding of conferences and reports from databases (Sestino and Mauro, 2021).

The sources were primarily selected from academic databases, like Harvard SE two articles, Science Direct three articles, IEEE Xplore four articles, Google Scholar 21 articles five thesis and Scopus one article, also web pages used with google. All these databases were chosen due to extensive coverage of AI-related research in the business context. The key words chosen for the online- resource search and phrases supporting the data search were as example; AI, critical decision-making in management, AI effect in business, historical background of AI etc. Below also the table content of the resource allocation is given.

Table 2.1 Resource Allocation



The method used contains the obligations of a traditional, classic literature review priorities. Starting with a historical background, the research gives information about the also examples about the development of AI practises in organizations globally in different business areas such as Amazon, Tesla, Google etc. The leaders of the market started to implement their work with the algorithms of AI already and today’s high-level managers and CEOs whose leadership is always required especially in critical moments of decision-making need also to work with AI-designed work integrations to improve their results in every are they operate.

3. LITERATURE REVIEW

1950s: The Birth of AI and Early Research:

The concept and scientific field of artificial intelligence officially began in the 1950s as it is in the historical background part mentioned, Alan Turing introduced the idea of a machine learning to the World (Persson, 1964). In 1956 with the Dartmouth Conference where also like Turing, McCarthy and the others, talked about machine learning but with the possibilities of the computer language learning where this also referred lately to the algorithm's combination for neuron nets that eventually lead to self-improvement for all and reliable results also for the business making-approach (McCarthy and others, 1955). He also developed the concept of the "Turing Test", which aimed to measure a machine's ability to exhibit intelligent behaviour indistinguishable similar to a human being by using an applicable reasoning method to understand the concept to develop a learning way for an AI (World, 2022). This also took researchers attention on this evaluation and made more scientific developments in the field of AI possible.

1960s and 1970s: Knowledge-Based Systems:

The 1960s and 1970s were in many ways a development period for AI. Computer programs learned the decision-making abilities of a human expert in a specific domain that focused researches in this specific area to make progress (Shubik, 2012). "Dendral", today a well-known pioneering expert system developed in the 1960s, was used for chemical mass spectrometry to analyse and to demonstrate the potential of AI in knowledge-based tasks for the future researches starting with science, but getting ready for the Business requirements (Wiederhold and McCarthy, 1992).

1980s: Knowledge Engineering and Commercial Application

Moving to 80s, people witnessed the commercialization of AI technologies, with the development of expert systems for industrial and business applications. AI research increasingly focused on knowledge engineering, which involved acquiring and representing human knowledge in a machine-readable form. Studies in this field show that knowledge engineering in fact had a huge impact on commercial applications by manufacturing industry with automation concepts around World (Kriebitz and Lütge, 2020). Expert systems are developed to be used in various industrial domains, including manufacturing, finance, especially security and healthcare. Governments also focused on detailed researches for security checks that can be easily applied and effects thousands of people around World (Pratt et al., 2020).

1990s: Machine Learning and Neural Networks

In the 1990s, major changes and developments has been revealed. These developments also determined the point of view as a shift toward machine learning approaches (Dirican, 2015). To explain more detailed discoveries in connection with neural networks, which allowed AI systems to learn from data has been a game changer for many researchers (Jarrahi, 2018). This era marked the resurgence of interest in neural networks, and their application in industrial settings, such as quality control and predictive maintenance, gained prominence.

2000s and 2010s: Big Data and Deep Learning

The 2000s and 2010s were marked by the explosion of big data and the development of deep learning techniques, such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs). (Vaio et al., 2020) This was also a needed mile stone for robotics to enter in the global markets for producing the household products that are mostly well-known brands like Dyson. Industrial businesses started utilizing AI for data analysis, optimization, and predictive maintenance (Haigh, 2003). AI was applied in supply chain management, quality control, and logistics.

2010 to Present: Industry 4.0 and IoT

The World turned its face to a new generation of system that include robotics and AI to every part of the industry. The new employees/workers of big companies started to change

after the presentation era is characterized by the integration of AI with Industry 4.0. It is called the fourth industrial revolution, which firstly focuses on smart factories and the Internet of Things (IoT). (Benbya and Pachidi, 2020) also includes to change the ideal manpower idea to machines taking over the jobs man used to do. AI and machine learning are applied to real-time data from sensors and IoT devices for process optimization, predictive maintenance, and autonomous decision-making in industrial settings (Ambati, 2020). AI-driven automation and robotics are transforming manufacturing and supply chain processes.

Artificial intelligence (AI) and the object that include to work with AI is mostly used these days in leader economies and companies in Amerika, Europe, in Asia and also some Arab countries. The positive effects and also the importance of the appliance of the method for AI transfer to organizations, caring points are shared with some real-life examples to solve the most common daily business problems are given below:

Data Driven Decision Making : To collect data for customer behaviour or to provide insight data to understand market trends in unknown competitive markets AI is an important asset (Persson, 1964). AI can be used to transfer this information to build up a market strategy, that can help CEOs and managers to make well informed thoughtful in many options, strategically wise decisions as example for product development regarding the needs of the market in aspects of culture and landscape or to expand the market.

Risk Assessment: Financial operational risks are one of the most important topics when it comes to investments in each sector of the industry. AI algorithms can make the process easier, by evaluating the potential threats, detecting frauds and crediting risks for executives to take further steps to grow their market range regarding their business needs.

Scenario Analysis: “Learn from the mistakes of others. You can't live long enough to make them all yourself” said “Eleanor Roosevelt” (Rockwell, 2017). The same idea can be adapted to business and usage of AI can make it possible by using historical data to simulate various scenarios based on the current conditions, which helps the executives of the organizations in the phase of planning and gives the organisation strategic options to succeed by their goals without taking real life risks.

Competitive Intelligence: AI can be used to analyse competitors’ activities in the market for the right pricing strategy or to upgrade and understand customer experience with outcomes to design it better in aim to reach target market share. For executives, CEO’s it is more efficient to build strong cases when it comes to finding new solutions against competitors’ fast growth. (World, 2022)

Demand Forecasting: Forecasting models helps executives for organising departments as example inventory management and production scheduling or reducing some costs and ensuring efficient sustainable resource allocation.

Logistics Optimization: To optimize transportation routes, to manage warehouse operations and to organise supply chain by ensuring clear and smooth operations by saving costs it is possible to work with AI to gain all these given step by step (Dwivedi et al., 2021). That makes AI an important tool for executives.

Customer Experience Enhancement: Use of AI is making personalization easier by chatbots or AI-driven recommendation systems to reach customer support in matter of customer satisfaction to be reachable on customer side it is an effective solution (Schultz, 2018). This helps the organisation to have fast feedback and also to social media data to improve products and services.

Process Automation: The daily tasks of business life like reporting financial data, to analyse contracts and human resource process can automated with the use of AI for business, that can lead to repetitive tasks automation, that saves employee time on daily duties

(Quinlivan, 2023). This also helps executives by decision-making process by reducing operational costs and most importantly the errors that occur recurrently.

Energy Efficiency: AI with automation systems it is possible green energy saving system for manufacturing and facilities. Optimization of the energy usage and reducing also operational for the environmental and financial impact AI is an important tool.

Human Resources: Human resources are the capital of the organisation, that holds the strength from the most important source, which is the employee (Persson, 1964). Starting with talent acquisition to employee engagement and portfolio management human resource is working with AI powered recruitment tools that can analyse resumes to match the right one with the wished position, to screen candidates fit with a job in many companies (Haigh, 2003). This transcends conventional methodologies to encompass resume analysis are the powerful help behind the scenes. AI is also used in HR for engagement and to identify factors that affect the productivity of the employee.

Financial Management: AI is used in wealth management for making investments recommendations and for managing portfolios in many ways. A long-term work can easily turn to a short-term work with AI-automatise expense reporting (Ambati, 2020). System can ensure compliance with financial policies, that also help reducing unnecessary overhead.

Cybersecurity: AI identifies and responds to the code algorithms given that leads to identification cybersecurity threats in real-time to secure company's important data operations by safeguarding Legal and Regulatory Compliance: Usage of AI helps organizations to evolve regulations by analysing legal document such as contracts and other required policies (Forredellas and Gallastegui, 2021). This gives executives options by saving time from daily work routines requirements. AI stands as a sentinel for organizations, in high-level corporate domains, CEOs and upper management wield AI as an invaluable strategic instrument for driving data-informed decisions, to shape the future of the organization. Manufacturing companies are already in this position and started to use more robot such as Amazon for making work environment and the work itself more efficient by doing so also aiming to reduce coast and gather financial power more and more in the sector (Vora, Gholap et al, 2023). It is not wrong to share that companies declining the usage of AI integrated systems in their business are most likely to lose profit in years. In high-level corporations to enhance decision-making, streamline operations, and gain competitive advantages there are different ways to apply to Artificial Intelligence in the system based on the needs of the organizations and there is always an option for any sector the business operates on.

4. CRITICAL DECISION MAKING IN BUSINESS

Critical decision making in business refers to the process of making high-stakes, impactful, and often complex choices that significantly affect the future of an organization (Nelson, 2023). These decisions are typically made by senior executives, including CEOs, and they involve strategic, financial, operational, and ethical considerations. Here are key aspects of critical decision making in business:

Strategic Decision Making: Strategic decisions set the long-term direction and goals of an organization (Jarrahi, 2018). They address questions related to market positioning, expansion, product development, and competitive advantage.

Resource Allocation: Deciding how to allocate resources, including budget, personnel, and technology, is a critical part of decision making (Saba et al., 2020). This involves choosing which projects to fund and which to prioritize.

Risk Assessment: Critical decisions are mostly holding managing risks, that can lead to potential financial, operational and regulatory risks including the market. Risk mitigation strategies are crucial. (Haigh, 2003)

Decision making approach is based on many different variations regarding the industry that the business accurse (Nelson, 2023). Manufacturing and producing in a big mass or a start-up business to grow, every company or organization has to make decision up to their goals for planning, AI makes it easier to collect the data needed after that to analyse and report it in hourly or daily basis regarding the need. (Rockwell, 2017) To save time and work more efficient, AI can help to make better decisions when the time comes for the executives to take action.

5. INTEGRATION OF AI TO BUSINESS WITH CASE STUDIES

All around the World, business is affected by AI and technology, no matter in which field the business or organization operates, the need to work with AI options stays on to table for all if it is the customer experience and data analysation, or logistics coast redaction t for. Emerging economies are mostly manufacturers main address to produce but also there is the option the build from zero than innovate a system that is working with failure.

After the integration and founding of Industry 4.0 era, AI is becoming increasingly integrated into manufacturing processes, supply chain management, and other industrial applications to enhance efficiency, reduce costs, and improve decision-making.

Today companies like Tesla and SpaceX, owned by Elon Musk are mostly focused on AI and to make a big difference in the future for the human kind (Benbya and Pachidi, 2020). Tests plant growing in the space to reach various important data to be able to survive on another planet if there is no option on Earth.

1970-1980 Design Meets Innovation: In the 1970s one of the biggest companies of its time Ford Motor Company combined their expertise in the new tech system and called it DERPO (Design Evaluation Program). This was an early AI application just designed to improve decision-making in the manufacturing process.

1990s-2000s Quality Control in Manufacturing: Specially in the car manufacturing industry there are significant examples of the usage of AI. Toyota started to use AI-powered quality control systems. The aim was to organise the system to analyse data from sensors on the production line that could detect defects in real-time, to reduce waste and to ensure the product quality to least.

2000s-Present Predictive Maintenance Years: In the 2000s Rolls-Royce made a major difference when it came to the engineering of the vehicles. The cars of the brand gained a massive power by the usage of the aerospace and civil defence company's aircraft custom made engines for the brand (Pratt et al., 2020). AI algorithms could analyse the sensor data and predict the needed power when it is maintenance to reduce downtime and increase lifespan of engines. This also developed a different respect for the brand by other brands in the market. After the success of the Rolls-Royce, German manufacturers in the automotive sector like Porsche, Audi, Mercedes and BMW started also to work on many projects including the different version of the AI by their systems (Lüber, 2023).

Robotics and Automation after Industry 4.0 Examples: Amazon is one the biggest companies on Earth that has a revenue of "\$143.083B" and with "12.57%" increase rate that added in years only more and more power on top (Amazon Revenue , 2023). Amazon started to use AI driven robots in different departments like; packaging, e-commerce and logistics (Schulz, 2023). This decreases the need of manpower in the department like logistics and packaging as example by robots moving the products to or for the human workers that also leads to efficiency in the supply-chain, which helps human by improving the quality of the work-space (Quinlivan, 2023).

Another example can be shared on pharmaceutical manufacturing, AI-driven robotics used by discovering drugs and to development of it (Vora et al., 2023). This accelerates the

testing of a drug and helps the process by performing high-throughput screening to make further steps in the area.

Present and Future: Factories and IoT: Factories became stronger and smarter every year with the new integrations of AI-design to make the work-space efficient and healthier for the employee and to increase the quality of the work by saving money and time. (Persson, 1964)

Siemens as example introduced the world with a new concept called the ‘‘Digital Twin’’ in manufacturing process. Here was the main idea to enable manufacturing process to simulate, to analyse and to optimize by enabling the production by leading AI-driven digital models of the physical product to increase efficiency and to reduce costs.

To build sustainable business for lifelong improving productivity is a must. To do that practical application in quality control and automation is a need. There will be new ideas becoming the reality in time without question to empower the globalization of AI-driven manufacturing and co.’s adaptation.

It is evident that machines, thanks to engineers and scientists, are gaining strength every day. However, while loading emotional intelligence into these algorithmic developments and mechanically adopting human qualities may be quite doubtful, it gives rise to multiple theories regarding the unknown. At the same time, the independence of artificial intelligences to store and develop knowledge and their ability to analyse millions of pieces of information by sifting through them in a fraction of a second may suggest that machines could become competitors for many tasks performed by the human brain in the future.

By using artificial intelligence applications in various functions, businesses can increase operational efficiency, improve decision-making processes and gain competitive advantage. There are commonly used AI applications and a roadmap for AI adoptions.

First of all, customer service and experience can be powered via chatbots answering the needs of the customer and can provide the basic services via AI. Marketing and sales area can be defined differently via the usage of AI by personalization, targeting and segmentation for sales forecasting and also customer need and demand analysis. We can re-shape the human resources and recruitment methods for CV screening candidates that can help time management as an evaluation via automation and data analytics in recruitment processes. Finance and accounting can also be shaped by AI for account reconciliation, predictive trusted financial analysis and fraud detection, in automatic invoice and accounting process, where human eye can miss or get lost in the details AI designed apps can help. There are also plus sight on operational efficiency part where forecasting and inventory management can be demanded easily via AI and applications for automation and control in production lines.

Another important topic is the risk management for business. Artificial intelligence applications for credit the risk assessments and financial risk predictions. AI based systems can be used also for security and also fraud detection. For management and strategic planning AI usage can be important for decision support systems and strategic decision making. Data driven AI applications can lead to better performance analysis and measurement.

In terms of roadmap, businesses can phase in AI adoption. This process may include different steps like vision settings, talent and resource analysis, organizing training and awareness programs for employees about artificial intelligence. There also opportunities in prototype and pilot Projects are also a need for organization strategic steps by usage of AI this can start with small-scale pilot projects and testing systems. Evaluating the effects of artificial intelligence applications. The AI combinations can be expanded by the use of artificial intelligence throughout the different areas and industries of business. AI is also a need for business regarding continuous improvement. Continuous monitoring and improvement of artificial intelligence systems There are many aspects for the combination and usage of the AI-

designed work environments and these can be shaped according to the industry and the needs of the business.

6. FUTURE TRENDS FOR AI INTEGRATION IN CORPORATE DECISION-MAKING

The integration of artificial intelligence (AI) into organizational decision-making is a developing work area, with a changing spectrum of emerging trends and evaluations poised to shape the future landscape. To understand the future trends, that will shape also the future of the business of many ways the usage of the AI is a need for CEO's and executives. For corporate strategies AI gives the option of data collecting and analysing in many different ways with one click.

“Future AI systems are expected to prioritize Explainable AI (XAI), ensuring that users can comprehend the underlying logic and decision-making processes of AI models. This trend is essential for building trust and maintaining accountability in AI-driven corporate decisions” (Dirican, 2015).

Artificial intelligence is also a developing field that is evaluated from different perspectives and is taking steps to dominate the sector, which is expanding its field with new concepts today. One of the important concepts, that shapes AI field is the “Generative AI”, that is likely to have a profound impact on organizational culture in the future of business. Generative AI can generate high quality visions, content based texts that can be shaped accordingly to the needs of business (Amazon, 2021). There are several ways in which it may influence organizational culture like in innovation and creativity, collaboration, data-driven decision making, continuous learning, flexibility and adaptability, employee well-being, human AI collaboration, customer-centricity, agility and speed.

Innovation and Creativity:

Generative AI can assist in generating new ideas, designs, and solutions. This can foster a culture of innovation as employees are encouraged to explore creative possibilities and experiment with novel approaches. The emphasis may shift from routine tasks to more value-added, creative activities.

Collaboration:

AI designs with tools and applications can enhance collaboration by providing platforms for real-time communication and collaboration. Virtual assistants, collaborative editing tools, and AI-driven project management systems can encourage a more connected and collaborative organizational culture.

Data-Driven Decision Making:

Generative AI can analyse data faster and can provide insights for a better decision-making approach. Organizations that embrace AI-designs may develop a culture that values data-driven decision-making, with employees relying on AI-generated insights to inform their strategies.

Continuous Learning:

There are different AI-driven learning platforms, that can open a new window regarding employees' engagement in continuous learning and upskilling. This can add to build values for personal and professional development, as employees recognize the importance of staying updated in a rapidly evolving technological landscape.

Flexibility and Adaptability:

As AI automates routine tasks, that give employees the option to focus on new roles and responsibilities. This can also change organizational culture of flexibility and adaptability, where employees are open to learning new skills and embracing change.

Ethical Considerations:

The use of generative AI raises ethical considerations. For personal data usage allowances are very important. Organizations may focus on cultivate a culture that prioritizes ethical decision-making, transparency, and fairness in AI applications.

Employee Well-Being:

Automation of repetitive tasks can potentially reduce workloads and physical power usage of human-beings that can also allow the employees to focus on more meaningful, fulfilling work at the workspace. This shift can contribute to a culture that values employee well-being, safety and being in better conditions regarding work environment and also job satisfaction, and work-life balance.

Human-AI Collaboration:

The integration of AI into different parts of work may lead to a culture of collaboration between humans and machines. Organizations that want to be successful for the future can emphasize the importance of humans and AI working together synergistically to reach organizational goals in the future.

Customer-Centricity:

Customer interactions can be enhanced by AI with personalization of strong and efficient services. Organizations that are customer-focused may use generative AI to improve customer experiences. This can lead to loyalty and trust and can end up with consumers being customers for the future.

Agility and Speed:

AI can help automating certain processes, which can lead for organizations to become more agile and responsive to market changes. Organization's culture that values speed, adaptability, and quick decision-making.

While the integration of generative AI offers numerous opportunities, organizations will need to carefully manage the implementation to ensure a positive impact on culture. It's crucial for leaders to communicate the benefits of AI, provide necessary training, and address concerns to create a supportive and collaborative environment.

In the future AI must obtain more detailed law and regulations when it will come to private data usage for important topics such as consumer behaviour or market analysis that requires protection of the consumer or costumers trust, while collecting data for the market research by AI. The Artificial Intelligence systems will increasingly operate at the edge, to be closer on data sources reducing latency and enabling real-time decision-making. This is one of the trends that gives hope regarding trend applications specially in supply chain management and industrial processes for the future (Schulz, 2023). AI augmented creativity and collaboration with creative professional and their speciality such as content creation, product design and innovation are a necessarily fact in the sector for all now (Lüber, 2023). Collaborative paradigm enhances creativity and also helps to optimize resource by utilization and develops the decision-making approach.

How governments will be building common understandings when it comes to AI regarding their own politic view is a big question for the future.

The synergy between AI and emerging technologies, such as quantum computing and blockchain, promises to reshape the corporate decision landscape (Shubik, 2012). Preparing

for these impending trends is imperative for businesses looking to harness AI's potential while upholding ethical and regulatory standards. Argentina, Indonesia, Mexico and Turkey, supported the short-term feedback hypothesis.

7. REGULATIONS AND ETHICS FOR AI-DESIGNED CONCEPTS IN BUSINESS

The new kind of power lays on the correct and effectively use of IoT and AI in many different branches. Where everything is basically possible with today's findings regarding yesterday seems to be impossible for AI, but where is the red-line? Where to stop considering the regulations of ethics by collecting data from devices that people do use in daily-life personal or in general at workspaces. There are many questions to ask and many to understand to find the perfect balance by working with AI where there are actually no limits- unleash it is not programmed to stop by algorithms.

The integration of artificial intelligence (AI) into business operations necessitates a meticulous consideration of regulations and ethics to ensure responsible and ethical deployment of this potent technology. In this part, the pivotal regulations and ethics governing the use of AI specially in Business are shared step by step:

Data Protection and Privacy Regulations: Data protection and privacy regulations rules has to be set for in Business matters (Pratt, Boudhane, Taskin and Cakula, 2020). There are data protection laws around the World regarding governments and countries own perspective of business ethics, such as the General Data Protection data protection laws such as the General Data Protection Regulation (GDPR) in the European Union. These regulations mandate the transparent and lawful collection and processing of (Schulz, 2023) personal data, necessitating the consent of data subjects.

Algorithmic Fairness: To control, to ensure the limitations and to impose restrictions when it comes to AI algorithms is a must to protect the society's norms such as protecting children to work with AI in different levels on. Also, the regulations demand that AI systems do not discriminate against protected groups based on gender, race, or other characteristics (Dirican, 2015). Compliance with anti-discrimination laws is fundamental.

Intellectual Property and Patents: For all business matters to protect uniqueness has to be cognizant intellectual property regulations, particularly pertaining to AI-created works, and ensure adherence to patent laws in cases where AI innovations are developed insure the concept.

Sector-Specific Regulations: Depending on the industry, businesses may be subject to specific regulations (Wiederhold and McCarthy, 1992). For instance, the healthcare sector must comply with regulations like the Health Insurance Portability and Accountability Act (HIPAA) when utilizing AI in patient data analysis.

Transparency: Ethical considerations necessitate transparency in AI systems. Businesses should provide clear explanations of how AI systems operate and the criteria used for decision-making

Accountability: Organizations are ethically bound to accept responsibility for the outcomes of AI systems (Haigh, 2003). Clear lines of accountability are essential to address issues or disputes arising from AI-driven decisions.

Bias Mitigation: To build a trust in the sector for each Business and organization it takes a long-term effort and time. In general, to gain trust as a customer experience outcome such as sustainable trustworthy system for a healthy business structure, organizations need to fulfil the needs of the consumers (Ambati, 2020). One of the most important steps is to mitigate the bias to gain that trust, consumers are unfortunately, often prone to focusing on urban legends rather than focusing on the facts. Such as internet news from unrealistic sources can affect

their judgment (Kriebitz and Lütge, 2020). To protect the business and the work with AI in the right position it is a must to forecast the options and the steps to take to mitigate bias. The ethical removal of bias from AI algorithms is critical. Businesses must strive to eliminate any unintentional bias in data and algorithms that could lead to unfair decisions.

Data Privacy: Respecting individuals' data privacy is a fundamental ethical principle for all Business matters. Businesses should safeguard the personal data to build trust to the organization and ask for permission of the users in every kind of service they provide to collect, process and seek informed consent for data usage or analysis.

Human Oversight: Ensuring that AI systems do not operate entirely autonomously is an ethical imperative. Human oversight should be maintained to prevent potential misuse or harmful decisions. This can be developed for the future to protect.

Societal Impact Assessment: Ethical AI deployment involves assessing and addressing potential societal impacts. Businesses should conduct impact assessments to anticipate consequences and mitigate negative effects (Kriebitz and Lütge, 2020).

Given the global nature of business, adherence to international standards and cooperation with relevant agencies is vital. Cross-border data flows and international AI collaborations require businesses to navigate a complex landscape of varying regulations and ethics.

8. CONCLUSION AND RECOMMENDATIONS

To build an efficient management system that allows organisation to continue to grow in today's needs of the World Market, managers need to take action to make important changes to make a difference among competitors (Schulz, 2023). Working with AI in business necessitates a comprehensive understanding and adherence to regulatory frameworks and ethical considerations data collection and analysing the data is a must. By doing this compliance with data protection regulations is a need, algorithmic fairness, and transparency, along with a commitment to mitigate bias, ensures that AI serves business objectives while respecting the rights and dignity of individuals (Kriebitz and Lütge, 2020). Ethical and responsible AI deployment is not only a legal requirement but also a necessity in the corporate World.

“How AI affects executives in the decision- making approach specially in the critic decision-making path and what are the important points to work on, while designing AI integrated work environments for employees and customers for ethical and fair business understandings regarding to protect human rights?” where the important questions designing this research. To summarize the subject, AI helps decision-making approach beginning with the data collection method, to improve the ways of the collection of data with algorithms designed to get to customers easily via usage of Generative AI methods. Making decision is a whole process.

Like a strategic decision-making approach via SWOT analysis, managers need to see the strong and weak sights and also the opportunities and treats while moving the company regarding their strategies to succeed. Google, social media like Instagram, Facebook, Twitter & co. are easily matched with Generative AI models. It is easier for brands to reach customers and consumers via advertisements, links, awarding systems and surveys that can lead to better marketing analysis and also to stronger marketing strategies. Not only outsources also insources can be designed differently with the usage of the AI in business. As example for employee's communication systems and human recourse is using also for years now surveys and online employee training systems to understand, to motivate and also to improve the quality of the work the employee applies, via AI designed systems. Sound, face or finger prints recognitions for labs, hospital and also high-level security adaptations are also trending apps when it comes to the usage of AI algorithms that will develop its-self in the future to a different level. For hotels, restaurants robotics are used in the sector of the service industry.

Many applications are getting viral day after day and we will see more lifechanging news in the field in the future like the big tech company Apple using algorithms to combine and to collect data via iPhones and Apple Watch for health measurements by collecting data with allowance of the person using it. Here the most important aspect is to design AI algorithms, applications, robots even regarding the ethical duties for human rights, privacy allowance by collecting any kind of data, that shouldn't lead to a gap when it comes to security and the protection of the personal data.

In another section of the industry for the future logistics will be different than today. The research made examples about the leaders of the industry via different parts of the organizational structure. As example Amazon started to use robots for carrying and sorting packages as a test group that will continue to grow and develop in also other branches and companies that can switch to this new global trend and power the usage of AI.

For the future researchers the physical power of man will be replaced slowly with the examples in the robotics area, also the health systems and a issues about privacy would be the trending topics when it comes to healthy ways to implement the AI-designed work spaces.

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EXTENDED ABSTRACT

Artificial intelligence (AI) has been applied in industrial businesses over the years. Innovations across various fields provide opportunities for significant advancements in Business for humanity, driven by technological methods and developments with the outcome of AI.

This study aims to explain the adaptation of AI to business life regarding critical decision-making approach with examples, starting from the origin of the concept from past to present, by dividing the development history of AI into certain years, to provide information for future researches. The study proceeded with a classic literature review as a method to understand and in order to shed light on the historical development of artificial intelligence and its impact on decision-making authority in business management. The findings obtained in the literature review were examined and explained in 5-to-10-year periods from past to present.

This review also provides a brief overview of the evolution of AI in the industrial business context, regarding from its early conceptualization to its current applications in Industry 4.0. The field has witnessed significant developments over the decades, with increasing emphasis on data-driven approaches, machine learning, and the integration of AI with industrial processes.

In business approach with the combination of AI, each industry structure has been affected in a way, regarding the main stones of making business regarding today's most popular methods in business decision making (Van de Wetering et al., 2022). The concept of "artificial intelligence," which has become an integral part of making business like human resource, marketing, management, producing, logistics and co. AI transitioned from conception of every part of and now occupies a significant place in the real life of business management. This also is affecting the ability to work more in efficiency, how people do business and how managers make critical decisions due to its ongoing impact in industry of technology.

For years, applications that provide numerous options and calculate probabilities trusted for time-saving and obstacle assessment on daily life of a human-being starting from waking up to finish up a day at work have already become part of the daily life of people, listing search engines, which offer hundreds of options, as examples of artificial intelligence applications (Hughes, 2021).

Within the scope of the research, the reliability of artificial intelligence applications that can perform situation analysis by eliminating factors like human emotions, ethics, morals, or conscience and report results by calculating probabilities will be investigated (Persson, 1964). It raises the question of whether this form of intelligence, devoid of human emotions, can effectively transmit the necessary data to leaders regarding critical decision-making and the vital sustainability of a healthy sustainable business structure for success.

In many developed countries, the period of mechanization in industries requiring physical strength became even stronger from 2015 onwards and began to take its place in our country with Industry 4.0 projects. Of course, the main question here is how to deal with the already high unemployment rates by mechanizing activities that are carried out by human labour in moderately developed countries with a sufficient young population and physical strength. This is an important issue that needs to be discussed from the perspective of businesses and the economy. For top-level executives, CEOs, and CFOs, the question of which way this intense development ratio will evolve in every aspect of the organization is vital.

Certainly, this change is the result of technological accumulation that spans many years and will lead to more significant differences over time (Forredellas and Gallestegui, 2021). The biggest question is how to adapt to changes that can profoundly affect every unit of management within the organization and can cause significant disruptions. To improve quality of work, to reduce costs and to grow artificial intelligence (AI) plays a crucial role in business-critical decision-making by providing data-driven insights, automation of processes, and predictive analytics.

Business co-operations have been using data analysing for many years now, only the methods are developed and innovated with the driven technology of today. Robotics and coding are the one of the most popular areas to study that also leads to feed the need in the market for the new coming technologic evolutions in the understanding of doing business (Rockwell, 2017). Leaders of today now the importance of the leading skills to be a good leader for the followers. AI makes this easier for CEOs, CFOs and managers all kind by using algorithms to understand the needs of the employee also to manage the teams to lead them to success.

The working routines of employees are part of the organizational success, where executives combined with the work of HR-department need to take it under to loupe. Even the time used on computer, the clicks of a mouse is reported on the system and the screen savers (Pratt et al., 2020) time can be used as the time stayed off-line, which is also giving information about the employees work style and work ethics that can be tracked with AI programs adapted to the specific business (Nelson, 2023). The actual hidden face of the motivational guidelines in business analysis that is used to understand consumers or customers behaviour and desires are also used to understand the situation of an employee by "working" efficient or not? When understanding what an employee needs to be motivated to show better performance at work helps to shape the dynamics in the organizational culture and to now the educational needs for HR to reduce stress on employees or to educate them in the specific regulations when it comes to the updates on organizational direction to reach common goals (Quinlivan, 2023). This combination of work has a huge impact for the office dynamics that should be under control to produce in a healthy, peaceful environment for each business area. The mindset of co-workers can affect each-other for motivational reasons, where AI is easy to apply on systems to follow up the weekly or daily reports. This reporting system is very useful for executives where time is worth of gold and there are a lot of expectancies' forcing them to combinate their work regularities with their work style (Jarrahi, 2018).

Combination of all this is a power and an asset as a package shows, that AI combined systems are not only one step further than other organizations, also they are more aware of the needs of a growing building business with their approaches and needs in this field. Designs combined with AI are more controlled regarding the reporting, analysing and resulting issues effectively to overcome for the aim of the co-operations. This is an example for AI usage for External and Internal reasons, regarding the needs of the organizational structure. (Vaio et al., 2020). Operational movements like in logistics, packaging, and transportation areas are for secured and controlled with the help of the AI-designed machines. What gives people the option to work faster and also reduces in stress by being able to control operational steps via AI designs. Man-power becomes machine power, that also will help to reduce work accidents in areas which required physical performance in called dangerous work fields like high level chemicals or movements of constructional pieces that can harm human body easily.

All of the given information above in total showing the idea behind this research. The optional usage to understand the AI concept for the business areas in fact is an emerging need. The aim for the research here comes with this idea and shares information to shed light on future researches. As a result of the studies conducted and the results obtained, changes in the way of doing business around the world are not ignorable in the future and will be even more under the influence of the concept of artificial intelligence. At this point, it will become imperative over time to evaluate these practices within the scope of business ethics, organizational culture and values, and to switch to an application that best represents the organizational structure.

The fact that it produces applicable results with accurate analysis while addressing the needs and desires of customers in a realistic way is an indication that artificial intelligence has begun to make big differences in the field of marketing (Lüber, 2023).

The study conducts a literature review by examining the general and specific appliance of artificial intelligence conceptually and in the different fields of business, sharing the positive impacts also with the potential trends for the AI concept that must be shaped regarding human rights and ethical concepts (World, 2022) . Another important impact of the concept in the field of security that come as cybersecurity forward is one the main important topics regarding governments military and civil security needs for countries. AI as a term from the starting point to a concept for the present is in this study piece by piece and the usage of the concept is shared with. examples presented by grouping them into ten-year periods as the method and approach.

Keywords: Literature Review, Artificial Intelligence, AI, Algorithm, Business, Management, Critical Decision Making