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DIGITAL TRANSFORMATION AND ITS IMPACT ON OPERATIONS: TRANSFORMING OPERATIONS MANAGEMENT WITH AI

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Abstract

Digital transformation is revolutionizing business operations, reshaping traditional processes, and enhancing efficiency through advanced technologies. Among these, Artificial Intelligence (AI) has emerged as a key driver of operational transformation, automating tasks, optimizing decision-making, and improving overall productivity. This paper explores the impact of digital transformation on operations, with a particular focus on AI-driven innovations. The study examines how AI enhances operational efficiency across various industries, including manufacturing, supply chain management, and service sectors. It also highlights challenges such as integration with legacy systems, workforce adaptation, and ethical considerations in AI-driven decision-making. Additionally, the paper discusses best practices for organizations to leverage AI effectively while maintaining agility and resilience in rapidly evolving markets. By analyzing case studies and recent advancements, this research provides insights into the benefits and risks of AI-powered operational transformation. The findings contribute to a deeper understanding of how businesses can harness AI to drive sustainable growth and maintain a competitive edge in the digital era.

Keywords: *Digital Transformation, Artificial Intelligence, Operations Management, Automation, Business Efficiency, AI in Operations*

1. Introduction

1.1 Background

In the era of rapid technological advancements, digital transformation has become a crucial driver of innovation and efficiency across industries. One of the most significant aspects of this transformation is the integration of Artificial Intelligence (AI) into operations management. AI-powered solutions are redefining traditional business processes, optimizing supply chains, enhancing decision-making, and improving overall operational efficiency.

This paper explores the impact of digital transformation on operations, with a particular focus on how AI is revolutionizing operations management. It examines key AI-driven technologies such as predictive analytics, automation, and machine learning, and their role in streamlining workflows, reducing costs, and increasing agility. Furthermore, the research highlights the challenges and opportunities associated with AI adoption, including data security concerns, workforce adaptation, and the need for strategic implementation.

By analyzing case studies and industry trends, this paper aims to provide insights into how organizations can successfully leverage AI to enhance operational efficiency and remain competitive in the digital age. As businesses continue to embrace digital transformation, understanding the evolving role of AI in operations management becomes essential for long-term success.

1.1. Definition and Importance of Technology in Operations

Technology in operations refers to the application of digital tools, software, automation, and advanced systems to enhance business processes, improve efficiency, and drive productivity. It includes innovations such as Artificial Intelligence (AI), the Internet of Things (IoT), cloud computing, robotics, and big data analytics, which are transforming the way businesses manage production, logistics, and decision-making.

Integrating technology into operations is essential for modern businesses to remain competitive and agile. Some key benefits include:

1. **Increased Efficiency and Productivity** – Automation and AI-powered systems streamline workflows, reduce manual effort, and enhance operational speed, leading to improved productivity.

2. **Cost Reduction** – Technology minimizes waste, optimizes resource utilization, and lowers labor costs by automating repetitive tasks.
3. **Improved Decision-Making** – Data analytics and AI enable businesses to make data-driven decisions, improving forecasting, risk assessment, and strategic planning.
4. **Enhanced Customer Experience** – Digital tools enhance service delivery, personalization, and responsiveness, leading to better customer satisfaction.
5. **Supply Chain Optimization** – IoT, AI, and blockchain improve transparency, efficiency, and real-time tracking in supply chain management.
6. **Scalability and Flexibility** – Cloud computing and digital platforms allow businesses to scale operations quickly and adapt to changing market demands.

1.2. Research Objectives:

The primary objective of this research is to analyze the impact of technology on operations management and assess how digital transformation, particularly Artificial Intelligence (AI), automation, and data-driven innovations, are reshaping business processes. This study aims to

1. **Examine the Role of Technology in Enhancing Operational Efficiency** – Investigate how automation, AI, and digital tools optimize workflows, reduce costs, and improve productivity.
2. **Assess the Influence of AI on Decision-Making and Strategic Planning** – Explore how AI-driven analytics and predictive modeling enhance data-driven decision-making and risk management.
3. **Evaluate the Effects of Technology on Supply Chain Management** – Analyze how IoT, AI, and blockchain improve supply chain visibility, logistics, and demand forecasting.
4. **Identify Challenges and Risks Associated with Digital Transformation** – Discuss potential barriers such as cybersecurity threats, workforce adaptation, and the need for skilled labor.
5. **Explore Future Trends and Opportunities in Technology-Driven Operations** – Provide insights into emerging technologies and their potential impact on operational strategies.

By addressing these objectives, this research will contribute to a deeper understanding of how organizations can leverage technology to improve operations and maintain a competitive edge in the digital era.

1.3. Research Questions

To achieve the research objective, this study will address the following key research questions:

1. How does digital transformation influence operational efficiency and productivity in modern businesses?
2. What are the key AI-driven technologies that are reshaping operations management?
3. How does AI improve decision-making, forecasting, and strategic planning in operations?
4. What are the challenges and risks associated with implementing AI in operations management?
5. How does AI-driven automation affect workforce roles and job dynamics in operations management?
6. What future trends in AI and digital transformation are likely to shape operations management in the coming years?
7. How can businesses effectively balance AI-driven automation with human expertise to optimize operations?

2. Literature Review: Digital Transformation and AI in Organizational Operations

Digital transformation and advancements in artificial intelligence (AI) have become central themes in contemporary research. Numerous studies have examined the influence of these technological innovations on various aspects of business operations. Particularly, the use of AI to enhance efficiency and its implications for the existing workforce and organizational functions have been widely explored. This section reviews the existing literature on digital transformation and AI, focusing on their impact on the operational dynamics of organizations.

AI is an interdisciplinary field that intersects computer science, statistics, operations management, mathematics, humanities, social sciences, and philosophy. It involves the development of machines and systems capable of performing tasks that typically require human intelligence. A core subset of AI is machine learning (ML), which emphasizes statistical learning through algorithms that can automatically detect patterns in large data sets and improve their performance over time without explicit programming. AI research dates back to the 1940s, when scientists first began contemplating the creation of thinking machines (Ali K. Dogru & Burcu B. Keskin, 2020).

In modern organizational settings, AI is increasingly seen as a catalyst for operational transformation. Businesses are leveraging AI not just as a technological tool but as a core element of their strategy to mimic human cognitive functions and improve decision-making processes (Aloini et al., 2018; Ammar et al., 2018; Schmidt & Hazır, 2019). The formal establishment of AI as a field occurred at the 1956 Dartmouth Conference, led by John McCarthy (McCarthy et al., 2006; Moor, 2006). Since then, AI has become integral to business strategy, with organizations adopting AI-driven systems, expert algorithms, and decision-making programs (Balugani et al., 2018; Sreedharan et al., 2018; Aldasoro et al., 2019; Colicchia et al., 2019).

The fundamental objective of AI is to replicate human thinking and decision-making capabilities in various business contexts (De Sousa Jabbour et al., 2018; Deshpande et al., 2018; Pavitra Dhamija & Surajit Bag, 2019). The integration of AI into operations allows businesses to make more informed, faster, and accurate decisions, thus improving performance and efficiency.

Digital technologies have revolutionized decision-making across all domains of operations management (OM). This shift has brought about new operational dynamics and economic opportunities. Research in the fields of Information Systems (IS) and OM has focused on topics such as digital manufacturing (Roscoe et al., 2019), supply chain digitalization (Holmström et al., 2019), and collaborative economics. However, digital transformation (DT) goes beyond the mere adoption of technology. For these transformations to be effective, organizations must actively engage in DT initiatives that bring about new business models, structural changes, and enhanced operational performance (Vial, 2019; Davies et al., 2017).

In today's rapidly evolving market environment, driven by shifting customer demands and technological innovation, businesses must develop the capability to adapt to strategic and procedural changes. Digital transformation serves as a vital tool to meet these demands—enabling increased efficiency, quality improvement, and the redefinition of competitive advantage.

The traditionally stable manufacturing sector is particularly affected, requiring immediate optimization of resources, innovation in production techniques, and efficiency enhancements. Emerging digital technologies—such as smart factories, 3D printing, AI, big data analytics, cloud computing, cybersecurity, Internet of Things (IoT), and immersive technologies like virtual and augmented reality—are reshaping the operational landscape.

In the context of global high-quality development, businesses are increasingly focusing on sustainable growth alongside profitability. Digital transformation capabilities have become key drivers of long-term success. More organizations are embracing digital technologies to rethink their value chains, foster innovation, and enhance productivity. As such, building digital transformation capabilities is crucial for achieving lasting competitive advantage in the digital economy (Jiatong Yu, Jiajue Wang & Taesoo Moon, 2022).

IMPACT OF AI IN DIFFERENT SECTORS OF THE INDUSTRY

1.4. AI in manufacturing operations

The AI system collects data on outfit conditions similar as pressure and temperature. It also tracks scrap- essence conditions, client delivery schedules, and electricity costs. The technology helps the shop produce different grades of sword with lower operating costs, a competitive boost. Some of the technologies that make Assiduity 4.0 a reality are independent robots, artificial Internet of effects, cumulative manufacturing(3D- printing), pall computing, stoked reality, digital halves, and blockchain. We expand on two of these technologies with exemplifications digital halves and blockchain. Digital halves are software models of detector- enabled physical means and designed to cover performance and help reduce expensive unplanned outfit outages. The confluence of advanced technologies similar as detectors, pall services, big data, and machine literacy has brought this idea to consummation. The AI system gathers information on environmental factors like temperature and pressure. Additionally, it monitors customer supply timetables,

scrap-essence conditions, and electricity expenses. The technology gives the store a competitive edge by enabling it to make several grades of sword at reduced operational expenses.

Assiduity 4.0 is made possible by a number of technologies, including blockchain, digital halves, pall computing, autonomous robots, artificial Internet of effects, cumulative manufacturing, and stoked reality. We elaborate on two of these technologies using blockchain and digital halves as examples. Digital half are software representations of physical detectors that are intended to cover performance and lessen costly unscheduled outages. This concept has been realized by the convergence of cutting-edge technologies including detectors, pall services, big data, and machine literacy. For example, digital binary technology is used by both Unilever PLC and Chevron Corp. for predictive conservation (Castellanos 2019; Smith 2019).

The bias project real-time temperature, motor speed, and other product characteristics into the walls of Unilever's stores. After absorbing the input, algorithms employ sophisticated analytics to identify the desirable functional conditions.

Employees on-site monitor product quality using handheld bias, modelling issues, and sharing data with colleagues in different locations. On the other hand, the blockchain can be applied to many kinds of systems and stakeholders throughout the manufacturing process. Olsen and Tomlin (2019) highlight a specific application of blockchain.

In a potential hypothetical script, the customer in New Zealand autonomously tags each kiwifruit with a micro-RFID during the picking procedure, which also enables the Chinese retailer to use blockchain technology to track the entire history of the kiwis' journey through the supply chain, including the times of selection, lading, trip and disburdening, and temperature fluctuations the kiwis were subjected to while in transit. Additionally, according to Olsen and Tomlin (2019), this blockchain technology enables smart contracts that robustly adjust to changes in external events (for example, the transporter's payments are dependent on the temperature axes that the kiwi fruits are exposed to throughout the voyage).

Schmitz (2019) identifies five key obstacles that the manufacturing industry must get past in order to fully benefit from Assiduity 4.0 technology. First, the top organizations in the Assiduity 4.0 space are actually fighting over how to retain fresh talent with the necessary skills and upskill their present workforce to take on new work responsibilities made

feasible by Internet 4.0. Adopting specialized moxie requires patience and a lot of time. Second, because of the perceived high cost and scalability risk, businesses unintentionally invest a significant amount of money in Assiduity 4.0 technology. Third, investments in Assiduity 4.0 technology have a somewhat extended payback period. In order to reduce the explicit cost of scaling, the paper recommends adopting the minimal feasible product strategy by enforcing small.

Fourth, small-scale imagined executions by airmen, generally speaking, Assiduity 4.0 technologies exhibit uncertain commercial value because directors are unable to assess the implicit impact of the airman on the production procedures and explicitly specify success criteria. Ultimately, because of a lack of focus, businesses usually find it difficult to decide which airman technology case to concentrate. In order to maintain the focus of the airman initiatives, the research suggests value-backed prioritizing.

3.2.AI in Retail Operations

Retail operations also make extensive use of AI. Online retailers can gather a great deal of information about browsing tendencies, basket composition, and shopping habits thanks to web-based shopping. In addition to helping retailers manage their supply chain operations, inventory fulfillment, and distribution systems, these data offer information about upcoming goods and promotions. For example, Walmart classifies vegetables based on freshness and forecasts when it will go bad using an ML system named "Eden" that has picture recognition skills (Weber and Schütte 2019). While the Kroger Company utilizes deep learning to determine the quickest route through a warehouse to fulfill a customer request, Home Depot employs deep learning to estimate the likelihood that inventory products would run out of stock and to automate choices about inventory replenishment. (Weber and Schütte 2019).

To compete with online shops, several traditional retailers are delivering groceries to customers' homes. Online grocery delivery services like AmazonFresh, Instacart, Peapod, and Tesco bring groceries right to their customers' doors. A capacitated vehicle routing problem with time windows (CVRPTW), a stochastic appointment scheduling problem with customer preferences, and an associated inventory management problem must all be solved cooperatively in order to create an effective e-grocery distribution plan. This problem structure extends beyond e-grocery delivery to include other last-mile services including appliance delivery and installation, home health care delivery, and other attended home services like gas, electricity, and water (Bruck et al. 2018). Attended home services offer many

benefits to customers, including a large product selection, price comparison among e-groceries, and simple access to goods that are not produced locally, despite being one of the most costly, polluting, and inefficient supply chain operations (Ehmke and Mattfeld 2012). By choosing not to drive to the retail location, customers also save time and gas.

There are three primary factors that make groceries last- afar delivery extremely delicate. First, the consumer must be present when the delivery is made for the home delivery service. A fresh delivery must be made if a client isn't there, which could beget a preliminarily planned delivery to be disintegrated. Exploration on appointment scheduling indicates that when guests' preferences are taken into account, they're more likely to show up. Still, by adding query, taking customer preferences into account makes a formerly grueling stochastic appointment scheduling problem much more delicate. Through the use of data- driven models and approaches, several studies seek to reduce the essential high degree of query in customer preferences.

For illustration, Klein et al. (2017) suggest a discerned time niche pricing scheme to strategically steer consumer choices in order to develop more effective distribution plans, and Pan et al.(2017) influence client power consumption geste to anticipate client attendance. Second, the situation is made more complex by the perishability of grocery products, which places farther limitations on issues with transportation, appointment scheduling, and force vacuity. For illustration, you cannot serve overtime. Likewise, the cold chain for some particulars breaks when the consumer isn't present when the delivery occurs.

Third, because last- afar delivery is a civic marvels, a number of complicating factors, similar as rush hours and the volume of business in particular sections, must be taken into account when working the CVRPTW. ML algorithms might be essential to resolving these issues. For case, ML algorithms can be used to group guests according to their geographic position, shopping habits (i.e., frequence and volume), and preferred delivery day and time. This may make it easier to find results for challenging appointment scheduling and vehicle routing issues. AI can also be used to more estimate time and position-dependent trip time in civic areas.

When an independent vehicle is used for delivery, the issue ofe-grocery distribution becomes indeed more interesting. For case, George Mason University delivers food to scholars upon request using tone- governing robots on bus (Holley 2019). As is formerly known, Google and Tesla have been conducting long-term testing of their tone-driving vehicles. In order to

conduct trials on long-haul exchanges that run autonomously with a mortal driver on board to cover and help if necessary, UPS has joined the crusade by investing in TuSimple, a tone-driving trucking start-up (Vartabedian (2019)). According to Vartabedian (2019), FedEx is also testing a platooning technology, which is an adjunct tone-driving system that allows vehicles to nearly follow one another in order to save energy. In this regard, driverless buses are presumably going to alter the way a normal CVRPTW problem is formulated. For illustration, limitations that place constraints on motorists' working hours and breaks must be modified or excluded entirely. It might be necessary to establish new routes in order to transport independent vehicles safely. Furthermore, routes must be redesigned in three confines, taking into account structure heights, power lines, and colorful air business constraints, if drones are to be employed for delivery.

3.2.AI in Healthcare Operations

One of the fields with the greatest potential for AI is healthcare. Numerous applications, including prognosis and prediction of certain ailments, diagnostic image analysis, and appointment/surgery scheduling, have been created for online platforms to improve the efficiency of clinical operations (Panch et al. 2018). IBM AI, for example, can detect breast cancer a year ahead of time with 87% accuracy, which is on par with a human radiologist, using mammography pictures and medical records, including iron insufficiency, thyroid function, biopsies, lab tests, and codes from other diagnoses (Chorev 2019)." Using ML algorithms, Sugar.IQ, a diabetes management software, examines insulin data, blood glucose levels, hypoglycemia episodes, and diet diaries to provide users with individualized insights and forecasts on blood sugar occurrences.

The Migraine.AI research team is currently conducting clinical trials in collaboration with esteemed institutions like Oxford University, Garmin, and Georgetown University. Berkeley HAAS Business School named Migraine.AI the most impactful healthcare start-up of 2019 in March 2019. Migraine.AI is a promising AI application that predicts what causes a user's migraine and optimizes their medication window (MigraineAI 2019). By combining patient genetic and medical profiles, environmental cues, and a variety of patient behaviors, such as medicine use and sleep habits, the application generates these personalized forecasts.

According to our discussion with the startup's CEO, Ozcan Cikmaz, there are four main obstacles to implementing AI in healthcare.

First, in order to conduct and customize health services, machine learning algorithms need a large amount of personal data. However, gathering, preserving, and safeguarding enormous volumes of personally identifiable information is extremely difficult. Cikmaz points out that in addition to gathering data from human beings, technology businesses must make significant financial investments to guarantee the secure preservation of personal data. Developing an effective user interface is the second challenge. In order to obtain as much valuable information as feasible, practical applications must ask the fewest inquiries possible during the data collection process.

Additionally, it should only take a few clicks for a user to reach any location inside the application. Migraine. AI, for example, just requires a patient to spend one minute of their day answering questions; patients are not even asked to type their responses. According to Cikmaz, some mobile applications on the market right now take up to 30 minutes to access customer data. Third, he highlights that although artificial intelligence (AI) is highly technical and has its roots in computer science and statistics, its practical application necessitates a more extensive collaborative and interdisciplinary team effort. In his opinion, OM/OR is essential in this context. Customization and potential prejudice are the fourth challenge. Since ML algorithms are only as good as the data sets they are trained on, it is imperative that diversity be accurately represented in the data sets used to train those (Panch et al., 2018). An automated decision will be skewed if there is prejudice toward an underrepresented group in the data set. For instance, if the algorithm's objective function is not designed to lessen inequities between various ethnic groups, an appointment scheduling program may generate racially biased scheduling judgments (Travers 2019). It's crucial to avoid certain prejudices when using AI in healthcare applications. According to Cikmaz, the reason why the majority of migraine management apps don't work is that they don't take into account the particular traits of women.

4. APPLICATION OF AI IN OPERATIONS MANAGEMENT:

4.1. Supply Chain Optimization:

Supply chains are transformed by AI since it provides extremely advanced tools for:

- **Demand Forecasting:** AI helps firms predict demand by analyzing consumer behavior and industry trends. Retailers, for example, employ AI to modify their inventory levels during periods of high demand.

- **Inventory management:** By tracking inventory levels and forecasting replenishment requirements, AI helps avoid overstocking or understocking.
- **Logistics & Route Optimization:** AI systems determine the best routes to cut down on delivery times and expenses.

For instance, In order to ensure quicker and more economical customer deliveries, Amazon employs AI to estimate inventory demands, manage warehouse operations, and simplify delivery routes.

1.5. Predictive Maintenance

AI makes ensuring that machines are operating as efficiently as possible by:

- **Monitoring Performance:** AI leverages the data collected by IoT sensors to predict likely equipment faults.
- **Reduce Downtime:** A consistent maintenance plan helps to promote longer equipment lifespans and reduce operational stoppages. Predictive maintenance, for example, is used by manufacturers to make sure that break-fix operations take place before to failure points.

For instance, General Electric saves millions of dollars in maintenance expenses every year by using AI in its manufacturing facilities to anticipate equipment breakdowns.

1.6. Management of Workforce

The following are some ways AI and workforce optimization interact:

- **Task assignment and scheduling:** AI systems analyze worker availability and performance to generate efficient schedules.
- **Performance Monitoring:** AI helps businesses achieve operational excellence by tracking performance and pinpointing areas for improvement.

For instance, AI is used by retailers such as Walmart to control staff scheduling and guarantee proper staffing during peak hours.

1.7. Assurance and Quality Control

AI enhances quality control by:

- **Defect Detection:** A visual inspection system that uses artificial intelligence (AI) can precisely identify flaws in a product during production.
- **Automation of Quality Control:** Artificial Intelligence (AI) can automate the entire process, cutting down on time and mistake rates.

For instance, Foxconn uses artificial intelligence (AI) in its production lines to identify product flaws and enhance quality control procedures.

1.8. Process automation

RPA rediscovers work and operational tasks in new ways.

- **Simplifies routine tasks:** RPA takes care of data entry tasks, freeing up many people to work on more important projects.
- **Workflow Efficiency:** AI removes bottlenecks and ensures error-free operation.

For instance, banks use RPA to automate loan processing and customer onboarding, increasing operational speed.

OPPORTUNITIES AND CHALLENGES OF USING TECHNOLOGIES IN OPERATIONS

OPPORTUNITIES

Enhanced Efficiency and Productivity:

- Automation and AI-driven systems reduce manual tasks, streamline workflows, and increase operational speed.
- Machine learning algorithms optimize resource allocation and improve overall efficiency.

1.8.1. Improved Decision-Making

- Data analytics and AI provide real-time insights, helping businesses make informed strategic decisions.
- Predictive analytics enhance forecasting accuracy, minimizing risks and improving planning.

1.8.2. Cost Reduction

- Use of technology decreases the cost of the labor, optimizes the utilization of resources and minimizes any wastage.
- Cloud computing lowers IT infrastructure costs and enhances scalability.

1.8.3. Supply Chain Optimization

- IoT and blockchain enhance transparency, improve tracking, and optimize logistics.
- AI-driven demand forecasting reduces inventory costs and prevents supply chain disruptions.

1.8.4. Personalized Customer Experience

- AI-powered chatbots and recommendation systems enhance customer engagement and service.
- Data-driven insights allow businesses to tailor products and services to individual customer needs.

1.8.5. Scalability and Flexibility

- Cloud-based solutions allow businesses to scale operations quickly and adapt to market changes.
- Digital transformation enables remote work and decentralized operations, increasing flexibility.

1.8.6. Innovation and Competitive Advantages

Companies that adopt emerging technologies gain a competitive edge by improving agility and innovation.

AI-driven R&D accelerates product development and market responsiveness.

1.9. CHALLENGES

1.9.1. High Implementation Costs

- Initial investments in AI, automation, and digital transformation can be expensive.
- Small and medium-sized enterprises (SMEs) may have troubles keeping up with the shortage of budget.

1.9.2. Cybersecurity and Data Privacy Risk:

- Increased reliance on digital technologies exposes businesses to cyber threats and data breaches.
- Compliance with data protection regulations (e.g., GDPR, CCPA) adds complexity to implementation.

1.9.3. Workforce Adaptation and Resistance to Change

- The employees may not be very welcoming to potential automation as they fear the loss of their jobs.
- Organizations are required to focus on the upgrading the skills of their existing workforce to keep them aligned with the advancements taking place in the technological use of the company. This helps the employees feel reassured and more comfortable with the changes going around in the organization.

1.9.4. Integration Challenges

- Legacy systems may not be compatible with new technologies, requiring costly upgrades.
- Poor implementation strategies can lead to inefficiencies and operational disruptions.

1.9.5. Ethical and Legal Concerns:

- AI bias and ethical issues in decision-making can lead to discrimination or unintended consequences.
- Regulatory uncertainty regarding AI and emerging technologies creates compliance challenges.

1.9.6. Dependence on Skilled Talent

- There is a shortage of professionals skilled in AI, data science, and cybersecurity.
- Businesses must compete for top talent or invest in workforce training programs.
- AI models and automated systems require continuous monitoring, updates, and maintenance.
- System failures or technological glitches can disrupt operations and lead to financial losses.

2. USE OF ARTIFICIAL INTELLIGENCE IN COMPANIES: SUCCESS STORIES.

In an increasingly complicated market, the following examples demonstrate how the strategic application of AI can produce significant competitive advantages and result in long-term growth.

Amazon

AI is used by Amazon in a number of its commercial operations. For instance, offering clients tailored product recommendations that have significantly increased sales and streamlining the supply chain, particularly with the launch of Amazon Go, a store without cash registers. Amazon Go enables customers to make purchases without using a checkout by just taking stuff and leaving the store. The AI tracks and pay for specific items automatically. This is made possible by sophisticated algorithms and computer vision technologies.

Google

Google employs artificial intelligence (AI) to enhance the precision of its search engines and create cutting-edge products like AlphaGo and Google Assistant, as well as its autonomous car technology. Additionally, artificial intelligence plays a key role in the analysis of vast amounts of data, which helps Google to keep improving its services. To put it briefly, Google has incorporated AI into its corporate infrastructure to enhance customer experience and

streamline procedures. For instance, Google Cloud uses AI to provide organizations worldwide with individualized services and comprehensive analytics.

BMW

Through a number of creative efforts, BMW has implemented artificial intelligence with surprising success. The automobile company has automated surface processing at its factory unit, which greatly increases manufacturing accuracy and efficiency. As demonstrated by the BMW 8 Series Gran Coupé, which employed AI to create interactive art experiences, BMW has also integrated AI into its design and digital art strategy.

These initiatives have strengthened BMW's position as a leader in the automobile industry by enabling it to provide customers with individualized and cutting-edge experiences in addition to streamlining internal operations.

Netflix

Netflix's creative application of artificial intelligence has allowed it to become a dominant force in the streaming industry. The platform optimizes user experience, directs its content creation strategy, and personalizes content recommendations using sophisticated algorithms and big data analytics. In addition to increasing user satisfaction, this tailoring lowers the subscription churn rate and lengthens platform usage.

In the end, artificial intelligence offers several advantages that have the potential to completely transform corporate processes. However, in order to overcome the inherent difficulties, careful planning and administration are necessary for its correct execution.

FUTURE OF AI IN OPERATIONS:

In the near future, industries including consumer electronics, automotive, and manufacturing as well as the service sector, which includes healthcare, retail, education, criminal justice, housing, and banking, seem to be dominated by AI, robots, and automation. Businesses and customers will eventually benefit from these technologies in many ways, including higher personalization, better quality, shorter lead times, and increased productivity. But there are obstacles to overcome as well. These difficulties include, but are not limited to, readjusting the division of labor by giving humans new responsibilities, creating safe hybrid systems that allow humans and robots to collaborate simultaneously, enhancing regulations to guarantee automated systems' accountability and foster confidence in AI technologies, and creating plans and tools to better safeguard institutional, corporate, and personal data.

Since our educational systems are historically built to encourage area specialization, colleges and research institutions are essential to adjusting to the structural changes imposed by AI and robotics technologies. It should come as no surprise that AI has long been considered in the realm of computer programming and statistical learning, but despite its technicality, AI has gained a broader meaning in the last two decades.

The historically surprising breakthroughs in AI that already surprise us today are likely to accelerate in the near future as companies increase their investment in research and development of AI pilot programs. According to Whittaker et al. (2018), collegiate AI programs ought to broaden beyond the fields of science and engineering in a manner that also incorporates the humanities and social sciences included. Since the industry urgently requires social and technical abilities that can work in analytical teams made up of experts from different disciplines amicably, schools must take the lead in introducing this interdisciplinary perspective to the area. Workplaces have already evolved: open areas and laid-back social study settings have replaced cubicles, allowing employees with varying specialties to collaborate, share knowledge, and generate innovative ideas. It is now time to shift our attitudes and viewpoints on artificial intelligence, automation, and robots, beginning with research, education, and academic curricula.

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