

AI: Transforming Businesses and Customer Experience



Introduction

The inception of AI is transforming the traditional way of business operations across enterprises, imbuing newer capabilities, creating business opportunities and enhancing operational efficiencies. Today, the market is witnessing largescale AI adoption and deployment across industries. Every organization is looking for cutting-edge technologies that gives them the necessary edge and lead amid competition. This has inturn led to a massive hype around AI, with investments pouring in for wide-scale adoption. A key factor driving the investment points to the trend where enterprises are embracing digital technologies and specifically focusing on data-driven business operations.

AI – Technology and Application

There are several technologies in AI that are focused on automation of different applications and consecutively reducing man-hours. AI consists of technologies such as ML and NLP, where it understands repeated supervision of patterns. In parallel, there is a lot of focus on cognitive technologies which also relates to the AI functions but with an addition of sentiment analysis and augmented human understanding. AI is segmentedinto two categories viz. weak AI (narrow) and strong AI (with cognitive capabilities). Even NLP is based on ML for NLU and NLG, including to speech-to-text or vice-versa conversion.

The implementation of AI across enterprises is expected to positively impact both, top line and bottom-line growth. Al is being widely used in business process automation with large-scale adoption across banks and financial institutions. ML which can be further bifurcated into supervised learning, unsupervised, and reinforcement learning. It has several advantages in applications including chatbots, image recognition and process automation, NLG, cognitive intelligence, speech recognition, and others, spanning diverse industry verticals. The tremendous potential and application of AI in every aspect is making the AI ecosystem much more complex. It has been observed that atleast one application or process can utilize AI in different forms and different functions. Though most enterprises have embarked upon their AI journey with huge investments, still several others have not been able to adopt AI even at a smaller scale.

Fig1 - DIKW and AI Ladder



Source: Data is Fundamental (IBM)

AI Applications across Industries

Finance

The adoption of AI in financial services has been massive compared to other sectors. It focuses on real-time reports, and processes large volumes of data. Currently, AI is being predominantly deployed in trading, robo-advisory, RegTech, RPA, and chatbots, among others. Implementations and use-cases are showcasing massive reduction in work hours. The reliability and accuracy in results from using AI technologies are pushing the market to make it one of the fastest growing areas, compelling investments from all corners. Further, the use of predictive analytics can help with the historical data and trend analysis for more precise results.

Smart cars and drones

Smart cars, autonomous vehicles, and drone manufacturers are heavily investing on AI technologies and it is enormously impacting the automotive industry. Retailers and e-commerce vendors such as Amazon and Walmart are interested in drone deliveries. The aerial movement of goods and connected vehicles are changing the way transportation and deliveries are being carried out today.

Al in Retail & E-commerce

The revolution in AI is changing the way customers interact and shop. For differentiating and enhancing their services, retail and e-Commerce companies have started to invest heavily in AI-based solutions. Big data in retail has made it possible to have AI-powered interactions with customers which involves personal assistance, product recommendation and customized searches. AI-based

Al-

Al-based applications would augment customer experience and impact business marketing.

applications are playing major role in automation of retail process and many applications have yielded increased ROI for retail companies.

Brick and Mortar:

With the increasing frequency of store closures and incidences of shoplifting, Brick and Mortar stores feel the imperative to innovate and collaborate human experience with technology. To compete with online set-ups and increase their in-store footfall, retailers are adopting AIbased solutions. With AI-based in-store navigation and self checkout systems, customer experiences would certainly be enhanced, resulting in increased footfall and boosted sales. AI-based solutions also help these retailers in reducing frauds and shrinkages.

• E-commerce:

E-commerce industry with the huge volumes of online shopping data, including preferred channels, spending habits and more, of individual customers, is revolving around ML focusing around applications such as product recommendations, search analysis, analyzing consumer sentiments, and promotions. For enhancing their marketing efforts, AI is being used by e-commerce companies to target the right audience. Amazon is considered as the top player for utilizing AI with nearly 25% of sales being generated through previous purchases, and recommendation-based product views. From a business perspective, AI is now being used by retailers for managing the inventory levels, understanding buying patterns, forecasting demand, and reducing losses occurring from over stock and out of stock SKU's.



The growing amount of data is compelling enterprises to adopt intelligence in data extraction through AI

• Al in Healthcare

Al is transforming the health sector in several ways right from clinical research, hospital care to drug development. Al can never replace human doctors, but do have the potential to assist physicians in making better and effective decisions. However, in the field of radiology, Al has the potential to takeover humans' judgements. Other than radiology, Al is also contributing in areas including pharma and pathology. Healthcare providers are focusing on Al investments, giving priority to the operational side of healthcare system followed by administrative operations.

By analyzing the previous patients records, and external sources, AI can unlock meaningful insights which will help patients in selecting the appropriate and related treatment path. With continuous learning and predictive abilities, AI can reduce the therapeutic & diagnostic errors and predict about the patient's future health risks. As, hospital error or medical error is one amongst the 3 leading causes of death in the US, hospitals in the country are focusing on preventing these errors by leveraging the power of AI. Globally, the impact of AI in healthcare is also resulting in enhanced patient outcomes, and reduced expenses. Albased virtual assistants when integrated with healthcare apps offer enhanced value to the patients and assists them in various medication alerts. In terms of the customer service domain, healthcare bots are also gaining traction to ease customer interactions.

AI in Manufacturing

Al is being used extensively in the manufacturing industry and is supporting with the conceptualization of industrial automation. The increasing trend for smart maintenance and Industry 4.0 is boosting the adoption of Al applications in the manufacturing sector. For enhancing the product quality, efficiency and safety of workers, manufacturers are utilizing Al-based analytics. Production line equipment and machinery failure which leads to unplanned downtime, is one of the major issues faced by manufacturers, which negatively impacts their bottom line and creates losses.

Predictive maintenance by using AI techniques detect and predict the machine or system issue even before they arise and suggest the maintenance time, whenever required. AI in manufacturing is transforming the factories and making it future ready. Several manufacturers are incorporating AI into their workflows for inspecting defects more accurately than humans. In the next few years, AI will empower industrial robots in handling more cognitive tasks and optimizing the process by making real time autonomous decisions. Some major benefits of AI in manufacturing includes reduced environmental impact, streamlined communication between all plants, reduced waste, faster and more reliable design, and identifying customers' pain point.

Industry Trends – Al

- Al-based chips Al is being used to complement CPU performance. Electronic chip manufacturers are going to produce specialized chips that enhances the execution speed with Al-embedded applications. Healthcare and automotive industry are expected to adopt these technologies for specific uses and intelligence.
- Rise of edge computing There have been tremendous influx of IoT and AI at edge computing, specifically in the industrial sector for predictive analytics for early detection and maintenance. Neural networks and advanced ML are being used for



equipment optimization.

- DevOps and AlOps Large amount of data are stored in hardware, system software, servers and applications, that can be searched and correlated to find patterns and similarity. The whole IT operations can be modified with deep understanding of faults and repair.
- Future of automation AI can severely impact the current job roles. The advancements in AI can not only impact the routine tasks but the executives as well.
- Facial Recognition Al is helping a great deal in facial identity and verification for security purposes. In this era, where personal assistant and devices are on the rising spree, it is evidently enhancing the shopping experience and boosting daily reminders.
- Regulations The introduction of GDPR in the European region and implementation of AI in RegTech solutions for identity management and compliance management is growing among vendors.

Applications of Al

Al is impacting almost all organizations across verticals by automating and optimizing their business processes. Some insights on the applications of Al are as follows:

1. Conversational AI

Al driven Conversational platforms including chatbots and virtual assistants, are witnessing shift towards mainstream business operations, due to the growing demand from consumer-driven smart home appliances and digital assistants.

- Chatbots: Chatbots are increasingly gaining popularity amongst enterprises, as it helps them to grow their business by enriching customer service programs. Basic and scripted chatbots which only had pre-defined responses have now evolved with the advancements in technology. By using messaging applications and voice-based interfaces, AI-based chatbots interact with consumers for enhancing customer engagement and streamlining business operations. Chatbots by using ML and Natural language processing (NLP) to imitate human interaction with real people, offers more conversational experience to customers by understanding the user intent.
- Virtual Assistants: Virtual assistants, here, indicate personal assistants which are being used by individuals and business employees for performing their basic tasks. Personal assistants are generally dedicated towards managing some of the user's need which helps them in their daily activities like scheduling an appointment, checking flight details, connecting calls, setting up alarms, and other such tasks. Personal assistants including Amazon Alexa, Google Home, Microsoft Cortana and others offers enhanced efficiency and accuracy to users by using dynamic flow method.

2. Al in Cybersecurity

Rise in connected enterprises resulting from increase in BYOD trend, has made businesses more vulnerable to external threats. With the growing competition, organizations are increasingly using social media platforms for the business growth, which can lead to data breaches. Additionally, with threats from cyberattacks becoming more sophisticated, there is a need for pre-emptive measures instead of the existing reactive techniques to secure organizations from imminent threats. Albased security applications are at a nascent stage and the machine learning algorithms continue to learn as a part of a continuously evolving cybersecurity market landscape.

Al-based software tools for security, take a proactive measure to shield and create automated flags for each incident log, for analysis and subsequent pre-emptive measures against future threats. For example: intrusion detection system is one of the key modes of security software which can detect malicious activities like violations of security policies, if someone tries to access the confidential information it further alerts the user about the attempt made to hack the system. The solution uses machine learning techniques to uncover patterns from the previous incidents of security breaches. Thus, with the use of Al, the data (incident) patterns within the security logs, can

Fig2 – AI Applications



Source: Secondary Research, Expert Analysis, and Infoholic Research

be interpreted and analyzed in a better way, thereby enabling organizations to proactively detect vulnerabilities and identify imminent security threats.

3. Al in Logistics & Supply Chain

For any consumer-based company, inventory and warehouse management plays a crucial role, and that is the reason why AI companies and startups have started focusing on SCM. The SCM data collected from sources including transportation, logistics and warehouse holds huge value for logistics and supply chain industry. This increase in size of data is the major trend in the development of AI, as AI requires significant volume of data to show its full potential. The analyzed data is being used by organizations for enhancing their supply chain visibility, productivity and bottom-line profit.

Al in logistics and supply chain industry holds huge potential in terms of augmenting and automating supply chain-related tasks, which are usually operated by humans. Organizations for enhancing customer satisfaction by improving supply chain responsiveness and product quality are adopting the AI technology. Building effective SCM strategy and reducing operational costs are other benefits of AI in the logistics and supply chain industry. Machine Learning within supply chain planning is helping SCM professionals in inventory and accurate demand forecasting. By balancing the demand and supply cycle, organizations can reduce the supply errors i.e. overstocking and under stocking. Capacity planning,



transportation planning, route planning, optimizing delivery of goods and enhancing supply chain decision making are few other areas which AI can revolutionize.

AI: The road ahead

Alis developing at a very fast pace and speeding up exponentially. With tremendous amount of data generated through mobile phones and smart devices, the importance of data is realized across industries. The use of Al is expected to provide more consumer details and help enterprises in identifying sales patterns and hence help in forecasting. Furthermore, predictive maintenance in manufacturing and operational efficiency are key areas where enterprises will continue to focus, with better scalable AI implementations across business functions and processes in enterprises. We would witness a full-fledged AI deployment augmenting customer experience and it would pave the way for a more digitalized world.



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