Artificial Intelligence Industry in the United Sates

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Introduction

This report will provide detailed information on the artificial intelligence industry. This data will facilitate investment decisions. Specifically, the industry landscape, relevant trends, target market, and competitive landscape will be covered.

Artificial intelligence, often abbreviated as AI, is a transformative and interdisciplinary field in computer science that pursues to create intelligent systems capable of preforming typical tasks required by humans. At is core, AI seeks to develop computer programs that can think, learn, reason, and make decisions in a manner similar to human beings

The Artificial intelligence industry has risen in ranks over the years due to its complex and innovative system in processing and analyzing vast amounts of data, applying pattern recognition techniques, and drawing conclusion form that data.

Industry landscape

AI Market Segments

The AI market is a vast and continually evolving market, with applications spanning a wide range of industries and domains. Markets range from Hardware, software, services, platforms, security and much more.

Hardware

AI processors are specialized chips like Graphics Processing Units, Tensor Processing Units, Application-specific Integrated Circuits, and Field-Programmable Gate Arrays that are optimized for AI computations. Additionally, Neuromorphic Computing are Hardware designs that simulate the neural structures of the human brain.

Software

Machine Learning Platforms that provide algorithms, APIs, data, and computing power to design, train, and deploy models into applications. AI-optimized cloud Services are offered by cloud providers such as Amazon AWS, Microsoft Azure, and Google Cloud.

AI for Enterprise Applications

Enterprise Recourse Planning, commonly known as ERP, provide AI-driven analytics, sales predictions, and customer insights. Moreover, Customer Relationship Management, known as CRM, offer Candidate Screening, matching, and sentiment analysis during interviews, several major companies such as Activision, Apple, And Amazon all use CRM.

General Performance and Key Financial Information

The global Artificial intelligence Market size will grow at an exponential rate within the next 10 years. In 2022, the global AI market size was valued at around USD 454.12 Billion and is expected to surpass the USD 2,500 Billion mark by 2032, registering a CAGR of 19% within the following years. Other sources reported a different but similar estimate in which the global market size will reach USD 1300 Billion in 2030 with a CAGR rate of 36.8%, (marketsandmarkets, 2023).

Figure 1: AI Market Size from 2022- 2023 (USD BILLION)

Within the US, Artificial intelligence market size reported USD 167.3 Billion in 2022 and is projected to reach around USD 594 Billion by 2032 (precedenceresearch, 2022). Furthermore, Precedence Research claimed, "The higher demand for automated and technologically advanced hardware and software products across various end-use verticals and the favorable government policies that encourages the industries in North America to adopt artificial intelligence has significantly contributed towards the growth of the artificial intelligence market" (precedenceresearch, 2022). Several other regions such as Europe, and Asia will report significant uprise in their Artificial intelligence Market size come the following years.

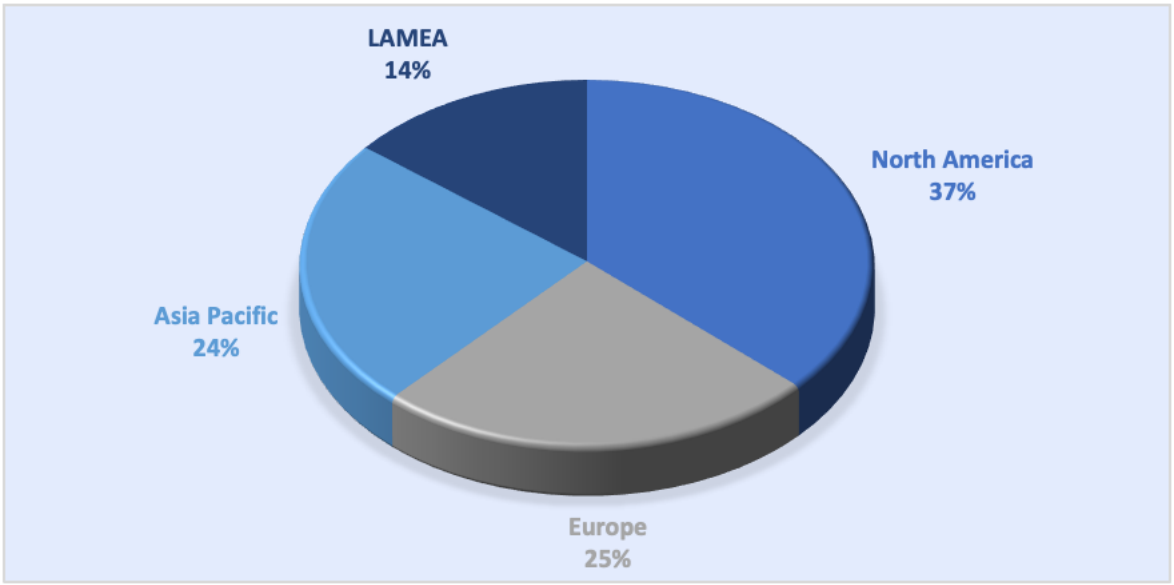

Figure 2: AI Market Share in different regions

Growth Factors

The hasty diffusion of digital technologies and the internet has substantially aided to the increase in growth of the global Artificial Intelligence market. Tech Giants such as Apple, Microsoft, and Google, invested heavily into research and development which promoted

technological advancements, thus increasing the demand for artificial technology in various industries such as, healthcare, manufacturing, logistics, and automotive, all of which are predicted to increase the global artificial intelligence market in the upcoming years.

Relevant Trends

Productivity with AI

According to Goldman Sachs Research, as AI tools advance and integrate their way into the corporate and societal world, they could increase global GDP by 7%, and elevate productivity growth by around 1.5 percentage points across the span of ten years, (Hatzius et al., 2023, p.1). Furthermore, Goldman Sachs Researchers claim that US occupations are at a risk, "our economists estimate that roughly two-thirds of U.S occupations are exposed to some degree of automation by AI" (goldmansachs, 2023).

Semiconductor Chips

The reason why AI is available to many users and companies and being able to provide such complex levels of computations is because of semiconductor chips. New advancements in extreme ultraviolet lithography are transforming the manufacturing of computer chips. The new semiconductor chips are much smaller and much more powerful in terms of processing. These chips can only be made by machines costing upwards of 300 million euros and are set to be shipped by the end of the year. This breakthrough in Semiconductor manufacturing is projected to increase the global semiconductor industry from $600 Billion to $1 Trillion within 10 years.

Political initiatives

In February 2019, The Trump administration established the American AI initiative. This initiative included "increasing AI research investment, unleashing Federal Ai computing and data resources, setting AI technical standards, building America' AI workforce, and engaging with international allies." (trumpwhitehouse, 2019). By having these government initiatives in support of Artificial intelligence, growth rate of the industry may be positively impacted. "Favorable government initiatives are expected to impose a positive impact on industry growth" (precedenceresearch, 2022). Additionally, the Indian government increased the budget for Digital India to $447 million in support of AI, Cyber security, Big Data, machine learning, and robotics in the year of 2020. The market size of AI is going to increase as a result of the data provided.

Target Market

Demographics

AI is being used in nearly every industry, as it has the capabilities to enhance, optimize, and overcome boundaries within the workspace, providing a more efficient and productive environment.

AI in Healthcare

Artificial intelligence will revolutionize the healthcare industry. AI-based radiology has been in existence since the early 1970s, ranging from systems such as MARSII, ICON, and Phoenix. In recent years, progression of deep learning algorithms to accurately diagnose breast cancer has emerged as a tool that can be utilized by radiologists in order to decrease interpretation time, thus improving clinical efficiency. The AI models have shown to provide similar results of diagnoses with physicians, "AI system was shown to have comparable efficacy as compared to radiologists in screening of breast cancer (area

under the curve was 61.4% higher than that of radiologists)", (Mahajan et al., 2019, para.[3]).

End User	2022	2023	2027	2032
Healthcare	64.33	76.35	152.36	369.22
BFSI	72.59	86.13	172	416.49
Law	15.96	19.02	38.65	95.47
Retail	43.83	52.13	105.03	257.43
Advertising & Media	63.19	74.97	149.59	362.07
Automotive & Transportation	45.41	53.84	107.81	260.74
Agriculture	29.26	34.78	70.02	171.16
Manufacturing	43.44	51.58	103.75	252.81
Others	76.11	89.34	170.89	389.77
Total	454.12	538.14	1070.1	2575.16

Table 1: AI Market share in each industry (USD BILLION)

Additionally, AI may be able to identify mental illnesses at an earlier stage allowing psychiatrists and other medical practitioners to provide swift medical attention and care to their patients, "As AI techniques continue to be refined and improved, it will be possible to help mental health practitioners re-define mental illness more objectively than currently done in the DSM-5", (Graham et al., 2020, para.[3]).

AI in the corporate world

Many companies are now interested in incorporating AI into their operations as AI provides valuable insight and real time analysis and solutions to predicaments within the logistics and manufacturing sectors within a business. When trying to increase production of its new A350 aircraft, airbus turned to AI to address issues and disruptions within the factory. The system matched upwards of 70% of its issues to previous solutions by combining data from the past and self-learning algorithms, (Ransbotham at al., 2017).

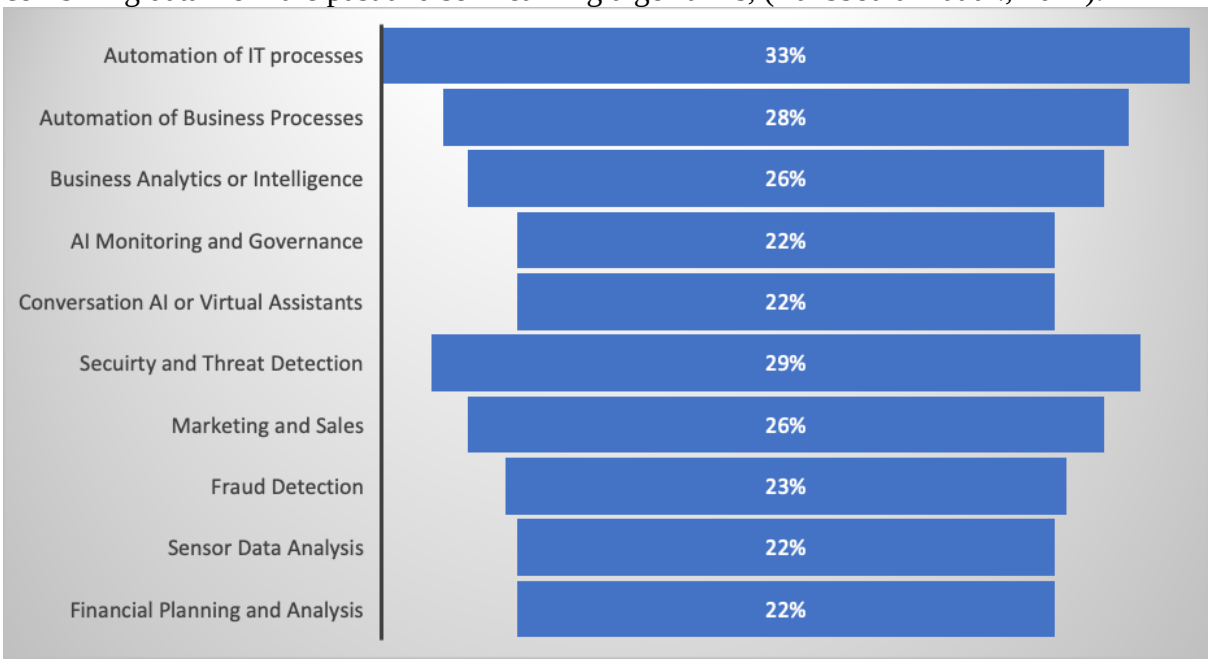

Figure 3: AI Implementation in Corporate world

Additionally, 49% of companies claim they use ChatGPT, and 93% of which plan to expand the use of ChatGPT, (resumebuilder, 2023). ChatGPTs is used in many areas of the corporate world from, proving hiring assistance, writing code, proving in depth analysis of data, and more.

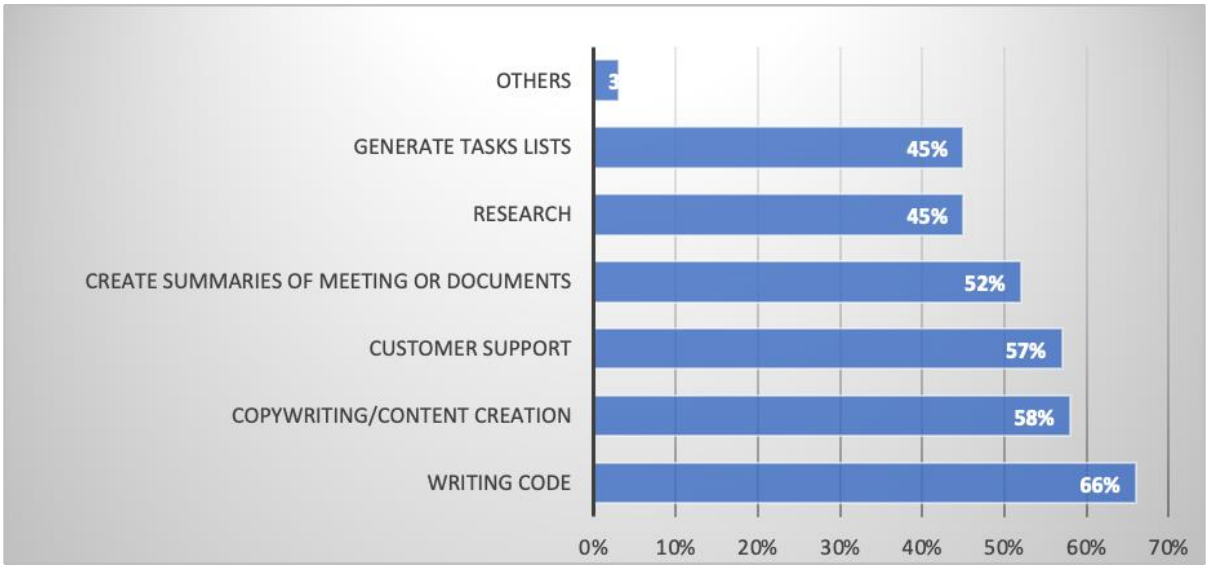

Figure 4: Uses of ChatGPT by Companies

Competitive landscape

Key players in the AI industry include Google, Microsoft, Apple. IBM, NVIDIA, Intel, AWS, Oracle, SAP SE, and Salesforce. These companies are launching new products optimized to serve specific needs for each sector within the business ecosystem. produced mainly by companies like NVIDIA, Samsung, Intel, these players focus more on the applications of hardware for AI. Companies more focused on Software are companies like Microsoft, Salesforce, IBM, and Oracle creating software used by millions of users like Chat GPT or IBM Watson. Finally, you have companies such as Google, AWS, and IBM creating cloud-based AI Models. The Artificial intelligence industry, as many other industries, produces numerous different types of products, each with their own specific use cases. Natural language processing such as Chat GPT or Google Bard are AI models focused on enabling computers to understand and generate human language which is used in chatbots for mobile applications or websites. Machine Learning, which is a subset of AI involving the application of algorithms and statistical models to enable computers to learn and make predictions based on past and current data. It is very difficult to calculate the market chare and percentage of AI products as technologies can vary over time and across regions, as well as change due to industry trends.

Conclusion

This report covered the industry landscape, relevant trends, target market, and competitive landscape in the artificial intelligence industry, this information will provide valuable foundational insight for investment decisions. Should you have any questions, please contact me vie my email alajmiq03@arizona.edu, or by phone 520-910-7958.

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