

THE COLOSSAL IMPACT OF ARTIFICIAL INTELLIGENCE IN E-COMMERCE : STATISTICS AND FACTS

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Abstract— This is global era of Artificial intelligence and Machine Learning. There is great impact of machine learning on society as we are surrounded with technology. Machine learning and AI helps us in Searching, Sorting and finding relevant data. Today all E-commerce giants like Amazon, eBay, and Flipkart standing on the bleeding edge of Artificial intelligence and Machine Learning. Artificial Intelligence is really taking over the world. AI is everywhere now, especially in e-commerce sector AI is making its impression.

In this paper we are presenting a study on impact of Artificial intelligence in E-Commerce. We are intended to represent the statistical facts relevant to this domain.

Keywords: Artificial intelligence, E-Commerce, Machine Learning, Natural Language Processing, Amazon Web Services.

I. ARTIFICIAL INTELLIGENCE IN ECOMMERCE

The application of AI and machine learning is increasing drastically in e-commerce industry. According to a survey conducted by eMarketer stastia in 2018[5], following changes in sales has been seen and continued to be seen. They also predicted the approximate sales of 2021 based on the existing pattern in data.

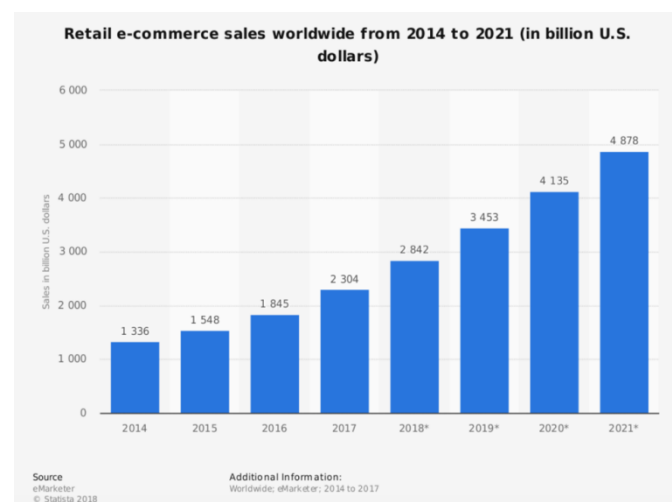


Figure No. 1: Retail e-commerce sales worldwide from 2014 to 2021
 Thus, Retail e-commerce sales have been influenced greatly by AI and Machine learning.

Now we will explore the application of Artificial intelligence into different domain to see how they are actually interconnected. Another Survey has been conducted by Cowen and Company IT survey -2017[2] to explore some areas in software that are ripe of investment of AI/ML investment. It has been found that Digital marketing has 50% potential and it is largest area of investment, whereas e-commerce has 20% potential but it is increasing day by day.

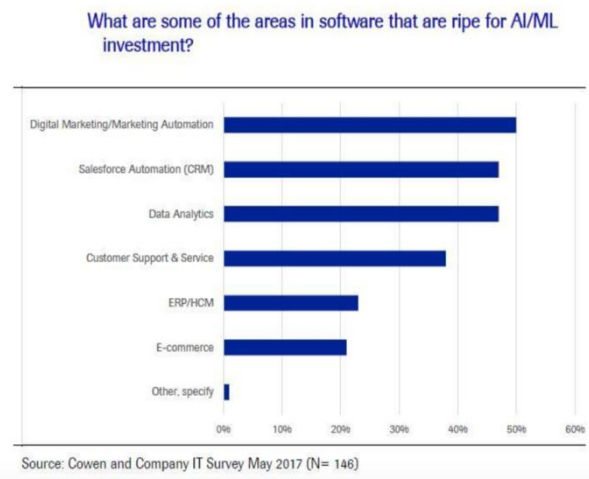


Figure No. 2: AI/ML investment Areas

According to Gartner the leading research and advisory company's prediction by 2020 over 80% of all customer interactions will be handled by Artificial intelligence. Today, companies like Alibaba, eBay, and Amazon are applying AI to detect fake reviews, product recommendations and managing big data.

II. COMPONENTS OF ARTIFICIAL INTELLIGENCE

The Key Areas of AI has been divided into 3 parts: Data Mining, NLP, and ML. These areas of AI help e-commerce business to grow. Data mining helps to mine large amount of current data (OLTP) and historical data (OLAP) so that it helps in future predictions. Natural Language Processing (NLP) is a second key area of AI, which focuses on how computer and human can interact with each other in natural language. Machine learning (ML) is an extraordinary domain of AI where machine is to program

in such a way that it uses examples or past experience to solve given problem.

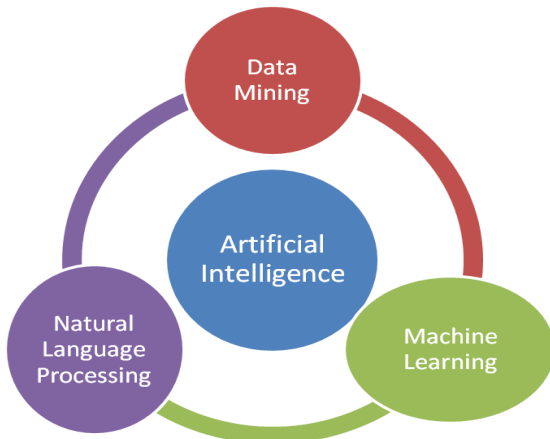


Figure No. 3: Components of AI

AI assists us to perform manual tasks very quickly; surprisingly it is doing their job incredibly good and allowing us to focus more on a strategic level of business. Introduction of AI and ML into E-commerce domain reduces not only cost but also the time complexity in such a way that now have that time that we hadn't have before, rather doing repetitive tasks, we can prefer to do some constructive tasks.

III. APPLICATION OF AI INTO E-COMMERCE

It is absolutely not possible to uncover all hidden application of AI into E-commerce domain in this paper but we will try to cover all applications of which is widely used:

[A] Visual and voice search: The searching and sorting of data pattern keeps on changing day by day. A survey has been conducted by Slyce, a visual search company that has spent years crafting image recognition technology that solves real-world problems for the some of the world's largest retail businesses. According to Slyce retail categories consumers use visual search in different domain of E-commerce as follows:

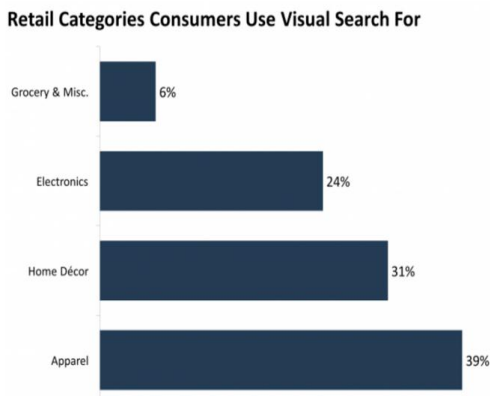


Figure No. 4: Visual search in E-commerce domain

A survey has been conducted by Comscore, an American media measurement and analytics company providing marketing data and analytics to enterprises. They claims that image and voice search may make up 50% of all searches by 2020. It is predicted that by 2021, due to the popularity Voice search e-commerce revenue will increase by 30 percent.

[B] AI assistants and chatbots: It helps in responding to customer as per their inquiries. Virtual assistant is also popular in this segment. It also provides good suggestion to the referred problems. It is also used in product recommendations systems through NLP. Alibaba and eBay are the good examples.

[C] Smart logistics: AI helps to manage online warehouse operations and delivery process. Amazon.com, JD.com is the good examples.

[D] Recommendation engines:

Artificial intelligence and Machine learning has capability of analyzing customer behavior on websites. It uses training data set based on searching pattern and algorithms to predict what products may be liked by customers and provide recommendations. Amazon, Flipkart can be a brilliant example.

IV. ARTIFICIAL INTELLIGENCE IN ECOMMERCE: CASE STUDIES

[A] Amazon: The application of AI and machine learning enhances the sale of Amazon drastically. Among most famous AI product Alexa is on the top. It helps to collect the training data sets for the algorithms are essential to Amazon's targeted marketing strategy. Recommendation system of Amazon uses AI to reveal the product in demand based on customer searches. Amazon's recommendation engine enhances the total sales by 35 percent.

[B] JD.com: To improve the efficiency of warehouse operation the renowned Beijing-based JD.com collaborated with Siasun Robot & Automation Co Ltd. They observed a drastic changes in supply chain system, not only it reduces cost of operation but also improve efficiency of delivery. The online order becomes 1.26 billion in 2015, which is almost double of 2014. Approximately 85% of order has been successfully placed. JD.com also has a mission to use Artificial intelligence to manual work which will reduce their number of employee from 120,000 to 80,000 over a decade therefore increase the profit margin.

[C] Alibaba: The founder of Alibaba believes that AI takes his work and dedication to supreme level. Alibaba doesn't left any stone un-turn as it has a list of AI services which include Tmall Genie, chatbot and Ali Assistant. It's chatbot

processes 95 percent of customer inquiries, both written and spoken ones. According to Alibaba AI algorithms is very helpful in finding the best delivery route, which offers 30% reduction in travel distances and 10% reduction in vehicle.

V. AI In Ecommerce: Benefits

- i. Customer-centric visual search approach.
- ii. Retarget potential customers and improve the sales process.
- iii. New level of personalization.
- iv. Chatbots and virtual assistants. Improve recommendations for customers.
- v. Filter fake reviews

VI. Conclusion

AI is on the rise in the e-commerce industry, however, it is still far from being perfect. E-commerce firms continue to improve their AI tools to better match market demand. They also partner up with other companies to merge their competencies in AI and create more sophisticated solutions. We believe, that Artificial Intelligence in eCommerce will impact transactions, customer retention, satisfaction, efficiency and many more. AI is changing the way we buy and sell online. Today all E-commerce giants like Amazon, eBay, and Flipkart standing on the bleeding edge of Artificial intelligence and Machine Learning. Artificial Intelligence is really taking over the world. AI is everywhere now, especially in e-commerce sector AI is making its impression.

VII. REFERENCES

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