

DEVELOPMENTS IN RETAIL INDUSTRY THROUGH SOCIAL MEDIA INTEGRATION WITH ARTIFICIAL INTELLIGENCE

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Abstract

For the last few years, there is a revolution in the Retail sector in identifying different ways to attract consumers while they shop in online or physical stores. Artificial intelligence holds the potential to transform how brands create and manage with the help of social media in marketing. Acceptance of Artificial Intelligence in the analytics of Social media information offers benefits to both businesses and consumers. This is very much important for us to understand the focus of organizations in employing the expertise of social media and artificial intelligence in their marketing tactics for retailing their services or products. It starts with a simple question; How AI influence social media and vice versa? Triggered us to study the literature and improve our thought process. Our paper instigates with an outline to social media and artificial intelligence, elucidates the inspiration of AI against Social media and elaborates its usage in the Retail sector in multiple areas including marketing. The objective is to study the integration of artificial intelligence with social media information for the betterment of the Retail Industry. Exploring the advantages, disadvantages, and scope of artificial intelligence integration with Social media towards future research.

Keywords: Artificial Intelligence, Social Media Analytics, Retail sector, Social networking Data, AI in Marketing

I. INTRODUCTION

A. Background

Artificial Intelligence, it drives us, it captivates us and makes our lives easier. One can say, the main purpose of Artificial Intelligence to make things easy. A.I. works by taking past data that include structured, unstructured and social media, analyzing in present and predicting future projections. As humans, we are becoming lazier and depend on technology to help us in all aspects. Well, A.I. depends upon this lethargy to work efficiently. The algorithm of Artificial Intelligence works in favor of the user's interests.

With all the changes brought forward by the developments in relation with Artificial Intelligence (AI) there is an equal interest in research for individuals (Agarwal et al. , Anderson and Rainie), and society (Bostrom , Cows and Floridi) as well as industries (Makridakis). Even in academics, new courses in the areas of AI are evolving (Rahwan and Cebrian). We believe that AI will have an ever-growing impact on Retail Sector and closely coupled with Social Media usage by the individuals, that seem to be a center stage where attention is needed to integrate them. Using Artificial-Intelligence, unsuitable content can be filtered, based on users online and social media activities, for users. There are three extents that we suggest to explore: (1) building A.I. projects that improve Retail operations (2) developing "Social Media" established approaches towards the Artificial-Intelligence projects; (3) creating frameworks for monitoring, measuring, and managing the relationship of A.I. and Retail Industry via "Social Media".

B. Marketing Defined

According to the social definition, it is a societal method by which groups and persons get what they want and need over exchanging, creating and presenting the products or services of value, freely with others. In managerial definition, marketing has been often defined as *the art of selling products*, but Peter Drucker, a leading management philosopher, said that marketing

aims is to recognize the customer and understand the buyer so well that the products and services fit him, and sells on its own. Ideally in retail industry, marketing has to result in a customer who is prepared to buy .

C. Social Media Defined

Social media is a collaborative computer enabled technology that enables to create and sharing of ideas, information, career interests, and other forms of communication via virtual world of networks . It involves users connecting with one another using desktop or laptop or mobile phones or tablets, uses user generated content such as voice, texts, photos, lip sync, music, comments, videos and the data exchanged over online communications.

D. Artificial Intelligence Defined

Having defined community, Social Media and Retail Sector, we define A.I., well-known in Artificial Intelligence communities, it’s the intelligence exhibited by machines that is comparable to humans. There is a great eccentricity relating to its descriptions, driven by the rapid advancements in the field of A.I., whereby newly imprinted terminology and re-assigning them is quite common that any machine that displays qualities associated with a human cognizance. The definitions offered are projected to give the Retail industry, scholars and others who are not knowledgeable in the field of A.I. as background definition.

E. Objectives of Study

The study aimed principally to realize A.I. in retail sector, practice of social media in regard to sales or marketing and identity it’s benefits and challenges.

Objectives are enumerated as follows:

- To study the prevailing explorations in A.I. and Social Media to unlock the power of A.I. in the areas of Retail sector.
- To understand Social Media advancements in AI
- To understand headway of A.I. to Solve Problems and Improve Retail Industry

II. LITERATURE REVIEW

In the year 1956, McCarthy a well-known mathematician, made up a new jargon *artificial intelligence* (Computer History Museum) and defined as jointly “the science and engineering of making intelligent machines” (Wang , and “the skill of machines to think, understand, and learn comparably to humans, with the possibility of using computers to mimic human intelligence” (Pan), Now-a-days a wide range of A.I. definitions with variations of adapting probability maximization or increasing the success chances or performing widespread range of actions to achieve complex targets in multiple levels of intricate environments (Legg) to “an agent’s ability to achieve goals in a wide range of environments” . The latest Gartner Hype Cycle shows the Artificial Intelligence in its peak in the digital marketing and advertising.

A. Classification of AI

Kaplan & Haelein et al. classified A.I. into three types: “artificial narrow intelligence (or Weak), artificial strong intelligence (or General) and artificial super intelligence (or conscious or self-aware)” (p. 4,).

Artificial Narrow Intelligence (A.N.I.), is built on procedures projected to resolve definite set of issues in a specific situation. ANI contains “algorithms...intended to make judgments” (p. 6,). Weak AI is commonly referring to have numerous layers and very complex schematic relationships among these multiple layers. Machine learning is one piece of weak A.I., consider an example, search engine learns a locality, room extent or supplementary traits of a location used, gives several choices during each successive quest. “Deep learning A.I., also called *artificial neural networking*, is a subset of machine learning that has multiple hierarchical levels, Image recognition can be considered as an instance of Deep Learning to identify patterns and attain at identifying one individual in a group” (p. 6,). Another Weak A.I. example is a program, Deep Blue, that shattered Kasparov at chess, unable to recognize a venue of an event. Weak AI can outpace humans in some duties, but it cannot match in solving problems beyond the scope of its focus ;

Artificial General Intelligence (A.G.I.), so far does not exist, that’s able to switch among functions, “performing multiple activities like playing chess and finding venue for event, and to reason, plan, and solve problems” (p.3,). Kaplan et al. refer to complex and multi-dimensional difficulties, considering retail sector as an example, requires enormous resources to be spent in order to develop strong A.I. Lo et al. believed in “it is not far-fetched to foresee AGI to exist within our lifetime” (p. 1,).

Artificial Super Intelligence (A.S.I.), Turing explained it, “would be self-aware and likely pass what is known as the Turing test whereby a human is unable to distinguish artificial from human intelligence” . Some experts surveyed about the likelihood of evolving A.S.I., in the coming future, by chance, may be bad for human race, considering it as an “existential catastrophe”.

B. A.I. Defined Contextually

Examining the use of A.I. can be obliging to the Social Media scholars. Pan describes “several ways that AI is deployed includes (1) AI robotics like chatbots, robotics associates used in many industries; (2) big data and cross-media AI as in text, images, voice, video integrations and movements to augmented reality; (3) crowdsourced AI as in Wikipedia-platform or endangered species protection; and (4) human-machine hybrid augmented intelligence in solving socio-environmental issues, recognizing smart cities.” . These definitions are not explained further considering the interest and knowledge of audience.

C. Social Media-based developments in AI

Social media analytics and intelligence exploration that has direct significance to the AI, Social media has removed the boundaries between readership and authorship with the information consumption and distribution process intertwined through the generating and sharing information processes . Eleonora describes the current approaches to innovation, determinants of innovation in the Retail sector and identifies the extent there are differences and similarities in the innovation drivers when compared to other areas.

Phillips et al suggest that resources towards Social Media associated advancements in A.I. are necessary for the Retail Industry and it could be drawn from idea of communal development. (p. 6), defined it as a way of growing and enhancing the activities performed in collaboration to get the outcome of that deeds for enhancements in the society in one or more of the following: socio-economical, physical, cultural, environmental etc. Hence, community development involves both methods and outcomes. A proper research practice could be employed to assist to understand the inter-dependency between the course of evolving and positioning integrated A.I. and Social Media results in Retail Industry.

Other methods adapted to frame the Social Media adapted development of A.I., such as the human-in-loop systems method. Human has a noteworthy role to optimize, control and maintain these A.I. systems . Allen et al. mentioned that, Human-in-loop systems have explored the field of administrative control, to study different roles and arrangements of surveillance in computer-human interface . Other frameworks including Social Media based development of A.I. usage and are affected by AI, are combined into every facet of A.I. origin, expansion, positioning and improvements.

D. Development of AI to Solve Problems and Improve Retail Industry

Guo et al. categorized issues in their research into four types on the roots of the progressions in the textile Industry, including designing apparels, production, supply chain and retailing . We advise that A.I. is established to resolve AI-caused threats to retail Industry. Conversely, Also A.I. offers a means to solving conservational and socio-economic problems that impend Retail Sector. Several Industry inventions and academic publications are evolving the concept of A.I. for good community, also known as *AI for Good* (Chui et al.). We recommend Industry leaders and researchers to engage in and learn from the growth in these ideas and ponder acclimating them to solve problems menacing as well as improving the Retail Industry.

E. Social Media Integration with Artificial Intelligence

A.I. in Marketing Strategies García-Crespo et al. studied the constant collaboration among patrons and firms, as it powers the Social Media environments with consequences on marketing of innovative products spread . Study by Lee et al. explained that social media interactions enhanced the sales surge, in turn motivates more people to visit, and presents social existence in the buying practices. Internet has gained as an innovative way of reaching people, other organizations and vendors .

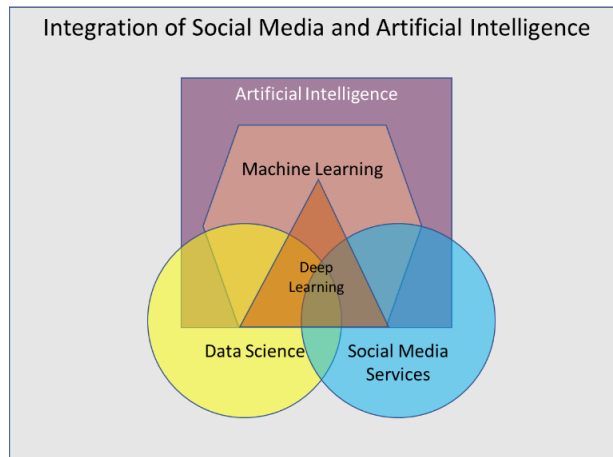
A.I. impact on Social media: Online streaming sites, such as Amazon Prime or YouTube, suggest movies or videos and shows based on recent online and social media activity by the consumer. Let's take the example of Instagram. Instagram is a digital platform where users can share posts with their thoughts. However, the posts on a user's feed are a representation of the user's tastes. If a post has certain key elements like hashtags, then relevant similar posts will pop up based on the user's feed. The A.I. judges the preferences and will begin to show more of what the user likes and follows and sometimes notified as messages on users' email or mobile.

Social Media impact on A.I.: Social media sites like Facebook recommend the user with people they know or friends of the known people and most of the feedback chats are with a robot. Developments in the area of AI are influenced by social media usage to enhance different AI areas like Chatbots, Data Mining, Deep Learning, Machine Learning, Prescriptive Analytics.

A.I. and Social Media impact on Retail Industry: Online shopping sites use the data from the consumers' previous orders as well as social media usage to display the best deals and suggestions for products or post-purchase services of customer's interest. For example, based on browsing history or social media interests, retailers can promote specific products that bring customers attention.

The following diagram shows the three regions briefly signifying the Artificial Intelligence, Data Science and Social Media services and their inter-relationship:

Figure 1: Integration of Social Media and Artificial Intelligence



(Source: Own Interpretation)

All these studies on social media and AI reveals the significance of inclusion of AI and Social Media integration as an important strategy for organizations.

We realized during the study of the inter-connection between A.I. and Social media in Retail incorporations deals with inter-disciplinary (combining disciplines), trans-disciplinary (creating new areas of study and possibly new disciplines), cross-sector (interactions of A.I. on Retail Industry using social media sites) and systems-based methods (“systems designed to change behavior patterns while changing with the patterns to quantify these relationships & influences”). Even organization are exploring ways to gain profits through their influence in social media and presenting their products to tap the power of marketing to sponsor new products, services and revolutionary ideas. Organizations are looking to influence the customer to sell variety of products at his convenience made sure to available at a great ease of accessibility and best quality to take care of the threats and opportunities faced by Retail.

III. METHOD OF EXPLORATION

The paper searches the various data points attached to the concept of AI, Social Media and Retail sector in a descriptive study, these examples mentioned based on the study from available secondary material from journals and some from the own practices of authors and their networks.

IV. AI AND SOCIAL MEDIA IN RETAIL INDUSTRY - FINDINGS

With the background information available in secondary data from prior researchers, AI and Social media interactions in Retail sector in various tenets like Sales and Marketing, promotional activities, Consumer interactions, customer service as well as effect of end user observations and reactions, and real time discussions, following are some of the benefits, threats and Opportunities listed.

A.I. can be applied in various businesses, bringing something or other benefit to societies, including the Retail (Yang and Siau) and Social-Media . It is explored by several scholars, studied in primary schools and applied in nursing homes as well as for traffic administration, service delivery, payment success prediction, fraud detection/prevention, issue interception, cross selling and upselling of products and services. Online groups use A.I. broadly for analytics, that include chatbot development, managing content and modeling . Today, people who use Information and Communication Technology also use, some form of A.I. (Reinhart), as they go hand-in-hand, few ICT projects can be observed in the following years. Retail sector uses the social media to analyze information in identifying new customers, reach them in a quicker way, making suggestions while they buy using online assistants, Virtual assistants etc.

While we can accept there are benefits to some societies with the uses of A.I. as mentioned above and others, we advise that the effect on Retail is, generally unknown. Nevertheless, we recommend that if A.I. could be established with the intent of Retail Sector, then its impact can be better understood using Social Media integration to it and that leads to measure the improvements towards mutual goals. With Retail analytics to collect data and analyze, what is treasured by the social media to realize the power of A.I. on Retail.

In this unit, we quickly outline the pressures on Retail from A.I. and to societies with few ideas on how this study could help solve these threats and few other issues like data privacy and security. Research conducted by Grace et al. found that “AI researchers predict AI will outperform humans in many activities in the next ten years, such as translating languages (by 2024),

driving a truck (by 2027), Robot working in retail (by 2031) and Robots working as surgeons (by 2053)". So, we recommend that opportunities/threats to Retail that have identified here are starting points to understand how A.I. may influence in future.

V. SUGGESTIONS

Looking at the analysis of the AI, Social Media, Benefits and Opportunities to Retail following few points can be suggested for statistical and hypothesis-based future research:

- Organizations have a need to build AI and Social Media integrated in their platforms.
- Issues can be seen in integration of AI and Social Media in terms of security and data privacy.
- Develop an integration strategy for better customer services and build brand image.
- AI inclusion in customer services for payments, returns, warranty, post purchase etc.

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