ISSN 2465-6399

Application of Artificial Intelligence in Marketing Mix: A Conceptual Review

Nanayakkara, N. W. O. K. D. S. P.[1]

Integration of technology into the business context is one of the centuries old marvel, where the difference is defined in terms of innovations and processes improvements. In recent years, Artificial Intelligence (AI) has turned out to be an emerging trend in diverse fields: business, education, science, medicine and automotive. AI has also been integrated into marketing and such integrations have become a fast-growing trend which guarantees the competitive advantage in the business context. In order to execute AI in marketing strategy, companies have redefined their marketing mix with AI. Empirical studies are found explaining how AI leverage the marketing mix with the presence of extensive data by encouraging business intelligence decision making related to future business processes, consumer behavior, and market trends which leads to promote decision making, which creates businesses a competitive edge over its rivals. Alongside, this paper attempts to appreciate the application of AI, embedded technologies and automation in aiding the 4Ps of marketing. The literature review was carried out addressing the key sub insights associated with marketing and AI. Journal articles have been reviewed as the main source of information to structure the contents with empirical justifications. Lastly, the paper deliberates how embracement of AI, results in designing marketing mix and the author attempts to explain the future potential implications of AI with regard to the 4Ps.

Keywords*: AI, Artificial Intelligence, Big Data, Marketing, Marketing Mix*

Cite this paper as;

Nanayakkara, N. W. O. K. D. S. P. (2020). Application of Artificial Intelligence in Marketing Mix: A Conceptual Review. *The Conference Proceedings of 11th International Conference on Business & Information ICBI, University of Kelaniya, Sri Lanka.* ISSN 2465-6399, (pp. 530-542)

[1] Department of Marketing Management, University of Kelaniya, Sri Lanka. *(2017_sonali@kln.ac.lk)*

Introduction

Global trends are shaped by the technological disruption where Artificial Intelligence (AI) plays a big role through the application of computer and information technology to develop machines that can imitate the intellectual capabilities of human beings (Pavaloiu, 2016). The technological development has boosted the industry through disruptive systems where AI has the objective to simulate and duplicate intelligence of humans and will be redefined by people apart from the existing capabilities of machines (Kaplan, 2016). Integration of technology and AI into business operations, processes and organizations is another growing demand in the modern era (Molsa, 2016).

Alongside, in the present business context technology applications continue to increase efficiency in decision making and overall business operations where business management and operations are in an era of data, which shapes day-to-day processes in business operations (Brynjolfsson & Mcafee, 2017). The main objective of AI is to leverage the presence of extensive data to encourage business intelligence decision making using sophisticated algorithms that are used in generating insights into future business processes, consumer behavior, and market trends which leads to promote decision making, that creates businesses a competitive edge over its rivals (Zahrani & Adel, 2018).

Although AI is still a new topic in the world, the application of AI has impressively boosted business activities particularly in the area of marketing (Heine, 2017). According to Israeli and Avery (2017), the advancement in AI and the rapid embracement of AI into businesses has showcased the effectiveness among marketers which has created an intimate sweeping change to the nature of marketing itself. AI has changed the communication ontology and practice has proved that the scene set up by AI can gain insights into the hearts of consumers through big data analysis, machine learning and other technologies, so that brands can better understand customers (Chang, Fang, & Chen, 2019). According to Campbell , Sands, Ferraro, Tsao, and Mavrommatis (2019), AI provides a large range of opportunities in the marketing platforms, in market targeting, product recommendations, and optimize advertising campaigns. AI allows personalized campaigns, collaborative filtering, and predictive models as well. Advancement in the field of big data proves the availability and accessibility of information, with the primary goal of turning data into usefull insight or actionable strategy. In the process of drawing conclusions from unstructured data on cause and effect in an extremely large data set, AI can provide a big contribution to marketers. Since AI has the ablity to capture and identify patterns, it will help marketers to identify trends and opportunities and react to them accordingly by being proactive (Wood, 2011). For instance, marketers use AI to extract sentiments from customers in social channels offering insight at different stages of a marketing plan (Campbell et al., 2019). As per Gentsch (2019), marketers can implement personalized, custom made products and price combinations for every customer with the help of AI. Furthermore, by using modern algorithmic, personalized advertisements in online marketing can also be created which provides a massive competitive edge to marketers.

The increasingly sophisticated developments and advancements in AI, creating excitement in the field of marketing and the high adoption rate of AI in the industry makes the topic of AI in marketing, ever more interesting to carry out further studies (Chow, 2017). In addition to that, AI provides constructive benefits to marketers, consumers, and the society as a whole by improving, creating, optimizing and distributing value which demands the need of more liturature to identify the importance of AI in marketing (Gentsch, 2019). In this study, the author has decided discuss the purpose of the study and methodology, literature review and the discussion with conclusion and future directions.

Purpose of the Study

Together with the brief including the empirical highlights on knowledge requirements in the field of AI, this paper attempts to review the importance of AI with regard to marketing mix. Though the significance of AI has been referred in relation to many business and organizational contexts, enough empirical studies are yet to be idenfied and is limited even within the marketing context (Chui, Kamalnath, & McCarthy, 2018). While many researches tend to focus on the particular area of AI in business, it is only a few academics whose interest has flickered in relation to AI from a marketing perspective (Israeli & Avery, 2017). Apart from that, most of the marketing managers have confidence in AI as a revolutionizing potential while, many are still unaware of the extent of the benefits or not sure how they can adopt AI to improve marketing (Reavie, 2018). Thus, this paper seeks to address a contribution to the literature on AI and, in particular, the phenomenon of the importance of AI in marketing mix. Furthermore, AI contributes, both theoretically and practically to marketing decision making, and this importance has only been realized to a very limited context, hence the author attempts to make a contribution by taking a closer look at the opportunities for AI in marketing, considering the achievements so far, and by addressing the potential perspectives for the future.

In addition to that, the researcher argues that AI needs to be empirically discussed related to different marketing theories and contexts, in order to unveil its real influence. Therefore, the author attempts to explore how AI has been found in empirical studies linked to different marketing contexts. Furthermore, this paper contributes to prevailing knowledge as a conceptual review to synthesize the role of AI in marketing mix in the current and future context, where it will be researched and claimed in future research directions.

Methodology

This paper follows a deductive approach in which arguments and explanations are primarily supported by empirical indications and related theoretical contents (Macinnis, 2004). It has attempted to review the empirical thoughts as an organized content on how AI links to marketing mix in different contexts and literature review has been recognized as the main research tool. Finally, it has concluded the main remarks though suggesting key insights for the future research directions.

Literature Review

This paper presents the literature review by mainly focusing on the empirical overview on AI and marketing whilst explicit consideration is made towards the convergence on AI and its impact on marketing activities. Additionally, content describes how AI has appeared as represented in the empirical studies.

Artificial Intelligence

Artificial Intelligence is the computerized systems that intake data, to perform a particular task of intelligent beings in a way that maximizes its chance of success . The most suitable term to define AI is “a portfolio of technologies” since there is a variety of different types of AI (Kaput, 2016). AI technologies provide different benefits and they are developed at different rates, but they are all focused on imitating human intelligence in computers to make operations smart. According to Hamet and Tremblay (2017), it is believed that AI has merely originated with the invention of robots and today, AI is considered a branch of engineering which resolves the complex challenges through novel concepts and novel solutions. Further explained by Hamet and Tremblay (2017), with continued progress in software programming,

capacity, and electronic speed computers might be as intelligent as humans one day and no one will be able to disregard the significant contribution done by contemporary cybernetics to the development of AI. Literature on AI is ample and uncontrolled in today's context and AI has been depicted as a likely risk to the world economy by 2015 and even AI might eliminate humanity one day (WEF, 2016). According to Luger & Stubblefield (2008), AI is the automation of intelligent behavior created with the aid of computer science.

However, the benefits of AI have spread its wings in macroscopic and microscopic level from industry environment, economics, and employment to the company level including the fields of finance and marketing and also in several diverse field such as medicine, automotive, robotics etc. Talking about the benefits of AI for businesses, AI provides a new fuel for any business model which helps to identify abundant business situations, forecasts new conditions and to take smart business decisions which would make a company more profitable (Coats, 1987). So as a result of easy access to modern technology, AI is taking over business intelligence applications in both small and large scale business organizations. AI has replaced the traditional production process through automated production processes and furthermore, financial activities of organizations are also carried out through AI applications as it provides highly accurate computations and reports automatically (Trippi & Turban, 1992). Thus, AI can allow big data to flow and break them down in to possible actionable insights, companies can make better informed decisions accordingly. It has been suggested by Michalski, Carbonell, & Mitchell (2013), that the adoption of AI by organizations is increasing highly as there's a shortage of professionals with data analytical skills. With the corporation of AI with marketing, business organizations have the ability of creating buyer personas that allows business organizations to predict consumer behavior and to effectively market their products to the target market which is the main discussion of this paper (Pavaloiu, 2016).

AI in Economy

AI has a huge effect on the economy with the potentials to increase growth of productivity and by persuaded labor disruptions would exacerbate prevailing problems in the labor force (Mitchell & Brynjolfsson, 2017). The economy develops in cycles, and with the introduction of new technology and AI, new business models have emerged and the economy has developed in online fields and e-commerce. Accordingly, financial services have been streamlined with online banking, e- payments by optimizing the operations. Substantially, drastic changes have occurred in each cycle (Nancey & Benjamin , 2017). According to Howard (2014), automation will make a society technologically rich but in the meantime it will create high unemployment rates or low labour in the economy. Another potential issue is that, income discrimation may also arise. Although automation will not take place in each and every company in the same way, but the job shoratage may occur unevenly which causes entrepreneurship, innovation, talent harness, and an abundant economy. Therefore, a new set of values and a shared context needs to be created for machines to be able to become an accompaniment to people effectively (Pavaloiu, 2016).

Alongside that, employment shifts may also take place in the economy as a result of the automation of activities done by laborers (Kaplan, 2016). He further explained that, social status, earned income, job recognition will not be the influences to define whether automation can substitute the skills needed for achieving a job or not. The white collar jobs such as accountant, budget analysts, audit officers will be the most prone jobs to come under automation while CEOs, therapists and surgeons will be hard to replace. When considering the blue collar jobs such as cashiers, drivers and gaming dealers have the highest risk of automation and designers, editors, lawyers have the lowest risk (Pavaloiu, 2016). There will be no automation in the pink color jobs which represents the services industry (Kaplan, 2016).

AI in Management

The high embracement of AI and robotics have created both opportunities and threats including the disappearance of certain professions, while re designing the management functions is one of the opportunities as well as a challenge in adapting organizations to new conditions in the interest of workers, employees and in whole to the society (Chernov & Chernova , 2019). As per the findings of Brynjolfsson and McAfee (2012), AI will bring up strong challenges to the management system in any organization which could be considered as a fourth revolution accelerator and the correct and timely adaptabilty to these challenges will be the key successful factor in modern organizations. Futhermore, non-standard activities like increasing the efficiency of e-Commerce, managing production lines in heavy industries can be perfomed through intelligent machines as a result of the development in deep machine learning technology. Subsequently, this trend created reasonable concerns such as replacement of employees by intelligent machines in various organizations, creating complexities to managers' task by making them to review their ultimate principles of work and organizations needed to adapt their training programs and strategies to attract talent, concentrating on those jobs that require evaluative judgment skills, such as creativity, collaboration and the ability to experiment (Chernov & Chernova, 2019).

Once AI technology is deployed in an organization, the values, practices, the way subordinates work, the fulfilment of tasks, goal accomplishments and on a whole the strategic management will reshape accordingly (Holtel, 2015). It has been suggested by Ross (2013), with the embracement of AI in management a company will be affected, namely in two ways: (1) Distribution of power will be reassessed in the organizational structure as a result of replacing human work force by AI, and the organizational structure will be flattened. Henceforth, the decision making process of organizations change and new ways of collaboration will appear and (2) The reasoning literacy of all related stakeholders will need to be improved, since AI will essentially change the way people narrate to knowledge and to the way they perceive a possible threat for their job where managers need to have a plan if they face conflicting results and the machines do not comply with their decisions (Wile, 2014).

AI in Marketing

Decisions related to 4Ps, brands, advertising are taken upon the deep knowledge of the customers by the marketing managers where the outcomes of these decisions have a direct impact on the behavior of other parties such as competitors, suppliers and resellers (Tiautrakul & Jindakul, 2019). Thus, marketing decision making is a very complex process with a combination of analysis and judgment, large degree of knowledge, expertise, and experience of professionals play an important role (Chovancova, Asamoah, & Wanninayake, 2012). Therefore, the role of AI plays an important contribution to marketing decision making (Wierenga, 2010). Technology as the most powerful tool is enabling marketers with a huge amount of information regarding consumers buying behavior, buying cycle, consumption patterns, key target attributes, delivery modes, technology and product preferences, favorable digital platforms, payment modes, etc. These huge bundle of insights from consumer can be transformed to meaningful information by AI powered tools for decision making. Advancements and the availability of big data provide marketers the ability to collect and aggregate huge amounts of information, with the ultimate objective of turning data into an actionable strategy and also AI allows marketers to be proactive by identifying the opportunities in the market (Campbell et al., 2019). Although Application of AI in marketing is a broader concept in nature, the author carries out the discussion by considering the marketing plan starting from analyzing the current market, understanding markets and customers, segmenting, targeting, and positioning, planning direction, objectives, and

marketing support, and developing a marketing strategy for planning and the implementation of controls (Wood, 2011).

Analyzing and understanding macro environmental factors will affect the business, it's marketing, and its stakeholders. In this initial step, marketing managers try to interpret the current and future environment where the organization operates (Chaffey & Smith, 2013). In order to analyze Macro environment, marketers can utilize AI techniques such as social listening, which allows information on markets and consumers, particularly related to satisfaction, purchasing patterns, and product demand. In this context identification of changes in competitor behavior, product demand estimation and assessment of customer satisfaction can be catered through AI (Paschen, Pitt, & J, 2020). Social media and online forums provide consumers the access to most suitable products to their specific needs and those consumer discussions in the online environment will be monitored by AI market and consumer research agencies. This information provides insights to marketers in identifying how well consumer segments are being served by one's own brand as well as competitors' (Campbell , Sands, Ferraro, Tsao, & Mavrommatis, 2019).

Micro-environmental analysis provides information about market share trends, product demand, customer characteristics, and also information including needs, wants, behaviors, attitudes, brand loyalties, and purchasing patterns (Wood, 2011). According to Dunwoodie (2018), organizations can use web analytics as well as market research to gather information in this stage and marketers can use customer experience softwares such as Medallia with integrated AI capabilities which provides the voice of customer programs rather than traditional methods. This software allows organizations to dig information on customer preferences and data from web, social media, mobile activities and interactions with contact centers. Further explained by Campbell et al. (2019), real time feedbacks can be given through the analysed data, allowing immediate decisions and actions to be taken.

STP is a common strategic model in the marketing approach which reflects the increasing popularity of customer centric marketing strategies over product differentiation strategies (Brenner, 2019). In STP, marketers try their best to create brands that best appeals to different customer sengments in the market through a targeting message by grouping customers based on different critearia (Wanninayake, 2014). AI will help marketers in both segmenting customers and predicting customer expectations and also AI provides tailored promotions and ads to each segment (Campbell et al., 2019). Image recognition and computer vision allow organizations to gain in depth understaning of their customer behaviours and segments accordingly. The pictures customers share, provide valuable inights and those insights can be used for segmentations which needs to be targeted with personalized advertisements (Dua, 2017). As highlighted by Peterson (2017), entire new ways of segmentation and targeting can be offered to customers through image recognition and computer vision where Pinterest is such a good example. Offering ways to scrub social media platforms to get insights in to user's images is one of the incredible activities done by AI companies and marketers will be able to see an increase of image based segmentation soon (Cannella, 2018).

On the other hand, AI and machine learning allow companies to extract different geographic, demographic and psychographic attributes of customers indirectly from behavioural data and provides some competitive advantage to the organization (Teichmann, 2019). Further explained by Teichmann (2019), the advantages of automted data driven approach are; scalling the entire customer base easily without missing or entering incomplete data, enabling first party data, containing information about the relevance of customer attributes and providing machine understandable encoded characteristics where data cannot be manipulated or changed. Despite the advantages of using AI for STP, marketers also need to be aware of

the dangers of discrimination through AI. While organizations essentially discriminate in terms of to whom they offer products and services, AI can lead to unpremeditated and illegal price discrimination through its emphasis on targeting different audiences (Newell & Marabelli, 2015).

Discussion

Applications of AI in marketing, is promptly developing world wide by representing the 4th largest use case of AI considering resources spent, and the 6th largest industry adopter of AI technology, with around 2.55% of the total industry having invested in marketing (Naimat, 2016). However, companies already use a variety of AI solutions to meet various marketing objectives successfully from low involvement to high involvement (Wierenga, 2010). This paper tries to extend the explanation on how marketing functions are done through AI whereas, previous literature is used as supportive contents for clarifications.

AI in the Marketing mix

Executing AI in marketing strategy, has become the new normal, since AI provides valuable consumer insights in real time for marketers to make use of. In order to execute AI, marketing strategy companies have redefined their marketing mix with AI (Talyor, 2019). The seller centric elements of marketing mix (4P's) transformed more to customer centric model wherein consumer replacing product, cost replacing price, convenience replacing place and communication replacing promotion (Londhe, 2014). Moreover, as per Singh (2017), application of AI and machine learning in marketing mix has entailed to forecast and to track the effectiveness and impact of each individual marketing channel.

AI and Product Mix

According to Campbell et al. (2019), opportunities to integrate with AI in product strategy comprises of identifying gaps for new product developments and product improvements, developing customized products to consumers' specifications, and coordinating the product delivery and logistics process. AI also has the potentional to identify which products to produce by understanding the products which will be committed to be bought in future. Thus, it leads to reduce the cost of surplus stock and leverages the mass customization. Lily AI is one such platform that assists in product configuration in online settings. Lily AI allows consumers to complete the look at checkout by facilitationg fashion retailers. Through the thorough understanding of customers' choices by Lily AI, it suggests head to toe outfits to shopper which leads to the increase in the size of the shopping basket at checkout (Brandon, 2017).

AI can also be used at designing the store envirenment as a part of the product strategy. It will lead to the reduction of labour hours, AI can be used to understand customers preferences and arrange the store layouts as well. Apart from that, product marketing can also be done throgh AI powered audience insights platforms identifying the customer insights from social media (Mcdowell, 2019).

Moreover, AI can improve customer loyalty and cross selling through automated product recommender systems whch increases the satisfaction of potential customers (Marchand & Marx, 2020). As per Dunwoodie (2018), AI facilitates product strategy by collabarative designing where customers insights are taken highly in to consideration for product designing. AI smoothes the production stratergy by allowing customers to design their own product and service and designs can be easily tested and revised more quickly through collaborative tools used in AI. (Brenner, 2019)

AI and Price Mix

AI can contibute in many ways to pricing such as estimating price elasticity, detecting pricing patterns and enabling dynamic pricing (Campbell et al., 2019). According to Jesus (2019), AI has the ability to track buying trends of consumers enabling competitive pricing solutions to marketers. AI pulls out all the competetive pricing data from different regions and provides the company a dynamic pricing solution. Also AI has the abilty to grab pricing information on discounted prices offered by competitors and the willingness of customers to pay for discounted price. Industries like hotels, using dyanamic pricing use AI to gain competitive advantage. For example hotels which are underoccupant may use AI and adjust pricing by balancing the supply and demand to increase profits (Hear, 2017). And also, AI has the ability of creating competitive pricing index considering competitors prices allowing a benchmarked price for brands that want to ensure their pricing is competitive (Jarek & Mazurek, 2019). AI benefits the pricing strategy by tailoring pricing according to the customized products by resetting pricing decisions based on the finding of different yield management approaches (Jesus, 2019).

Pricing analytics softwares use different techniques generated with different statistical models to generate algorithms that automatically recognize patterns from the data and forecast prices based on information (Node, 2020). Patterns from enormous data sets such as data from purchase history, inventory levels and competitors' pricing, product preferences and demand, and any data related to pricing are captured (Node, 2020). Deyo (2018), argued that automated AI pricing solutions are the future of pricing decisions where even companies go on margins since all the businesses hardly want to reduce the enormous amounts of time spent on manual labour on tracking the competitor's prices. In summry marketing managers will get real time market intelligence with all the information covered with a large scale intergration and automation of data (Brenner, 2019).

AI and Place Mix

AI will have a positive influence on distribution mainly in three key areas ; at the point of sale, throughout the supply chain and within the internal processes (Cohen, 2019). Particularly, marketer has to take a decision on what the distribution channel is, since there are direct channels, wholesale channels and retail channels. At this stage, AI will pave the way to new arenas of new marketing channels such as e-commerce and online channels which will drastically reduce many costs of the organization (Dorfer, 2018). AI will provide a faster and a convenient platform for their customers to purchase and 24/7 shopping will be available to customers via applications like chatbots (Jarek & Mazurek, 2019). Purchase order automation is another innovation through AI where manual entry form purchase orders can be detached from distibution processes. Purchase order automation softwares can capture purchase orders allowing POs to proceed faster with lower cost (Karani, 2020). As per Brandon (2017), AI has the power to automate merchandising through online context by increasing the revenue and adding value. As a result of convenient and online shopping, consumers can shop anything at anytime from anywhere which provides new opportunities for businesses to engage more with consumers outside their traditional locations. Similarly, developments may take place in B2B sales with the advancement of AI (Paschen et al., 2020). In addition, AI enables channel optimisations and facilitates in identifying missed channels very easily. Also, intergration with AI for distribution, improves transaction times and speeds up the transaction process (Chaffey & Smith, 2013).

AI and Promotion Mix

Since we are at the age of considering 'customer as the king', a 360 degree experience across all marketing channels, providing unparalleled customer services, delighting customers and personalized recommendations will create loyal customers (Deyo, 2018). So that marketers are working proactively to give their customers the best posible experience and at this stage marketers work to generate and witness the brand meaning in the eyes of customers. To achieve this target, marketers involve in carefully developing, targeting and placing communications to convey an effective message to the selected target customers (Cannella, 2018). AI has created a wide variety of platforms for effective marketing communications such as A/B ad testing, contextual ad targeting, AI optimized ad retargeting, keyword bidding, and automation and personalization of content creation. As a result of AI intergration in marketing, personalized marketing communications have emerged through which marketers are able to enagage in one to one marketing. Insights from personalised communication accelerated the understanding between marketers, advertisers, and consumers (Strycharz, Noort, Helberger, & Smit, 2019). Meanwhile AI facilitates marketing communications through creating a unique experience, eliminating the learning process of product catagories and by creating a positive image on the consumer by minimizing consumer dissapoinments (Jarek & Mazurek, 2019).

AI facilitates promotional strategy in numerous ways. For advertising AI can be utilized in identifying and designing text, images and video contents to suit different market segments in different marketing channels (Kaput, 2016). Direct marketing is also being expanded and developed with the use of AI. AI enables direct marketing by selecting which forms and types of contacts, types of channel and types of content is suitable for different target groups (Brandon, 2017). Moreover, providing prsonalized responses from different consumers, anlysing and suggesting different personalized ideas are some of the approaches used by AI for personal selling.

Conclusion and Future Research Directions

The era of AI has approached the world offering a bundle of benefits to businesses, marketers, consumers, and to the society at large. As a result, traditional marketing practices have been integrated with AI enabling companies to reduce process times and engage with individual consumers at scale by simplifying marketers' ability to create and distribute a great value to the right people at the right time in the right way (Cannella, 2018). Moreover, AI has automated repetitive tasks allowing marketers to provide their fullest contibution to value generating activities which lead to generate a good consumer experience (Chernov & Chernova , 2019).

AI and automation have brought the most powerful tool, providing an information bundle regarding consumers buying behavior, buying cycle, consumption patterns, key target attributes, delivery modes, technology and product preferences, favorable digital platforms, payment modes, etc. These bundles of insights can be transformed into meaningful information by AI powered tools for effective decision making (Brenner, 2019). Campbell et al. (2019), argues that AI can be implemented in the whole marketing planning process by analysisng AI tools in operational marketing functions. The author was able to identify a package of benefits to customers including a 24/7 customer service, automated recommendations and purchases, hyper personalized solutions, one to one marketing, and convenient shopping and many more new dimensions in the field of marketing. However, extended investigations are required to identify how organizations strategically use AI to support marketing mix strategy. The author has also highlighted innovative marketing and

businesses supported by AI solutions as a timely need for emerging economies to extend potential markets. With the inculcation of AI in marketing mix, the seller centric elements of marketing mix (4P's) have transformed more to a customer centric model wherein one can see the consumer replacing product, cost replacing price, convenience replacing place and communication replacing promotion (Londhe, 2014). Moreover, as per Singh (2017), application of AI and machine learning in marketing mix has entailed to forecast and to track the effectiveness and impact of each individual marketing channel.

The utilization of AI is growing promptly, dynamically changing and progressively developing in the business and marketing platforms (Gentsch, 2019) and there is only a limited number of studies carried out on application of AI in marketing mix. Therefore, to fill the literature gap more research studies, conceptual frameworks, articles need to be carried out on this regard. Alongside, we also denote future research directions to be investigated extensively as to how AI influences the marketing mix strategies and decision making process in different markets. The author encourages such studies to focus on different AI mechanisms related to demographic and customer cognitive factors. More studies need to be carried out on maintaining innovativeness in strategic marketing decision-making related to 4Ps and planning in an AI-driven world. Conclusively, the author emphasises the knowledge required on examining effectiveness of AI and machine learning as a strategy in developing marketing and branding with reference to different industries.

References

Brandon, J. (2017, July 12). *Instacart AI helps personal shoppers buy groceries faster*. Retrieved from The machine making sense of AI: https://venturebeat.com/2017/07/12/instacart-ai-helps-personal-shoppers-buy-groceries-faster/

Brenner, M. (2019, February 20). *How to Improve Customer Segmentation with AI*. Retrieved from The Marketing Insider: https://marketinginsidergroup.com/artificial-intelligence/how-to-improve-customer-segmentation-with-ai/

Brynjolfsson , E., & McAfee , A. (2012). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies.* New York: WW Norton & Company.

Brynjolfsson, E., & Mcafee, A. (2017). The business of artificial intelligence. *Harvard Business Review*.

Campbell , C., Sands, S., Ferraro, C., Tsao, H.-Y., & Mavrommatis, A. (2019). From data to action: How marketers can leverage AI. *Business Horizons, 63*(2), 227-243.

Cannella, J. (2018). Artificial Intelligence In Marketing.

Chaffey, D., & Smith, P. R. (2013). *Emarketing Excellence: Planning and Optimizing Your Digital Marketing.* Abingdon: Routledge.

Chang, Q., Fang, G., & Chen, X. (2019). Analysis on The Development of AI Clothing Marketing. *4th International Conference on Social Sciences and Economic Development*, *314.*

Chernov, A., & Chernova , V. (2019). Artificial Intelligence in Management: Challenges and Opportunities. *8th International Scientific Conference on Economic and Social Development*, 133-140.

Chovancova, M., Asamoah, E. S., Wanninayake, W.M.C.B. (2012). Consumer Behaviour and Branding: A cross Cultural Perspectives. *GEORG Zilina*, Bojzova11, 01001, Zilina, Slovak Republic.

Chow, M. (2017, September). *AI and machine learning get us one step closer to relevance at scale*. Retrieved from Emerging Technology,: https://www.thinkwithgoogle.com/marketing-resources/ai-personalized-marketing/

Chui, M., Kamalnath, V., & McCarthy, B. (2018, March 12). *An executive's guide to AI*. Retrieved from McKinsey & Company website: https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/an-executives-guide-to-ai#

Coats , P. K. (1987). Artificial Intelligence, Expert Systems and Business. *American Business Review, 5*(2), 1-7.

Cohen, B. (2019, July 24). *How AI Will Impact Distribution – Leveraging the Power of AI #1*. Retrieved from https://www.naw.org/how-ai-will-impact-distribution-leveraging-the-power-of-ai-1/

Deyo, K. (2018, June 21). *How Retailers Are Using AI to Power their Marketing Communications*. Retrieved from https://www.smartbugmedia.com/blog/how-retailers-are-using-ai-to-power-their-marketing-communications

Dorfer, S. (2018, May 31). *Shoppable Content: AI App Browzzin*. Retrieved from https://www.stylus.com/kppfqb

Dua, T. (2017, June 08). *Why images are the next frontier for ad targeting*. Retrieved from m https://digiday.com/marketing/ad-targeting-images/

Dunwoodie, B. (2018, July 12). *How AI Is Impacting the Voice of the Customer Landscape*. Retrieved from CMS Wire: cmswire.com/customer-experience/how-ai-is-impacting-the-voice-of-the-customer-landscape/

Gentsch, P. (2019). *AI in Marketing, Sales and Service.* Cham: Palgrave Macmillan.

Hamet, P., & Tremblay, J. (2017). Artificial intelligence in medicine. *Metabolism*.

Hear, S. O. (2017, December 13). *The price is right! Pace raises £2.5M to automate hotel room pricing based on demand*. Retrieved from https://techcrunch.com/2017/12/13/pace-pricing/

Heine, C. (2017, August 07). *Heres What You Need to Know About Voice AI, the Next Frontier of Brand Marketing*. Retrieved from www.adweek.com/digital/heres-what-you-need-to-know-about-voice-ai-the-next-frontier-of-brand-marketing/

Holtel, S. (2015). Artificial Intelligence Creates a Wicked Problem for the Enterprise. *Procedia Computer Science*, (pp. 171-180).

Howard, J. (2014, December 16). *The wonderful and terrifying implications of computers that can Learn*. Retrieved from https://www.ted.com/talks/jeremy_howard_the_wonderful_and_terrifying_implications_of_computers

Israeli, A., & Avery, J. (2017). Predicting Consumer Tastes with Big Data at Gap. *Harvard Business Review*.

Jarek, K., & Mazurek, G. (2019). Marketing and Artificial Intelligence. *Central European Business Review, 8*(2), 46-55.

Jesus, A. d. (2019, February 16). *AI for Pricing – Comparing 5 Current Applications*. Retrieved from https://emerj.com/ai-sector-overviews/ai-for-pricing-comparing-5-current-applications/

Kaplan, J. (2016). *Artificial intelligence: What Everyone Needs to Know.* United States: Oxford University Press.

Kaput, M. (2016). *The Marketer's Guide to Artificial Intelligence Terminology*. Retrieved from https://www.marketingaiinstitute.com/blog/the-marketers-guide-to-artificial-intelligence-terminology

Karani, D. (2020, June 10). *How to OCR Purchase Orders For Automation*. Retrieved from https://nanonets.com/blog/how-to-ocr-purchase-orders-for-automation/

Londhe, D. B. (2014). Marketing Mix for Next Generation Marketing. *Symbiosis Institute of Management Studies Annual Research Conference (SIMSARC13)*, 335-340.

Luger, G., & Stubblefield, W. (208). *AI algorithms, data structures, and idioms in Prolog, Lisp and java.* Boston: Addison-Wesley Educational Publishers.

Macinnis, D. (2004). Where Have All the Papers Gone. *Association for Consumer Research Newsletter*, 21(2), 1-3

Marchand, A., & Marx, P. (2020). Automated Product Recommendations with Preference-Based Explanations. *Journal of Retailing*.

Mcdowell, M. (2019, March 12). *Stores get smart about AI*. Retrieved from Vogue Business: https://www.voguebusiness.com/technology/artificial-intelligence-physical-stores-kering-nike-alibaba

Michalski, R. S., Carbonell, J. G., & Mitchell, T. (2013). *Machine learning: An artificial intelligence approach.* Springer Science & Business Media.

Mitchell, T., & Brynjolfsson, E. (2017). Track How Technology is Transforming Work. *Nature*.

Molsa, M. (2016). Success factors when implementing AI-powered marketing solutions. 1-32.

Naimat, A. (2016, August 2). *The New Artificial Intelligence Market* . Retrieved from O'Reilly and Intel Nervana: https://www.oreilly.com/data/free/files/the-new-artificial-intelligence-market.pdf

Nancey, G. L., & Benjamin , K. (2017). Emerging Robotic Regions in the United States: Insights for Regional Economic Evolution. *Regional Studies, 52*(6), 1-13.

Newell, S., & Marabelli, M. (2015). Strategic opportunities (and challenges) of algorithmic decision-making: A call for action on the long-term societal effects of 'datification'. *The Journal of Strategic Information Systems*, 3-14.

Node, I. (2020, September 7). *How Artificial Intelligence (AI) Is Helping Retailers Predict Prices*. Blog. https://www.intelligencenode.com/blog/retailers-predict-prices-using-ai/

Paschen, U., Pitt, C., & J, K. (2020). Artificial intelligence: Building blocks and an innovation typology. *Business Horizons, 63*(2), 147155.

Pavaloiu, A. (2016). The Impact of Artificial Intelligence on Global Trends. *Journal of Multidisciplinary Developments, 1*(1), 21-37.

Peterson, T. (2017, May 16). *Pinterest will use image recognition to target ads, including in Lens results.* Retrieved from https://marketingland.com/pinterest-will-use-image-recognition-target-ads-including-lens-results-214895

Reavie, V. (2018, August 1). *Do You Know The Difference Between Data Analytics And AI Machine Learning?* Retrieved from Forbes: https://www.forbes.com/sites/forbesagencycouncil/2018/08/01/do-you-know-the-difference-between-data-analytics-and-ai-machine-learning/#6ee72885878d

Ross, B. (2013, December 28). *Man and machine: Cognitive computing in the enterprise*. Retrieved from Information Age: https://www.information-age.com/man-and-machine-cognitive-computing-in-the-enterprise-123457556/

Singh, H. (2017, February 25). *Artificial Intelligence for Marketing Mix Models in the Pharma Sector: Reducing Costs and Boosting Sales*. Artificial Intelligence for Marketing Mix Models in the Pharma Sector: Reducing Costs and Boosting Sales. https://www.linkedin.com/pulse/artificial-intelligence-marketing-mix-models-pharma-sector-singh/

Strycharz, J., Noort, G., Helberger, N., & Smit, E. (2019). Contrasting perspectives – practitioner's viewpoint on personalised marketing communication. *European Journal of Marketing, 53*(4).

Talyor, R. (2019, October 8). *integrating ai in your marketing strategy: six steps*. Retrieved from Chief Marketer: https://www.chiefmarketer.com/integrating-ai-in-your-marketing-strategy-six-steps/

Teichmann, J. (2019, July 15). *AI meets marketing segmentation models*. Retrieved from Towars data Science: https://towardsdatascience.com/data-science-powered-segmentation-models-ae89f9bd405f

Tiautrakul, J., & Jindakul, J. (2019). The Role of Artificial Intelligence (AI) With the Change of Marketing Communication.

Trippi, R. R., & Turban, E. (1992). *Neural networks in finance and investing: Using artificial intelligence to improve real-world performance.* McGraw-Hill, Inc.

Wanninayake, W.M.C.B. (2014). Consumer Ethnocentrism as a Strategic Tool for Developing Domestic Brand Equity in Developing Countries. *Proceedings of the Annual Research Symposium*, National Centre for Advanced Studies. ISBN 978-955-4978-00-3.

WEF. (2016). *The Global Risks.* Geneva: World Economic Forum.

Wierenga, B. (2010). *Marketing and Artificial Intelligence: Great Opportunities, Reluctant Partners.*

Wile, R. (2014, May 13). *A Venture Capital Firm Just Named An Algorithm To Its Board Of Directors — Here's What It Actually Does*. Retrieved from Business Insider: https://www.businessinsider.com/vital-named-to-board-2014-5?IR=T

Wood, M. (2011). *The Marketing Plan Handbook.* New York: Pearson.

Zahrani, A., & Adel, M. (2018). How Artificial Intelligent Transform Business. doi:http://dx.doi.org/10.2139/ssrn.3226264