INTERNATIONAL JOURNAL FOR INNOVATIVE RESEARCH IN MULTIDISCIPLINARY FIELD
ISSN(O): 2455-0620 [Impact Factor: 7.581]
Monthly, Peer-Reviewed, Refereed, Indexed Journal with IC Value : 86.87
Volume - 9, Issue - 2, February - 2023 Publication Date: 28/02/2023

DOIs:10.2015/IJIRMF/202302054 --:-- Research Paper / Article / Review

IMPLEMENTATION OF AI AND ML TOOLS IN MARKETING MANAGEMENT PROCESS

[1] RASOOL BASHA. H, [2] RAKESH. N, [3] RITHI BHARRATHI. S, [4] SHIVANI. R

[5] KIRAN. S [6] MANSHI DHIRAN. D

[1]Student, MBA, Dwaraka Doss Goverdhan Doss Vaishnav College, Chennai, India
Email - [1]22e4150@dgvaishnavcollege.edu.in
[2]Student, MBA, Dwaraka Doss Goverdhan Doss Vaishnav College, Chennai, India
Email - [2]22e4110@dgvaishnavcollege.edu.in
[3]Student, MBA, Dwaraka Doss Goverdhan Doss Vaishnav College, Chennai, India
Email - [3]22e4116@dgvaishnavcollege.edu.in
[4]Student, MBA, Dwaraka Doss Goverdhan Doss Vaishnav College, Chennai, India
Email - [4]22e4108@dgvaishnavcollege.edu.in
[5]Student, MBA, Dwaraka Doss Goverdhan Doss Vaishnav College, Chennai, India
Email -[5]22e4123@dgvaishnavcollege.edu.in
[6]Student, MBA, Dwaraka Doss Goverdhan Doss Vaishnav College, Chennai, India
Email -[6]22e4113@dgvaishnavcollege.edu.in

Abstract: *Machine learning (ML) can predict future developments and support decision-making by extracting insights from large amounts of generated data. AI can be used to process the data and discover new findings related to marketing department of the company. This functionality greatly impacts the strategic decision-making process of organizations. The research gap analysis shows that only a little is known about marketer's attitude towards the knowledge about, ML tools and the adoption of these tools in utilization to support strategic and operational management. Data Analytics is used to process the data stored by the organization. The data related to Marketing Management of the organization can be processed and analysed through data analytics. The research presented here focuses on the selection and adoption of ML-driven analytical tools for finding the performance of the organization in the area of marketing. A framework consisting of enablers and a process map is created to help organizations identify the opportunities in market and successfully execute the projects related towards the deployment and adoption of analytical ML tools in digital marketing.*

Key Words: *Artificial Intelligence (AI), Machine Learning (ML), Marketing analysis, Decision-making, Prediction.*

1. INTRODUCTION:

In recent years, the extensive development of information and communication technologies in the private and public sectors initiated the emergence of a new digital marketing environment. Due to the proliferation of information technology, a huge amount of data is currently generated. According to estimates, 2.5 quintillion bytes of data are produced each day, and as the Internet of Things develops, this number rises (IoT). A further estimate states that 90% of the current global data was produced in the previous two years. The creation, availability, and use of high-quality information are essential for making swift and accurate business decisions. Therefore, by using new data-oriented approaches to marketing management, there are potential to achieve a competitive edge as a result of exponential technological advancement and its barrier-free global distribution.

Companies turned to digital marketing as a logical response to take advantage of and profit from the increased consumer focus on the Internet. Many different sorts of organisations employ digital marketing as part of their marketing strategies and deployment plans, including companies, hospitals, schools, professional groups, councils, and NGOs.. Some of these organizations can also operate their own e-commerce platform, but they mostly use the Internet as a

channel/medium within their communication strategy. These organizations typically fulfil the role of clients or advertisers – also referred to as brandsThere are several types of organisations that work in the field of digital marketing. Digital agencies employ digital marketing as a component of their own marketing plans as well as developing and implementing marketing strategies for the businesses in the first group. Digital agencies (or the advertisers themselves) employ the third category of companies, the media, to reach out to their target demographic.

Through a few clicks on the right analytical tool, businesses can discover more about consumers thanks to the Internet environment. Digital marketing has the most measurable advantages over conventional marketing tools and platforms. Every Internet user has a sizable amount of data in their digital footprint that can be used as input in marketing analyses. The data had to be manually acquired and examined, which took time and had little regulation. Analytical tools are currently used in marketing management to systemize processes, streamline the decision making, and automate work. These sophisticated analytical tools use machine learning (ML) to learn from historical data and help plan future activities more effectively. Numerous industries can make use of the ML tools. Their usage in marketing analysis to enhance strategic and operational choices in marketing management is the specific focus of the study provided in this article. The research examines the potential of ML in marketing analytics, the extent of technology deployment, as well as the attitudes of marketing agencies and marketing managers towards active exploitation of these technologies, using an interdisciplinary approach.

2. LITERATURE REVIEW:

- **IMPORTANCE OF DATA ANALYSIS IN STRATEGIC PLANNING**

  Organizations may make quicker and more effective operational decisions with the aid of analytical tools, which streamline strategic planning. Analytical tools in marketing have the potential to: 1) access data as strategic assets; 2) visualise data into clear structures; 3) provide an overview of current and potential customers; 4) increase the effectiveness of marketing decisions; 5) focus on proactivity towards consumers; 6) create tailored offers for specific consumers; 7) adapt the digital environment to the preferences of specific users; 8) engage in real-time discussions with consumers; and 9) increase the number of sales.

- **ML-BASED ANALYTICAL TOOLS IN MARKETING**

  A computer or machine can learn based on experience and examples thanks to adaptive mechanisms found in machine learning (ML). Over time, developing new talents will improve system performance. Adaptive systems are built using ML mechanisms. Current information systems are equipped with the computational power necessary to carry out complex statistical mathematical procedures. As more software development projects adopt ML principles, more sophisticated analytical systems are produced as a result. Their adoption not only reduces long-term expenditures for businesses significantly, but also simplifies life for customers. ML has a lot of potential to be used in the marketing industry for decision-making, customer engagement, and strategic planning.
  Neural networks are used to solve particular problems that call for thinking, whether it be human or artificial. ML might be seen as a cursory data processing method that just works with the topmost layer of learned knowledge. ML's in-depth learning technique manages multiple data layers at once. Therefore, in-depth learning-based systems are able to get fresh data from which to build new processing layers. This strategy makes predictive analysis possible.

- **DEPLOYING ML-DRIVEN ANALYTICAL TOOLS IN DIGITAL MARKETING**

  Online marketing, Internet marketing, and mobile marketing are all included under the general phrase "digital marketing," which is used frequently. It can be characterised as marketing that implements marketing strategies using digital technology (hardware, software, and communication technologies).
  The tools utilized in digital marketing include market research, polling, various forms of advertising, search engine marketing, newsletters and social media marketing. Marketing analytics is an inherent part of effectively using any of these tools. All three types of organizations (advertisers, agencies, media) need the awareness and

ability to work with large amounts of data to extract meaningful information and increase the effectiveness of their digital marketing initiatives.

3. METHODOLOGY:

Qualitative research, using the method of in-depth interviews, was used to gain insight into the way ML is practically used in marketing. Digital marketing specialists representing 1) firms in the role of advertisers; 2) agencies in the role of intermediaries; and 3) businesses providing the media space in Slovakia, were selected as interview participants, based on the following key criteria: The interviewee is a middle or senior manager, has been working in digital marketing for at least five years and has direct experience with information systems in the field of Pay Per Click (PPC), Search Engine Optimization (SEO) or Real Time Bidding (RTB) campaign development and optimization. Three experts from each of these three groups were interviewed, i.e. a total of nine respondents. The findings from the in-depth interviews indicate the current situation in the area of using ML-driven analytical tools by organizations that are active in the field of digital marketing. Quantitative research, using a standardized questionnaire, was conducted to confirm the findings and gain more insights into the identified issues.

The process of in-depth interviews consisted of three steps: 1) preparation; 2) implementation; 3) data processing. The preparation stage included defining the interview structure, formulating initial instructions for respondents, preparing research questions, providing audio recording techniques, and selecting a suitable environment for the interviews. The estimated length of the interview was one hour. Prior to each interview, the respondent was asked to sign a consent form. The interviews were based on a pre-defined structure and moderated. However, respondents were given the opportunity to suggest additional topics and make comments that stem from the flow of the conversation. Before the interviews, participants were requested to express their feelings and beliefs and to provide only true information. They were given the assurance that there are no wrong answers, that answers are considered confidential, that responses will not be linked to individuals, and that the audio recording of the interview and the written notes taken by the researcher will be used solely for research purposes. Interviewees were also informed that the findings of the research may be presented in both written and oral form.

4. FINDINGS:

The set of questions in the in-depth interviews, the intention was to find out how respondents perceive marketing analyses and analytical tools and how they implement these tools in digital marketing processes in their company
The first question focused on the way respondents use marketing analysis in the process of planning and implementing digital marketing strategies. The following comments illustrate the situation in this area:
• Respondent working in the media: “We use marketing analysis regularly. It is a thing without which we will not move. This means that the analysis is probably the most important part before we decide what further steps we will take.”
• Respondent working in the agency: “Marketing analysis forms a substantial part of the whole process. They give us valuable impulses for creating a marketing strategy and think about what to do and how to do it.”
• Respondent working for the advertiser: "All agency assignments we work with are based on our analysis and data."
In the second part of the questionnaire, respondents were asked what they expected from marketing analysis at any point in the planning and execution of an advertising campaign.
The most popular responses were:
• data about the intended audience for a marketing campaign;
• data about the size of the target audience;
• data about the marketing strategies of competitors;
• data about the state of digital marketing in the local market;
• data about the volume of searches for relevant keywords;
• data about the feasibility of marketing communication interventions;
• data about the likelihood that the desired marketing message will be shown to the user on a regular basis; and
• data about the target audience's demographics.
The results showed that marketing analysis is used as a resource and is relied upon by respondents in all crucial stages of digital marketing strategy preparation and implementation.

Machine learning

• Respondent 1: “It can evolve. It can learn and develop.”
• Respondent 2: “Based on what it does, it learns, and, in the future, it makes its activities better, more natural. The first step is to have AI and then link ML to it so that AI learns better, for instance to communicate with you based on some data.”
• Respondent 3: "All robots and bots, manual work ... those things that can be set with a simple scheme ... conditional: when this, then this ... can be automated. These are responses to customer service, manual activity automation, etc.”
• Respondent 4: "ML should be a process by which the process is improving in some way, that means, it should be able to produce better results after different sequences."
• Respondent 5: “ML is more predictable and only responds to directly set inputs. However, its specificity is that it has received a great amount of data, or that it "experienced" many simulated situations, making its output more accurate and relevant."
All respondents identified ML as part of AI. Most respondents also correctly identified that ML is a kind of process that takes in large amount of data on which the system bases its learning and developing. Again, the answers only partially coincided with the definition given in the literature. Two of the respondents confused the concepts of AI and ML. The respondents took a considerably longer time to formulate their answers, in comparison to the other questions. When we asked the additional question: "Where did you hear about the mentioned terms for the first time?" most respondents mentioned professional marketing conferences where the topic is currently very popular. Other responses included Internet resources, articles on marketing and technology websites, e-mails after voluntary subscription to news from a specific website and various educational relaxation videos. It follows from the above that respondents are aware of the terms; they have encountered them in practice and have an approximate idea of what they represent.
The issue is closely tied to process automation and the capacity to work with massive volumes of data, according to all respondents, who also stated that AI and ML have significant promise, especially in technology-oriented businesses like digital marketing.

Artificial Intelligence

• Respondent 1: "A machine, a device that thinks. It functions and has a processor.
• Respondent 2: "AI is something that a person programmes and operates according to rules that the man sets."
"AI is a superstructure, it's a Mercedes among ML," said Respondent 3. It may educate itself in addition to learning from case studies that are provided to it.
"AI should be able to solve problems on its own," said respondent 4
• Respondent 5: “AI is an algorithm that at some point starts to make decisions based on a large number of derived, indirect inputs. Given that it is starting to enter inputs from this point on its own, we can basically talk about intelligence.”
All of the respondents have heard of the phrase previously and believe it to be extremely pertinent in the modern world. The responses, however, were inconsistent, ambiguous, and perplexing. Nearly no respondents' understanding of the phrase was totally consistent with the definition found in the literature, and all respondents had a hazy understanding of its qualities. The answers either failed to fully or imperfectly express the essence of AI.

5. USING ML IN PRACTICE

"Can you define marketing analytics tools based on the core principles of AI?" was questioned during in-depth interviews. Tools Google (AdWords, Search); Google Data Studio; YouTube; Facebook Ada Manager; chat applications; programmatic buy software; Echobox; automated webinars; Mailchimp were most frequently mentioned. Respondents know about ML/AI-based digital marketing tools. Respondents cited graphics card, autonomous car, and text translator companies in addition to marketing tools. The same tools were listed when asked which ones their company uses.
The replies show that ML-based technologies would mostly effect the following digital marketing areas:

• advertisement systems and campaign management,
• reporting process automation,
• partial automation of communication (particularly written communication like emails or chats).

Analytical tools can be used to retrieve data from the aforementioned areas. This eliminates the need for human intervention and the software solutions can perform defined actions autonomously. In areas where AI is difficult to apply, respondents consider:

• creative processes,
• building and maintainence of relationships with business partners.

These sections use limited or specific data. Today, ideation and drawing can be automated. Nonetheless, Machines will never match human brainstorming. Computers cannot feel, which affects the outcome (sometimes in a good way).

"What future ML activities does your organisation plan?" was another qualitative survey question. If the respondent was unfamiliar with analytical tools, marketing analysis, big data, data management, etc., and their firm supports ML-driven tools just minimally, only basic or no activities are planned. ML plans were well-developed if respondents understood the themes and worked at an innovative company. Companies planning such actions most often include:
report automation,

• linking several marketing analytical tools,
• data generated from marketing activities,
• automation of the processing of collected data,
• digital content creation.

6. CONCLUSION:

Based on all of the responses, it is obvious that marketing analysis is essential to developing and putting into practise a marketing plan. The everyday use of data analysis and working with data was affirmed by all nine respondents. All respondents concurred that without knowledge obtained from marketing analysis, they would not move forward. ML already has a place in the work of marketing managers and digital marketing specialists, according to the findings of this study. The qualitative research revealed how respondents view the application of ML in digital marketing and how their organisations view the advantages and disadvantages of ML and AI tools.

REFERENCES:

1. DOMO, “Data Never Sleeps 6.0,” 2018. [Online]. Available: https://www.domo.com/solution/data-never-sleeps-6. [Accessed: 05-Feb-2019].
2. B. Marr, “How Much Data Do We Create Every Day? The MindBlowing Stats Everyone Should Read,” 2018. [Online]. Available: https://www.forbes.com/sites/bernardmarr/2018/05/21/how-muchdata-do-we-create-every-day-the-mind-blowing-stats-everyoneshould-read/#451a9afd60ba. [Accessed: 19-Jul-2018].
3. Miklosik, M. Kuchta, and S. Zak, “Privacy Protection vs. Advertising Revenues: The Case of Content Publishers,” Istanbul Univ. Fac. Commun. J., vol. In print, 2018.
4. F.-C. Cheng and Y. S. Wang, “The Do Not Track Mechanism for Digital Footprint Privacy Protection in Marketing Applications,” J. Bus. Econ. Manag., vol. 19, no. 2, pp. 253–267, 2018.

I. Heimbach, D. S. Kostyra, and O. Hinz, “Marketing Automation,”Bus. Inf. Syst. Eng., vol. 57, no. 2, pp. 129–133, Apr. 2015.

J. Amrollahi and B. Rowlands, “Collaborative open strategic planning: a method and case study,” Inf. Technol. People, vol. 30, no. 4, pp. 832–852, Nov. 2017.

K. Rojas-Arce, O. Gelman, and J. Suarez-Rocha, “The Methodology for Strategic Plan Implementation,” J. Appl. Res. Technol., vol. 10, no. 2, pp. 248–261, Apr. 2012.

A. Efstathiades, S. Tassou, and A. Antoniou, “Strategic planning, transfer and implementation of Advanced Manufacturing Technologies (AMT). Development of an integrated process plan,”Technovation, vol. 22, no. 4, pp. 201–212, Apr. 2002.

5. R. M. Schwartzstein, G. C. Huang, and C. M. Coughlin, “Development and Implementation of a Comprehensive Strategic Plan for Medical Education at an Academic Medical Center,” Acad. Med., vol. 83, no. 6, pp. 550–559, Jun. 2008.
6. G. B. Tettamanzi, M. Carlesi, L. Pannese, and M. Santalmasi, “Business intelligence for strategic marketing: Predictive modelling of customer behaviour using fuzzy logic and evolutionary
7. algorithms,” in Applications of Evolutionary Computing, Proceedings, 2007, vol. 4448, p. 233+.
8. X.-W. Chen and X. Lin, “Big Data Deep Learning: Challenges and Perspectives,” IEEE Access, vol. 2, pp. 514–525, 2014.

L. E. Frisk, F. Bannister, and R. Lindgren, "Evaluation of Information System Investments: A Value Dials approach to closing the theory-practice gap," J. Inf. Technol., vol. 30, no. 3, pp. 276–292, Sep. 2015.
9. J. Balla, "Seven benefits from using marketing analytics," 2014. [Online]. Available: https://blogs.sas.com/content/customeranalytics/2014/09/17/sevenbenefits-from-using-marketing-analytics/. [Accessed: 14-Jan-2018].
10. N. G. Polson and V. Sokolov, "Deep Learning: A Bayesian Perspective," Bayesian Anal., vol. 12, no. 4, pp. 1275–1304, Dec. 2017.
11. J. B. Heaton, N. G. Polson, and J. H. Witte, "Deep learning for finance: deep portfolios," Appl. Stoch. Model. Bus. Ind., vol. 33, no. 1, pp. 3–12, 2017.
B. Marr, "What Is The Difference Between Deep Learning, Machine Learning and AI?," 2016. [Online]. Available:
12. https://www.forbes.com/sites/bernardmarr/2016/12/08/what-is-thedifference-between-deep-learning-machine-learning-andai/2/#ff0aefc154fa. [Accessed: 21-Jan-2018].
M. Pangallo and M. Loberto, "Home is where the ad is: online interest proxies housing demand," EPJ Data Sci., vol. 7, Nov. 2018.
13. Y. Kurachi, S. Narukawa, and H. Hara, "Al Chatbot to Realize Sophistication of Customer Contact Points," Fujitsu Sci. Tech. J., vol. 54, no. 3, pp. 2–8, Jul. 2018.
14. G. Pant and S. Pant, "Visibility of corporate websites: The role of information prosociality," Decis. Support Syst., vol. 106, pp. 119–129, Feb. 2018