THE BACKGROUND OF ARTIFICIAL INTELLIGENCE APPLIED TO MARKETING

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ABSTRACT

The increasing use of Artificial Intelligence (AI) in Marketing can facilitate, expand and modify markets. AI tools and devices in marketing are deeply related to consumer behavior. Companies and brands have been able to benefit from the use of this technology. However, there is little research on the application of AI to marketing decisions. Studies are relatively recent and scarce, especially when compared to other topics. It is inevitable to understand the AI process in marketing. The aim is to analyse and identify lines of research on AI in marketing, clarifying the main contributions and implications of AI in marketing, and also to contribute to the identification of future research topics. Discussion of research is necessary in all areas of knowledge in a systematic and impartial form of research to improve and update the constant search for knowledge. You concluded that AI marketing can solve many traditional problems as well as digital ones, making the impact it will have on the AI discipline in marketing important, in addition to the future implications of AI in marketing.

Keywords: Artificial Intelligence, AI, Machine Learning, ML, Big Data, BD, Marketing, and Marketing Intelligence

INTRODUCTION

A generic definition for the term and discipline of "marketing" can be conceptualized as the methodologies, methods, approaches, perspectives, and tactics for conveying the value of a brand, service, or product to the consumer market, with the objective of selling a promoting the said service, product, or brand. On the basis of both this definition and practical experience, it is clear that marketing is a continually evolving discipline and area of contemporary business practice. The widespread incorporation of technology into marketing, over time, evidences the assertion above. At the frontier of the evolution of marketing today are digital technologies, which are gradually and increasingly generating a newer understanding of so-called 'new age' or digital marketing (Jain & Yadav, 2017, Foroudi et al., 2017). Among these broad spectrums of novel digital technologies is Artificial Intelligence (AI).

AI is simply the demonstration of intelligence, typically associated with intrinsic human capabilities, by machines. More technically, it is the branch of computer science that concerns itself with building 'smart machines' with the potential of undertaking tasks typically requiring human intelligence (Brynjolfsson & Mcafee, 2017). Generally, four academic and practitioner perspectives have defined the field of artificial intelligence both historically and contemporarily, namely rational action, humanly action, rational thinking, and humanly thinking (Brynjolfsson & Mcafee, 2017). These lines of inquiry have generated two broad categories of AI termed narrow or weak AI and strong AI that is formally referred to as Artificial General Intelligence (AGI) (Brynjolfsson & Mcafee, 2017). The vast majority of tangible results and developments in AI as a digital technology emanate from narrow AI that operates within a limited context to simulate human intelligence, as exemplified in a variety of extant use cases such as AI personal assistants, semi-autonomous vehicles, IBM's Watson, Google search, and image recognition software (Brynjolfsson & Mcafee, 2017). Conversely, AGI pertains to AI-powered machines with human-level intelligence that could find application to any complex task. The scientific quest for AGI has largely been unfruitful so far despite extensive and wide-ranging efforts. More specifically, advances and developments in narrow AI generate multiple domains and

applications that continue to transform and revolutionize multiple areas of contemporary business management practice and modern life, overall. The most important narrow AI domains and technologies today, in this regard, include examples such as Machine Learning (ML), Deep Learning (DL), signal processing, and natural language processing, understanding, and generation (NLP, NLU, NLG, respectively) (Brynjolfsson & Mcafee, 2017). Each of the domains aforementioned generates its unique sets of transformative applications such as voice recognition, image recognition, and computer vision.

The integration of AI-powered tools and technologies, as defined above, into the domain and discipline of marketing presents a potential and implications of consequential import and significance for contemporary marketing practice. Ai has the potential to realize dramatic improvements in contemporary marketing tactics in addition to introducing entirely new ways of communicating and distributing value to the consumer market (Brynjolfsson & Mcafee, 2017). Importantly, the excitement of such meaningful integrations among marketing organizations and practitioners has increasingly shifted from merely theoretical observations to practical application, especially as at the decade beginning from the year 2010 (Dimitrieska et al., 2018). Notably, multiple empirical studies indicate that marketing is a leading use case of AI resources, with extant surveys corroborating this assertion by revealing that marketing is one of the leading industry adopters of AI technologies (Sterne, 2017). Despite this likely profound impact, however, an evaluation of the current body of knowledge on the intersection between AI and marketing reveals a dearth of literature that is arguably attributable to the relative infancy of this subject area of research (Brynjolfsson & Mcafee, 2017, Sterne, 2017). Moreover, survey research consistently demonstrates that not only is the subject of AI in marketing severely under-researched but also that most business and marketing managers today possess "insufficient understanding of what AI is, what it can do, and what it cannot" (De Bruyn et al., 2020, p. 91). Given the monumental significance of AI for marketing, as described above, it is important to address the current limitations in the available body of knowledge on AI in marketing along the lines of the potential use cases, current applications, implementation strategies and intricacies, and high-level comprehension of AI's potential long-term implications for marketing.

Accordingly, this paper proposes an empirical research exploration of AI applied to marketing. The proposed research seeks to synthesize the insights derived from extant literature addressing the integration of AI into contemporary marketing research, practice, and decision-making. More precisely, a systematic examination of extant evidence is important not only for collating the disparate pieces of literary evidence available on the subject of interest currently, thereby addressing the literature gap aforementioned but also for generating evidence-based answers to the following research questions:

I. What are the research themes emergent from extant research linking AI to marketing?
II. What are the current and potential contributions of AI to marketing?
III. What are the implications of AI for the discipline and practice of contemporary marketing?
IV. What does current literature reveal about the focal areas of current research efforts into AI in marketing?
V. What are the potential areas for future research?

METHODOLOGICAL APPROACH

To address the research questions posed above and to address the central objectives of the investigation proposed here, this article proposes a review of the thematic Systematic bibliometric literature (LRSB) of existing and relevant literature. The selection of the qualitative research design rather than the quantitative alternative is based on the rationale that the former paradigm for research provides for a more in-depth and nuanced understanding of what current research reveals regarding the state and implications of the integration of AI into the marketing scholarly discipline and empirical practice, compared to the latter research design. Additionally, thematic analysis provides a methodological and systematic analytical framework by which to

undertake and evidence-based synthesis of the concurrent and recurrent details identified within pertinent literature.

The LRSB of AI applied to marketing according to the proposals of Rosário & Raimundo (2021); Rosário (2021); Rosário, et al., (2021); Raimundo & Rosário (2021); Rosário & Cruz (2019). An LRSB improves: (i) the validity of a review provides the people so that it can be followed if the study is replicated; (ii) the accuracy of a review provides arguments strictly related to the study questions; and (iii) the generalizability of the results, allows synthesizing and investigating the accumulated knowledge. In view of the above, we consider the LRSB as a "guiding instrument", which allows us to shape the review according to our study objectives, rather than a methodology with a concrete set of rigid rules. Thus, allowing a comprehensive knowledge as well as its evolution over time, recognizing researchers, publications and the nature of the most relevant articles (Rosário & Raimundo, 2021; Rosário, 2021; Rosário et al., 2021; Raimundo & Rosário, 2021; Rosário & Cruz, 2019).

Accordingly, the literature that is subsequently analyzed herein was identified based on the implementation of an elaborate literature search strategy that was undertaken on the Scopus database in July of 2021. However, we consider that the study has the limitation of considering only the Scopus database, excluding the other academic bases. The primary inclusion criteria include a peer review requirement and a publication period spanning the duration between the years 2010 and 2020 of the Scopus database (Table 1). This study in Meta-search generated 384,692 publications using the artificial intelligence keyword; First Inclusion Criterion limiting to the Subject area Business, Management and Accounting generated 10,310 publications; Second Inclusion Criterion, with Exact keyword: Marketing generated 127 publications and finally Screening in July 2021 for the period 2010-2020 generated 72 publications.

Table 1
SCREENING METHODOLOGY

Database Scopus	Screening	Publications
Meta-search	Keyword: Artificial intelligence	3,84,692
First Inclusion Criterion	Keyword: Artificial intelligence Subject area Business, Management and Accounting	10,310
Second Inclusion Criterion	Keyword: artificial intelligence Subject area Business, Management and Accounting Exact keyword: Marketing Keyword: Artificial intelligence	127
Screening	Subject area Business, Management and Accounting Exactkeyword: Marketing Period between 2010-2020 Published until July 2021	72

Finally, 72 documents were obtained 4 in open access and 68 others, the documents are divided into 37 articles 33 conferences paper and lastly, 2 book chapter.

LITERATURE ANALYSIS: THEMES AND TRENDS

Peer-reviewed articles on the subject were selected in the last ten years (2010-2020). In the period under review, 2011 was the year with the largest number of peer-reviewed articles on the subject, with 27 publications. Figure 1 analysis the peer-reviewed publications published for the period 2010-2020.

The publications were sorted out as follows: 2011 2nd International Conference On Artificial Intelligence Management Science And Electronic Commerce Aimsec 2011 Proceedings; Decision Support Systems and European Journal Of Marketing (3); Applied

Marketing Analytics; Big Data And Innovation In Tourism Travel And Hospitality Managerial Approaches Techniques And Applications; California Management Review; Electronic Commerce Research And Applications; Industrial Management And Data Systems; and Knowledge Based Systems (2); the remaining journals with 1 publication each (2010 International Conference On Management And Service Science Mass 2010; 2016 13th International Conference On Service Systems And Service Management Icsssm 2016; ACM Transactions On Economics And Computation; Big Data And Cognitive Computing; Bottom Line; British Food Journal; Central European Business Review; Computer Law And Security Review; Electronic Markets; Entrepreneurship And Sustainability Issues; International Conference On Management And Service Science Mass 2011; International Journal Of Computer Information Systems And Industrial Management Applications; International Journal Of Forecasting; International Journal Of Information Systems In The Service Sector; International Journal Of Production Research; International Journal Of Technology Management; Journal Of Brand Strategy; Journal Of Communication Management; Journal Of Service Management; Journal Of Strategic Marketing; Journal Of Travel And Tourism Marketing; Lecture Notes In Business Information Processing; Picmet 2014 Portland International Center For Management Of Engineering And Technology Proceedings Infrastructure And Service Integration; Picmet Portland International Center For Management Of Engineering And Technology Proceedings; Proceedings 2017 IEEE 19th Conference On Business Informatics CBI 2017; Production Planning And Control; Service Industries Journal; TQM Journal; Technological Forecasting And Social Change).

We can say that between 2010 and 2020 there has been an interest in research on artificial intelligence applied to marketing.

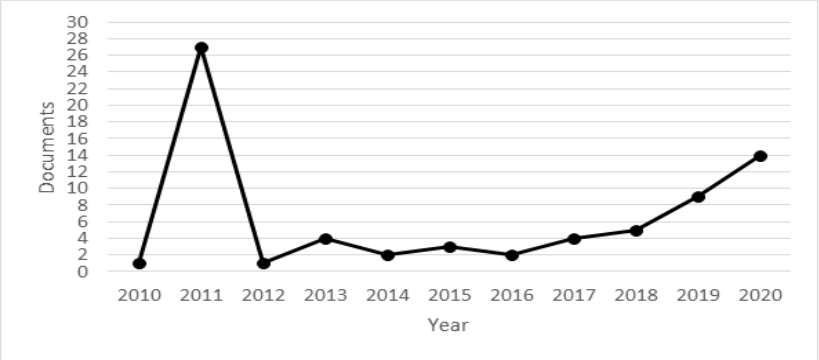

FIGURE 1
DOCUMENTS BY YEAR

In Table 2 we analyze for the Scimago Journal & Country Rank (SJR), the best quartile and the H index by publication. California Management Review California Management Review 2,770 (SJR), Q1 and H index 124. There is a total of 17 journals on Q1, 8 journals on Q2, 3 journals on Q3 and 3 journals on Q4. Journals from best quartile Q1 represent 55% of the 31 journals titles; best quartile Q2 represents 26% and finally, best quartile Q3 and Q4 3% each of the 31 journals titles.

As evident from Table 2, the significant majority of publications on artificial intelligence applied to marketing rank on the Q1 best quartile index. We can say that between 2010 and 2020 there has been an interest in research on artificial intelligence applied to marketing.

Table 2
SCIMAGO JOURNAL & COUNTRY RANK IMPACT FACTOR

Title	SJR	Best Quartile	H index
California Management Review	2,770	Q1	124

Technological Forecasting And Social Change	1.82	Q1	103
International Journal Of Production Research	1,780	Q1	125
International Journal Of Forecasting	1,750	Q1	85
Knowledge Based Systems	1,750	Q1	107
Journal Of Service Management	1,710	Q1	53
International Journal Of Technology Management	0,410	Q1	54
Industrial Management And Data Systems	1,390	Q1	96
Production Planning And Control	1,390	Q1	70
Electronic Commerce Research And Applications	1,240	Q1	69
Entrepreneurship And Sustainability Issues	1,170	Q1	18
Electronic Markets	1,010	Q1	29
Computer Law And Security Review	0,668	Q1	32
TQM Journal	0,660	Q1	64
Journal Of Communication Management	0,660	Q1	35
British Food Journal	0,579	Q1	74
Journal Of Travel And Tourism Marketing	1,490	Q1	64
Journal Of Strategic Marketing	0,770	Q2	45
Bottom Line	0,269	Q2	14
Service Industries Journal	0,630	Q2	62
ACM Transactions On Economics And Computation	0,432	Q2	11
Lecture Notes In Business Information Processing	0,260	Q3	44
International Journal Of Information Systems In The Service Sector	0,220	Q3	11
Central European Business Review	0,210	Q3	3
International Journal Of Computer Information Systems And Industrial Management Applications	0,160	Q4	6
Applied Marketing Analytics	0,120	Q4	1
Journal Of Brand Strategy	0,100	Q4	1
2016 13th International Conference On Service Systems And Service Management Icsssm 2016	0,180	-*	4
2011 2nd International Conference On Artificial Intelligence Management Science And Electronic Commerce Aimsec 2011 Proceedings	-*	-*	10
2010 International Conference On Management And Service Science Mass 2010	-*	-*	7
Decision Support Systems and European Journal Of Marketing	-*	-*	-*
Big Data And Innovation In Tourism Travel And Hospitality Managerial Approaches Techniques And Applications	-*	-*	-*
Big Data And Cognitive Computing	-*	-*	-*
International Conference On Management And Service Science Mass 2011	-*	-*	6
Picmet 2014 Portland International Center For Management Of Engineering And Technology Proceedings Infrastructure And Service Integration	-*	-*	5
Picmet Portland International Center For Management Of Engineering And Technology Proceedings	-*	-*	10

Proceedings 2017 IEEE 19th Conference On Business Informatics CBI 2017	-*	-*	-*

Note: *data not available.

The subject areas covered by the 72 scientific publications were: Business, Management and Accounting (72); Computer Science (46); Economics, Econometrics and Finance (31); Decision Sciences (16); Engineering (6); Social Sciences (6); Psychology (5); Arts and Humanities (3); Mathematics (3); Agricultural and Biological Sciences (1); Environmental Science (1).

In Figure 2 we can analyze the evolution of citations of articles published between 2010 and 2020.

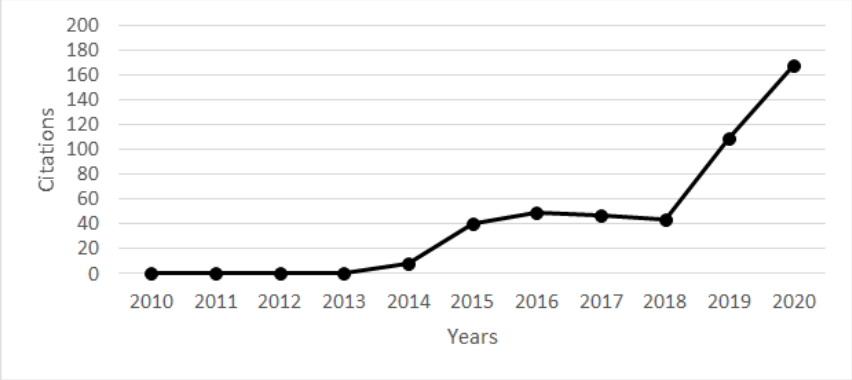

FIGURE 2
EVOLUTION OF CITATIONS BETWEEN 2010 AND 2021

The number of citations shows a net positive growth with an R2 of 75% for the 2010–2020 periods, with 2020 peaking at 167 citations. The most quoted article was "Sentic patterns: Dependency-based rules for concept-level sentiment analysis" from Poria, et al., (2014) with 192 quotes published in the Knowledge-Based Systems with 1.750 (SJR), the best quartile (Q1) and with H index (107). The published article introduces a new paradigm for the analysis of feelings at the conceptual level.

The h-index was used to ascertain the productivity and impact of the published work, based on the largest number of articles included that had at least the same number of citations. Of the documents considered for the h-index, 9 have been cited at least 9 times. In Annex I, the citations of all scientific articles from the 2010 to 2020 period are analyzed; the documents were not cited until 2013, 2014, 8; 2015, 40; 2016, 49; 2017, 47; 2018, 44; 2019, 109; and 2020, 167 with a total of 464 citations. Annex II examines the document self-citation during the period 2010 to 2020 of the articles 14 were self-citation for a total of 54 self-citation "A decision support system for market-driven product positioning and design "was self-citation 25 times. Of the scientific papers, 20 have not been cited until the time of writing of this paper.

In Figure 3, a bibliometric study was carried out to investigate and identify indicators on the dynamics and evolution of scientific information using the main keywords. The study of bibliometric results using the scientific software VOSviewe, aims to identify the main research keywords in studies of artificial intelligence applied to marketing. The research of the analyzed articles: Artificial Intelligence, Marketing, and Marketing Intelligence. The linked keywords can be analyzed in Figure 4 making it possible to make clear the network of keywords that appear together/linked in each scientific article, allowing to know the topics analyzed by the research and to identify future research trends. Finally, in Figure 5, a profusion of citations with a unit of analysis of the documents.

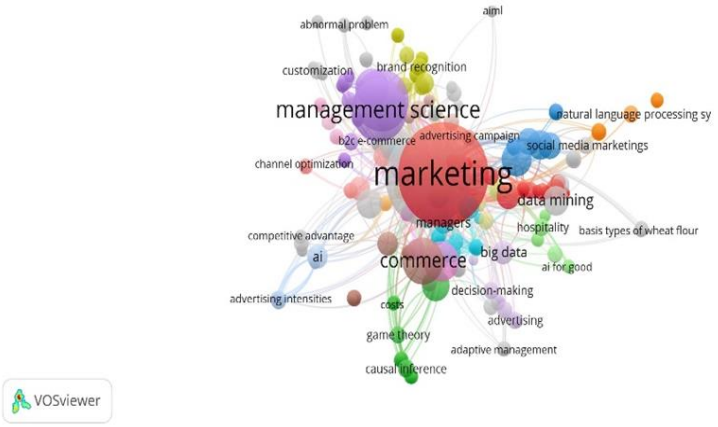

FIGURE 3
NETWORK OF ALL KEYWORDS

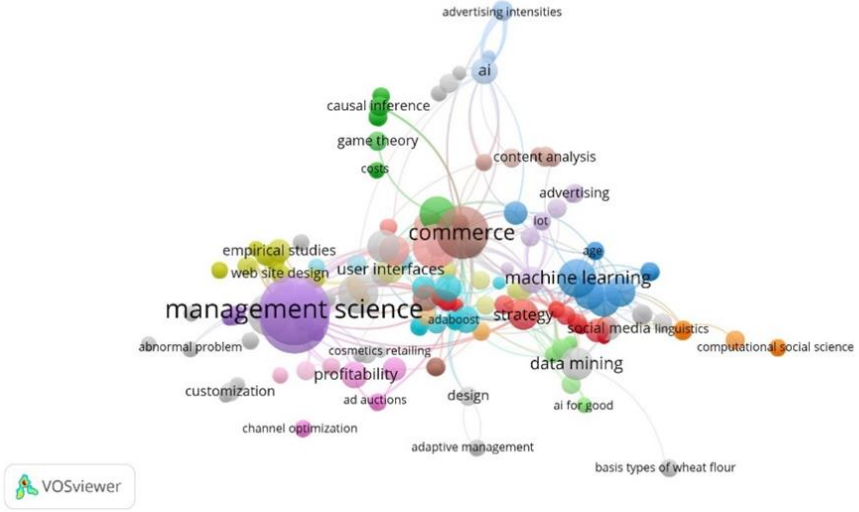

FIGURE 4
NETWORK OF LINKED KEYWORDS

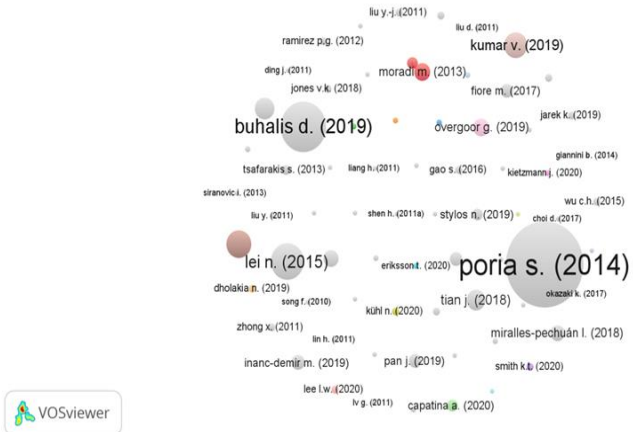

FIGURE 5
NETWORK OF CITATION
THEORETICAL PERSPECTIVES

Implementing the literature search strategy described above enabled this study to generate 72, scholarly and peer-reviewed articles addressing AI and marketing and published

between the years 2010 and 2020. In-depth examination of each article led to the discovery of six themes that are emergent and recurring within and across the population of studies, and these were triangulated with the secondary text source cited herein as Sterne (2017). Table 3 provides a succinct description of each study and the major theme (s) that it addresses. A full description of all the studies cited in the table is provided in the reference section at the end of this paper. The six themes below form the basis of this study's thematic analysis.

Table 3
SCIMAGO JOURNAL & COUNTRY RANK IMPACT FACTOR

Theme	Description of Theme	Article Citations
AI and the Marketing Problem	The role of AI in solving marketing problems	Ovegoor, et al., (2019); Qian & Gao (2011); Ramirez & Hachiya (2012); Shen, et al., (2011a); Shen, et al., (2011b); Song & Zhang (2010); Stone, et al., (2020); Tian, et al., (2018); Wang & Lim (2011); Zerfass, et al., (2020).
Levels of AI implementation today	Empirical evidence of AI applications in contemporary marketing practice.	An &Tian (2011); An, et al., (2020); Banerjee & Golhar (2013); Belanche, et al., (2020); Capatinn, et al., (2020); Ding & Liu (2011); Han & Guo (2011); Jarek & Mazurek (2019); Jones (2018); Kietzmann & Pitt (2020); Kuhl, et al., (2020); Kumar, et al., (2019); Okazaki & Inoue (2017); Poria, et al., (2014); Pradana, et al., (2017); Siranovic, et al., (2013); Smith (2020); Stylos & Zwiegelaar (2019); Yu & Bo (2011).
Disciplinary Contributions of AI to Marketing	How AI contributes to contemporary approaches to, and tactics of, marketing.	Abbas, et al., (2020); Buhalis & Simarta (2019); Chen & Shan (2011); Choi, et al., (2017); Dholakia & Firat (2019); Even (2019); Fiore, et al., (2017); Fu & Fu (2011); Giannini, et al., (2014); Hao (2011); Inanc-Demir & Kozac (2018); Kuhl, et al., (2020).
Implications of AI for marketing practice	The broader picture of the impact of AI on marketing professionals and on their practice.	Dalenberg (2018); Gao, et al., (2016); Guo (2011); Tienkouw et al., (2011); Ullal, et al., (2020); Tsafakaris, et al., (2013); Wang (2011); Wang & Xu (2011); Yang (2011); Zhong & Kuai (2011).
Emergent and Focal Areas of Research	The current state of marketing and business management research on AI integration	Chica, et al., (2016); Guelman, et al., (2013); Li, et al., (2011); Liang & Zhai (2011); Lin & Shao (2011); Liu & Li (2011); Liu & Rao (2011); Miralles-Dechuan, et al., (2018); Yang & Li (2011)
The Future of AI in Marketing	Trends and potential subject areas for future research.	Eriksson, et al., (2020); How, et al., (2020); Liu (2011); Luo & Wei (2011); LV & Li (2011); Mithas, et al., (2020); Moradhi, et al., (2013); Dan, et al., (2019); Wu, et al., (2015).

THEMATIC ANALYSIS

AI and the Marketing Problem

The phrase 'marketing problem' is utilized herein to cumulatively refer to the aggregate body of challenges that contemporary marketers face both in digital and traditional marketing. Sterne (2017, p. 113) describes the marketing problem as the aggregate of challenges faced in "putting the right message in front of the right person at the right time in the right context on the right device and figuring out whether any of the work [done] had an impact on the buying decision." Simply stated, the marketer's core challenge is in raising profitability by product, customer, and distribution channel "in a specific time frame with minimal budget" (Sterne, 2017, p. 127). AI applied to marketing provides several solutions to the marketing problem of digital marketers in this regard. Notably, AI marketing empowers digital marketers with a mechanism for dealing with the rising ubiquity and complexity of marketing channels in a digitalized world by streamlining Omni channel processes to facilitate the instantaneous individualization of content in a synchronous manner (Zerfass et al., 2020; Wang & Lim, 2011; Tian et al., 2018). In today's digitalized world, moreover, an important inflexion point in practitioners' marketing problem is the fact that marketers' ability to capture data has outpaced the ability to transform such information into data-driven decisions and action (Overgoor et al.,

2019). AI marketing provides and intervention for overcoming this challenge in contemporary marketing by empowering marketers to develop a unification and integration of disparate data drawn from a plethora of sources, including external customer data, internal data like customer relationship management (CRM), and behavioral data (Shen et al., 2011a; Shen et al., 2011b; Stone et al., 2020). In this way, AI can facilitate more intelligent customer targeting based on completeness of customer data. Moreover, AI provides the mechanism for unlocking data to drive real-time customer interactions across multiple channels (Qian & Gao, 2011); it provides the tools to reduce redundant marketing tasks (Song & Zhang, 2010); and delivers automated, personalized marketing opportunities across a wide range of micro-segments as opposed to reliance on superficial personas to shape customer journeys and experiences (Ramirez & Hachiya, 2012). The above demonstrate that in addition to simplifying Omni channel complexities and generating holistic perspectives of the customer, AI also resolves the marketing problems relating to personalized customer experiences, real-time customer engagement, and the competitive value advantages of time-to-market.

Levels of AI Implementation Today

As the implementation of AI technologies and applications becomes universally feasible across a diversity of organizational management functions, the marketing function and context continues to witness an ever-increasing unfolding of a variety of AI marketing formats. Although the number of organizations implementing large-scale and wide-ranging AI-driven marketing solutions is presently limited (Sterner, 2017), many firms of different sizes are presently utilizing smaller scale AI-powered solutions that require minimal set up costs and maintenance involvement. The spectrum detailed in this section of the review provides an exemplification of the varying degrees to which contemporary firms utilize a diversity of available AI solutions for their marketing objectives.

Programmatic Advertising

This one of the levels of marketing with some of the most widespread application of AI. Programmatic advertising can be defined, simply, as the automated purchasing of digital media by use of machines (Sterne, 2017). Traditionally, the purchasing of media on the marketing arena involved labor-intensive processes and procedures pertaining to price-coordination, placement, and a variety of other details requisite for executing advertising agreements (Yu & Bo, 2011). These labour-intensive processes created numerous inefficiencies for marketers, in turn necessitating an automated process that was delivered through programmatic advertising (Stylos & Zwiegelaar, 2019). Notably, the automation capabilities under programmatic advertising achieved on the basis of insights generated through customer data is crucially instrumental in marketers' ability to achieved personalized and highly targeted advertisements at scale (Pradana et al., 2017). These and more efficiencies have seen programmatic advertising growing from merely a tool for companies sell off ad inventory automatically into a robust industry which, according to the latest estimates, is on track to facilitating nearly 80% of all digital ad buys (Smith, 2020). More importantly, the mechanism of programmatic advertising has incorporated and utilized AI to various degrees throughout its implementation (Siranovic et al., 2013; Smith, 2020).

Presently, it is estimated that more than 70 percent of the entirety of both mobile and online advertising spend occurs on programmatic platforms that implement different domains of AI, but machine learning more particularly (Okazaki & Inoue, 2017). These platforms utilize AI for various marketing applications including customer segmentation through behavioral analysis and pattern recognition; and the automation of various aspects of programmatic advertising itself, including ad content automated personalization and automated ad buys (Kumar et al., 2019; Kuhl et al., 2020). Relatively more rare but emerging, moreover, are advanced AI solutions that facilitate predictive analytics for customer conversion and creative assets'

campaign optimization (Kietzmann & Pitt, 2020). Current trends in programmatic advertising also indicate that the industry is gradually shifting toward AI use cases related to transparency improvements, enhanced customer segmentation, interactive ad units, ad fraud mitigation (Jarek & Mazurek, 2019; Jones, 2018). Generally, programmatic advertising is an area of contemporary marketing that bot evidences the feasibility of AI marketing and the significant potential of AI for marketing in the near future.

Computer Vision and Image Recognition

Image recognition and computer vision are two interrelated domains and applications of AI. Image recognition accords computing machines advanced capabilities in identifying any given image's subject matter, whereas computer vision enables these computing machines to use mathematical representations to 'see,' detect, and comprehend the meaning of imagery (Lee et al., 2020; Sterme, 2017). By definition, therefore, computer vision and image recognition are two areas of AI that lend themselves naturally to marketing application. Technically, these applications leverage the subset of AI known as convolutional neural networks to enhance the efficiency of image data analysis (Han & Guo, 2011). These additional capabilities have substantive potential on the marketing arena as evidenced by some extant applications presently implemented primarily within social media marketing. Social media platforms are renowned for their wealth of customer data that fuel social media marketing. Social media networks like Facebook presently offer computing vision and image recognition tools for marketers to automatically see, detect, and analyze imagery related to the representation of brand logos on social media (Lee et al., 2020). This empowers marketers with the ability to see what brands consumers are posting about, the customers' experience with brands, and the role of said brands in customers' day-to-day life.

Creativity

It is a well-established fact that the marketing discipline in empirical practice demands significant amounts of creative and analytical thinking. The inherently creative nature of marketing is yet another major attribute that connects marketing as a discipline and practice to the numerous benefits that AI can deliver along these lines. As indicated in a previous section of this paper, a core marketing problem that AI solves for all marketers, but more especially practitioners involved in digital marketing is the automation of redundant, repetitive, and labor-intensive marketing tasks (Sterne, 2017). The natural implication of this AI use case is that these technologies will free up the time currently spent by marketers on traditional tasks and instead refocus practitioners on functions and objectives involving higher-level, humanistic, and creative marketing tasks (Ding & Liu, 2011). More specifically, AI not only has the potential, but also presently continues, to impact creativity in marketing positively in four primary ways including, firstly, automating repetitive marketing tasks that typically generate creativity burnout; enhancing the effectiveness of creative assets by optimizing their allocation and deliver in the right way, at the right time, and to the right customers; generating deeper and data-driven insights that facilitate the bolstering of creative marketing strategies and decision-making; and, lastly, positioning creativity as the primary factor of differentiation between competitors based on the ability to deliver personalized, meaningful, and impactful customer experiences.

Chatbots

Chatbots can be described as text-based conversational tools that mimic real-life conversations in an interaction between humans and machines. These tools are presently encompassed by two broad categories, namely rule-based chatbots that respond only to specific commands and AI-driven chatbots (Lee et al., 2020). AI-powered chatbots constitute the category with the most widespread adoption and application today, particularly within

contemporary organizations' marketing function (An et al., 2020). They utilize several subsets of AI to facilitate human-like conversations, including natural language processing, understanding and generation (NLP, NLU, and NLG, respectively) (Lee et al., 2020). The intelligent tools and technologies capable of facilitating conversations with customers have natural applications and inherent opportunities in the marketing context. For example, they are applicable to engaging customers, influencing customers' decision-making at strategic points throughout the customer journey, and to adding satisfaction and value to the overall customer experience (An et al., 2020). Currently, the most prevalent marketing use cases of chatbots are in e-Commerce, customer service, and personal assistants.

Personalized User Experience (UX) and User Interface (UI) Design

Personalized UX and UI designs are another significant area of marketing AI with significant current and potential use cases for marketers across all industries and organizational contexts. Personalized UX and UI design stem from AI inherent ability to customize user experiences at scale (Capatinn et al., 2020). This means that through the integration of AI into customers' brand interactions on digital platforms, marketers are able to customize, say, their websites in real time and in adaption to the behavior of individual customer users (An & Tian, 2011). This integration generates numerous benefits and opportunities in empirical marketing practice, particularly in relation to the creation of relevant experiences for customers at the individual levels. Moreover, these personalized customer experiences, when driven by AI, can evolve in real-time based on in-depth tracking of the user's or customer's behavior (An & Tian, 2011). Several firms and brand have already witnessed the accretion of efficiency and Return on Investment (ROI) benefits through the strategic implementation of AI in the manner described above. For instance, companies with largely digital business models like Amazon, Netflix, Google, and Facebook all implement real-time personalization and intelligent product recommendations on the basis of customer behavior data, to generate more relevant experiences (Capatinn et al., 2020). Broadly, personalized UX and UI have the potential to revolutionize extant marketing approaches and tactics.

Voice

Today, voice technologies and devices featuring the application of AI are in the hands of hundreds of millions of consumers worldwide (Jones, 2018). The ubiquity of AI-driven voice recognition technology therefore presents monumental opportunities for contemporary marketing practice. Presently, AI-driven voice recognition continues to impact marketing in three primary domains, namely personal assistants, search engine optimization, and e-commerce (Banerjee & Golhar, 2013; Balance et al., 2020). Personal assistants have been the focal area of interest for AI marketing because of the ubiquity voice assistant applications within the consumer market, as exemplified by the popular devices of Microsoft Cortana, Amazon Alexa, Apple's Siri, and Google Home (Jonnes, 2018). The widespread adoption of voice assistants thus means that these devices constitute a crucial tool that marketers can leverage when incorporating voice into their communications mix. Moreover, the emergence of AI-driven voice technology is also presently shifting the mechanisms and modalities by which consumers search and retrieve digital information (Balanche et al., 2020). A profound impact of this shift in trend on marketing continues to be centered primarily within the realm of Search Engine Optimization (SEO) (Jones, 2018). In this regard, AI-driven voice search imposes a powerful influence on how markets shape and boost their search rankings and also provides a new outlet for facilitating bolstered customer experiences. Lastly, another notable trend emergent within the marketing context pertains to the rising frequency and incidence of purchasing through voice assistants among users of these AI-powered devices and technologies (Banerjee & Golhar, 2013). From a marketing perspective, this trend translates to numerous opportunities for marketers to leverage

in eliminating or minimizing the barriers and difficulties consumers experience in their journeys to e-commerce purchasing.

Disciplinary Contributions of AI to Marketing

Having examined some of the empirical examples of the most widespread use cases of AI in contemporary marketing, this review now advances to examine what extant research indicates regarding the impact of AI on marketing from a wider and more global perspective. Specifically, this section explores the pieces of literary evidence regarding the impact of AI on the discipline of marketing. Accordingly, the focal themes herein addresses the leveraging of AI in marketing communications informs the deployment of marketing tactics to get the consumers' attention, to persuade consumers, and to retain consumers.

Leveraging AI to get Attention

Getting the consumers' attention is a marketing objective that encompasses all of the marketing metrics used traditionally to describe success, beginning from the fundamental foundation of market research to the ideal end-point of effective and extensive public relations. This paper's review of literature demonstrates that AI finds practical application at almost every juncture along the entirety of this spectrum of success, as exemplified in the exemplified use cases of machine learning in market research (Chen & Shan, 2011), AI in competitive analysis (Hao, 2011), and AI in social media monitoring and engagement (Fu & Fu, 2011). For example, current research reveals that AI influences the traditional understanding of, and conventional approaches to, market research as indicated above. The contemporary integration of machine learning into market research is a use case in point of how ML by virtue of bolstering consumer research bolsters marketers' ability to gain attention within consumer markets (Buhalis & Sinatra, 2019; Abbas et al., 2020). Current applications of machine learning to the marketing discipline allow market researchers to enhance the collection, analysis, and communication of a hitherto unfathomed volumes of consumer data and insights to inform the formulation of effective marketing strategies, including notable advances toward one-to-one marketing and more efficient approaches to dividing markets into actionable segments (Fiore et al., 2017; Even, 2019). For example, the AMA's (American Marketing Association) Lucy is a ML market research tool that allows marketers to develop evidence-based insight on the most important marketing problems in relation to consumers' attention today, including how to effectively target high-value growth sources, the marketing function's role in the c-suite and in the firm, the digital transformation of marketing, shaping effective marketing practice, effective omnichannel marketing strategies, "competing in dynamic global markets," and "incremental and radical innovation" (Sterne, 2017). AMA's Lucy is an example of how machine learning continues to influence the discipline of contemporary marketing through more extensive and efficient market research, which in turn provides marketers with the crucial evidence basis for capturing attention within globally diverse consumer markets more successfully.

Leveraging AI to Persuade

Similarly, the integration of AI into marketing influences the evolution of the conventional disciplinary approach to persuasive marketing strategies, tactics, and approaches. Developments in marketing research and changes in consumer preferences and behaviors, particularly under the influence of ubiquitous digitalization, have cumulatively generated the important concept of the 'customer journey' (Pholakia & Firat, 2019). Emergent theoretical and empirical models of the customer journey such as the customer life cycle funnel continue to demonstrate, in turn, the value of incorporating AI into the evolving understanding of the customer journey in practical marketing practice (Sterne, 2017; Choi et al., 2017). AI, and the AI subset of ML more specifically, is instrumental in developing superior comprehension of

customer journeys, specifically because of its provision of tools for visualizing and aggregating the marketers' prospect's behavioral data (Giannini et al., 2014). Using the superior capabilities of AI-driven behavioral analysis in marketing, it is possible to identify the specific junctures within the customer journey upon which to focus and change or enhance (Abbas et al., 2020). For example, RAN (Random Access Navigation) is an ML-driven shopping assistant marketing tool that provides real-time behavioral analysis and adjustments based on consumers' behaviors on various digital marketing channels (Sterne, 2017). RAN exemplifies how AI completely revolutionizes the current understanding of the customer journey, which conventionally relies on forecasting consumer behavior by use of the sum total of an individual's psyche (Fiore et al., 2017). Rather, RAN utilizes the superior capabilities of AI to manage high-dimensional data by detecting "all parameters required to perform an intent (with context)," allowing "the user to change their mind without going back," and working "seamlessly with web views" (Sterne, 2017). These capabilities of AI in behavioral analysis are especially critical in an evolving business-to-consumer marketing landscape where ever-increasing digitalization has meant that the customer journey follows no identifiable linear path but, rather, wanders in no specific sequence from one marketing channel to another (Abbas et al., 2020). The overarching implication of the above is that AI marketing continues to fundamentally and radically transform the disciplinary understanding of the customer journey by generating superior tools for visualizing the customer experience and predicting customer behavior, thereby optimizing specific moments within the customer experience to help consumers accomplish their current or subsequent undertakings on a given marketing channel.

Leveraging AI to Achieve Retention

The long-held consensus within the discipline and practice of marketing is that it is infinitesimally more expensive to convert new customers than to convert current and existing customers. This understanding has throughout time informed the specific focus on customer retention in both traditional and contemporary marketing, but continues to be especially important in the context of digital marketing because of prevalently rising customer expectations in consumer markets throughout the world and across all sectors and industries (Sterne, 2017). Conventionally, churn analysis, undertaken through a variety of statistical techniques such as Markov chains and statistical analysis, has been the primary mechanism by which marketers identifies and focus on customers of higher value, establish the determinants of customer retention, and forecast the actions that regularly precede lost sales or customers (Irfan & Ortiz, 2018). However, AI and its subsets applied to marketing continue to transform these mainstream disciplinary approaches to customer retention because of their superior data and predictive analytics capabilities not only in statistical analysis but also in related techniques in the pertinent areas of user retention, cost of user acquisition, and user retention (Inanc-Demir & Kozak. 2019). For example, Gaininsight's AI-powered marketing platform leverages some of the capabilities aforementioned to allow marketing organizations and professionals to "proactively identify signs of customer risk and collaborate cross-functionally to resolve issues" (Stern, 2017). Additionally, Appuri is an AI-powered marketing platform that allows marketers to track "customers, products, and features of [their websites] to initiate e-mail, text, and website popup messages" and enable practitioners and organizations to "turn average users into power users" (Sterne, 2017). These use cases and more exemplify how AI applied to marketing is radically and positively transforming the comprehension of, and approaches to customer retention in the contemporary discipline of marketing.

Implications of AI for Marketing

Having explored some of the examples of the various ways in which AI is presently transforming marketing from a disciplinary perspective, this section of the review presently seeks to synthesize the empirical evidence pertinent to what AI marketing means in the practical

marketing context, and for marketing professionals. The focal themes of interest, in this regard, are the AI-powered marketing platform, the strategic role of the contemporary marketing professional in facilitating the integration of AI into contemporary marketing practice, and the pitfalls and opportunities inherent to such integration.

The AI-Powered Marketing Platform

Marketing technology firms and marketing organizations are presently engaged in the leveraging of AI to underpin their current offerings. Within this segment of firms are those that are creating generic AI-driven marketing platforms and inviting external expertise into the platforms' 'education' and those that are building AI-powered marketing systems from the ground up (Ullal et al., 2020; Zhuang & Kuai, 2011; Yang, 2011). These two categories of efforts can broadly be described as supplemental AI and AI-powered marketing tools from scratch, respectively, with some prominent, instructive examples detailed subsequently in this regard. The website Salesforce.com is an example of a supplemental AI-driven marketing platform that offers marketing firms with external consultancy services of sorts in AI-driven marketing outcomes in predictive scoring, forecasting, and e-commerce recommendations generation (Sterne, 2017). Conversely, the Behavioral Marketing Platform is an AI-driven customer journey analytics and marketing software, constructed from scratch by Pointillist Inc., that claims to discover and predict consumers' patterns of behavior and the paths they implement "as they engage across multiple touchpoints" in a diversity of marketing channels (Sterne, 2017). These and more empirical examples evidence the gradual shift in current marketing practice towards the incorporation of supplemental AI and AI-powered marketing tools developed from scratch.

The Marketing Professional's Strategic Role

Another important implication of AI for marketing practice is the fact that it is systematically transforming the traditional roles and responsibilities of the contemporary marketing professional. Specifically, more and more marketing practitioners are finding their professional context increasingly shaped and influenced by the need for additional skills, competencies, behaviors, and knowledge requisite for facilitating the seamless integration of AI into existing marketing platforms and frameworks (Wang & Xu, 2011; Guo, 2011). These new requirements encompass a wide-range of work-related considerations including, for example, shifting from the currently prevalent work of the marketing function in silos to methodological and regular engagement with data scientists and technicians (Tienkouw et al., 2011). The modern marketing professional operating in an AI-driven context must know, among other things, how to effectively define for data technicians: the problems they face, what success looks like, the data they possess currently, and other potential sources of useful marketing information and data that can be leveraged through an AI-powered marketing platform (Sterne, 2017; Tsafakaris et al., 2013). Other important novel skills relate to the practitioners' ability to express the value of marketing and of incorporating AI into marketing; and the marketing managers' skills and knowledge in leading and managing the change necessitated by the adoption of AI and its subsets into the marketing function.

Pitfalls

An inevitable consequence of AI integration into marketing is that such a process presents firms and their marketing practitioners with opportunities and potential costs that must be effectively balanced from a well-informed cost-benefit perspective, to deliver optimal outcomes. The thematic discussion above has already highlighted the innumerable advantages of AI marketing. Some of the most notable pitfalls that marketers and marketing firms must pay close attention and consideration to, however, firstly include the perennial perception that leads

to high levels of resistance to change among practitioners and professionals regarding the prospect of AI integration posing an existential threat to jobs and employment opportunities (Dalenberg, 2018). While AI will inevitably result in some degree of job displacement in marketing, it is important for organizational leaders in the marketing function to emphasize the need for, and the limitless possibilities presented by, the seamless integration of human capabilities with AI-driven marketing capabilities. Secondly, the discipline and practice of marketing is also confronted with inherent potential of AI marketing systems and platforms to be used in malign and malicious ways such as in entrenching discrimination and in jeopardizing customers' privacy (Dalenberg, 2011). Marketing organizations and the marketing profession at large must be sufficiently prepared to address such risks by used of robust and stringent ethical AI frameworks (Wang, 2011). Another potential pitfall in AI marketing relates to the implementation of effective digital transformation strategies required to facilitate the shift of organizations from the currently widespread legacy information communication technology systems to the more novel and robust digital, AI-driven marketing platforms.

Current Areas of Research and the Future of AI Marketing

This paper's review of literature encompassing the empirical evidence drawn over the last decades reveals that pertinent research has gradually evolved throughout the decade from explicit emphasis on the potential of AI (Lin & Shao, 2011; Liu & Li, 2011; Liu & Rao, 2011; Yang & Li, 2011; Li et al., 2011), to overt focus on the construction of an evidence-based framework for describing and defining organizational readiness to implement AI in context-specific marketing functions (Guelman et al., 2015; Chica et al., 2016; Miralles-Pechuan et al., 2018). Generally, the research themes emergent and recurrent within the more contemporary AI marketing literature identify similar criteria for marketing organizations' AI readiness (Miralles-Pechuan et al., 2018; Chica et al., 2016). These criteria largely revolve around resource availability- budget for implementation, availability of data, and availability of AI expertise, skills and labor; and marketing objectives- pain points and areas in need of improvement, immediate goals in day-to-day operations, value-creating activities, and long-term strategic goals, and marketing mix allocation.

Moreover, common and shared themes emerge within extant literature in relation to the potential future direction of AI marketing and AI's long-term impact on marketing practice and the marketing discipline more broadly. Importantly, the predictions of relatively earlier studies (Luo & Wei, 2011; Liu, 2011; LV & LI, 2011; Moradi et al., 2013; Wu et al., 2015) regarding the foreseeable widespread adoption of AI in marketing within the decade have more or less come to fruition. As explained earlier, many firms today, at the end of the decade, are utilizing different forms of narrow AI-powered marketing tools even though robust AGI marketing continues to prove to be a difficult and nearly impossible prospect. Furthermore, the common theme cutting across the latest scholarly predictions, in this regard, concerns a dramatic and robust shift to widespread AI marketing adoption in the near future as more and more organizations achieve the hypothesized criteria for AI marketing readiness (Pan et al., 2019; Mithas et al., 2020; How et al., 2020; Eriksson et al., 2020). The core driver underpinning this shift in the contemporary marketing function, scholars commonly posit, is the prevalent need for marketing to accommodate and respond to substantial changes in consumer expectations especially as the digital native generation takes the drivers' seat of the global consumer market at some point within the coming decade.

CONCLUSION

This thematic LRSB commenced with the core objective of addressing five fundamental research questions. Regarding the first question on the research themes emergent and recurrent within extant literature, the how review finds that much of the literature focuses on: AI marketing can solve and is solving classical and digital marketing problems; the levels of AI

marketing implementation today; the disciplinary impact of AI on marketing; the practical implications of AI marketing; and the current state of AI marketing research in addition to the potential future of AI in marketing.

The themes of 'AI and the marketing problem' and the 'levels of AI implementation today' address this paper's second research question regarding the contributions of AI to contemporary marketing. Thirdly, the review found that AI is presently reshaping the current marketing understanding in areas such as gaining customers' attention, persuading and retaining customers, the marketing professional's role in the AI marketing context, and use of the AI marketing platform; thereby answering the third research question regarding the implications of AI for contemporary marketing practice and the marketing discipline overall. Fourthly, the paper answers its fourth research question by identifying organizational readiness of AI implementation in marketing as the focal subject area for the majority of the latest contributions in AI marketing research. Finally, the LRSB shows that the future of AI marketing is bright and limitless, evidenced by the current shift of many marketing firms from modern marketing to AI marketing, at different levels of adoption and degrees of implementation. Overall, this paper has met its overarching objective by answering its stated research questions comprehensively. Further research into marketing firms' readiness for AI implementation is hereby recommended.

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