

Pharmaceutical Digital Marketing, AI And Advertisement for Pharmaceutical Sale and Marketing

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Abstract: "Digital" has grown to be a significant aspect of daily life. At a faster pace, every industry has been adjusting to the digital age. The pharmaceutical sector hasn't exactly been able to embrace digital marketing, except from the website. Nowadays, a growing number of pharmaceutical enterprises use e-commerce or social media platforms for digital marketing. Customers can now purchase things online thanks to this. While some organizations are attempting to include digital into their larger marketing strategies, others are still striving to grasp the full worth of this medium. All of the companies, however, are unable to sell products online because they manufacture prescription drugs, which are prohibited from being sold online. For instance, Pfizer uses social networking sites to interact with consumers and respond to their needs. Facebook, Twitter, and YouTube were utilized for customer communication. Among the earliest firms to start a YouTube channel was Johnson and Johnson. Pharmaceutical businesses in the North East, Quantum Pharmaceuticals and The Specials Lab, provide online ordering for specialty medications, supporting e-commerce and digital marketing.

Keywords: Pharmaceutical marketing, sale, digital marketing strategies, e-pharm, social media.

I. INTRODUCTION

Some companies have very innovative technical practices, but their application is limited by the dearth of strong case studies on digitization in the pharmaceutical sector. Internet marketing is not a good fit for the drug sector. Ads in the banking, professional services, manufacturing, and business services sectors surged online, but the pharmaceutical industry was kept back by the industry's cautious behavior and the unpredictability of the laws. Nevertheless, as patients' healthcare professionals (HCP), key opinion leaders (KOLs), and the larger medical community use the internet and social media more frequently, online

professional and patient communities have expanded to meet this need. As a result, pharmaceutical companies are now investing in and testing digital marketing strategies in accordance with industry guidelines. It's interesting to note that this is among the top social media marketing strategies for pharmaceutical companies looking to improve their reputation. Digital marketing is essential for any businesses that wish to prosper in the current digital era. By 2020, the market for contemporary advertisements—which includes Twitter, YouTube, prescription Bing, and healthcare—is anticipated to reach \$10 billion. This promotional budget is thirteen points more than what businesses are now spending. For the purpose of selling and promoting a certain medication, a combination of AI, digital marketing, and advertising is required.

II. DIGITAL MARKETING

Pharmaceutical digital marketing uses the potential of technology to educate audiences and promote products and services. In pharma, these audiences are primarily healthcare professionals (HCPs) and patients, though investors and other stakeholders are also influential.

Digital marketing in pharma uses many digital techniques and channels familiar to other sectors, though often in ways specific to the life sciences. As a regulated industry, pharma must ensure full compliance in its digital communications and patient outreach. For example, it is common to create different web pages for particular audiences. Patients and their carers will get a page designed for their needs, while medical professionals will receive information relevant and appropriate for prescribers that only they can access. Some digital channels and techniques are specific to pharma — often developed to support the

high-quality scientific and medical dialogues that companies provide HCPs.

Types of digital marketing

1. Search engine optimization: Customers typically use Google, Yahoo, or MSN/Bing as their first choice when searching for health-related information. Among internet users of all ages, searching for healthcare information is one of the most popular online activities. Reaching these users with SEO works well. Search engine optimization techniques are used to manipulate search ranks, giving users of Google or other search engines a higher search rank. Thus, search engine optimization (SEO) techniques represent a significant chance for businesses to connect with their target markets. Organizations that are not visible in search results are missing out on a huge chance to connect with their target audience [1]. Using keywords in titles and URLs, backlinks from other websites, internal links on your own website, using alt tags for photos appropriately, and social media activity are all crucial components of search engine optimization [2]

2. Social Media Marketing: Social media activity is used by search engines as a marketing tool. Retweets on Twitter, Facebook shares, and Google+ one-ups help you rank higher in search engine results. Social media marketing makes it possible for a business to communicate directly with its customers. It enhances the brand's values and fortifies the company's reputation. By sharing updates from the company website and promoting conversation, bad public forum experiences can be improved. [3]

3. Pay Per Click Ads: Google ads may be purchased if there isn't enough traffic to the company website. Direct purchases of advertisements on other websites can be made through the various ad networks. Pay-per-click, or PCC, advertisements rely on the keywords that Google users enter. The business can ascertain the PPC campaign success rate with the aid of ad analytics software. Only when someone clicks on the advertisement's link will the business receive payment. [3]

4. Email Newsletters: According to a 2012 Channel Preference Survey from Exact Target, email is still the primary direct channel that consumers choose to use on a daily basis for both personal and promotional communications. Additionally, customers can access emails quickly due to the widespread use of smartphones and tablets. Furthermore, according to

the Exact Target study, 77% of consumers would rather receive permission-based marketing communications via email than through text messaging (5%), social media, or other channels. Customers can opt into a relationship through email and then follow through by receiving only the information they want to receive, giving them a sense of control and personalization. [3]

Current scenario and challenges:

In 2014, there were about 1405 million internet users in Asia, 582.4 million in Europe, and the number is steadily rising globally. This has significantly accelerated the digital era across a number of industries [4]. When compared to traditional marketing, digital marketing is a more efficient and less expensive way to reach customers in any industry. Pharmaceutical marketers can leverage data from digital marketing to develop more strategic interactions with prescribers and doctors. Nonetheless, a lot of businesses still struggle to incorporate digital into a larger business plan [5]. Adopting digital marketing strategies is fraught with difficulties for the pharmaceutical industry, some of which are outlined below.

1. Inadequate company vision: The majority of businesses don't have a clear plan in place for using digital marketing solutions. The internal sharing, agreement, and definition of the strategies are lacking. Establishing the goals, confirming the vision, and keeping an eye on the work pace all need strong management. Typically, companies do not identify the field force and marketing champions who are promoting the digital pharma vision. [6]

2. A lack of digital minds: The workforce in the pharmaceutical industry is not skilled enough or motivated to lead digital transformation. Employees must be knowledgeable about digital marketing and the challenges associated with implementing it in the pharmaceutical sector in order to establish digital marketing within the organization. The majority of businesses lack an effective workforce that is simultaneously knowledgeable about the industry and the emerging digital marketplace.

3. A digital catastrophe: Pharmaceutical marketers are unable to carry out an all-encompassing, successful digital strategy, despite the fact that many pharmaceutical companies have begun deploying digital channels and campaigns. A digital disaster has been caused by the use of data in digital strategies,

which has led to increased data and challenging analysis. Pharmaceutical marketers ought to integrate data from various sources, make use of it instantly, and use their digital brains to adjust their digital strategies. [5]

4. Strict Regulations: Before launching any digital campaigns, the regulations in each jurisdiction need to be carefully examined [6]. Compared to other industries, life sciences marketing is subject to more stringent regulations. The Federal Trade Commission (FTC) and the FDA have regulations that the pharmaceutical industry must abide by, from privacy to creative copy. The Health Insurance Portability and Accountability Act (HIPAA), which was established in 1996, safeguarded the confidentiality and security of patient medical records. This law preserved the privacy of healthcare data by preventing advertisers from abusing it online. The FDA warned Novartis to remove its Facebook share in 2010 because the company had not given enough information about the risks associated with the leukemia treatment drug Tassigna [7]. Pharmaceutical companies have been more cautious when investing in and implementing new digital marketing strategies as a result of the search restrictions[8]. Businesses can make digital work happen instantly by integrating digital and approval processes with pre-existing compliance workflows [5].

5. Poorly maintained websites: Manufacturers of biopharmaceuticals use social media sluggishly. Some pharmaceutical companies still operate in the "Web 1.0" world. The pharmaceutical industry has long favored one-way information flow that is thoroughly vetted, authorized by law, and shielded from outside influence. These websites only disseminate information without communicating directly with patients [9]. It's worse to have a poorly maintained, outdated website than none at all. To handle these interactions, effective human resources must be found [10].

III. ARTIFICIAL INTELLIGENCE (AI)

Pharma's next frontier in the life sciences is artificial intelligence. This article examines the most recent artificial intelligence (AI) techniques that try to mimic human intelligence functions, such as using robots and AI "Automation became the result of Industrialization," as workers were relieved of heavy

and dangerous tasks and productivity was increased in order to produce consistently high-quality products. PAT, CFD, and pharmaceutical automation in research and development are recent trends in pharmacy AI. These approaches provide comprehensive details about methods that have been applied in healthcare previously, such as drug absorption and dissolution, inhaler designs, and disease-focused techniques. Pharmaceutical robots have a bright future, but in order to meet the growing demand of an aging population that needs more advanced medical equipment and modern medications immediately, robotics systems are being used more and more for increased productivity and efficiency. Nonetheless, the manufacturers of robots encounter various obstacles in their pursuit of recognition in the pharmaceutical domain. The use of robotics and AI in human life has both benefits and drawbacks. Artificial neural networks (ANNs), machine learning, AI in healthcare, and AI in clinical practice are just a few examples of the AI techniques used despite the growing body of literature on AI in fields ranging from drug discovery to care options. Due to their potential for death, cancer, neurological disorders, and cardiovascular diseases are the main focus of this research. Although the future is never certain, artificial intelligence (AI) will shape it since it will be the pharmacy industry's next big thing.

AI general overview

AI, or machine intelligence, is a term that is frequently used synonymously with automation and robotics. Artificial Intelligence (AI) is the ability of any computer or machine to exhibit human-like behaviors or intelligence, whereas robotics is just the construction of machines capable of performing complex repetitive tasks [11]. Although they may be able to move or carry objects independently using a designed program and surface sensors—a process known as automation—robots were not traditionally built with these "intelligent capabilities." Fundamentally, artificial intelligence (AI) is the branch of computer science that focuses on building intelligent machines that can carry out tasks that are typically performed by humans[12]. Artificial Intelligence is widely used in the creation of digital computers or computer-controlled robots that can perform intellectual and cognitive tasks that humans can. These mental and cognitive functions include language, learning, reasoning, solving problems, and

perception. Because it is only intended to carry out specific tasks, such as internet search, voice and facial recognition, car control, and so forth, the type of artificial intelligence that is currently in use is known as narrow AI or weak AI. The AI community does, however, eventually hope to create machines that are capable of performing better on all cognitive tasks than humans. General AI, or Strong AI (ADI), is the branch of AI that deals with building machines that are capable of doing all cognitive tasks performed by humans [13]. Artificial Intelligence (AI) can be defined as the capacity of machines and computers to act, think, behave, and perform human-like tasks. A few well-known instances of AI-controlled systems are the self-driving cars made by Google, Mercedes, BMW, and Tesla, as well as Apple's SIRI (in the iPhone)[14], Amazon's Alexa[15], and Apple[16]. Knowledge engineering, which involves building machines with access to a wealth of data and information about the human world so they can mimic human behavior, may be the foundation of artificial intelligence. Another kind of artificial intelligence is machine learning, which uses statistical models and algorithms to increase software applications' ability to predict outcomes accurately without requiring explicit programming. The foundation of its establishment was the notion that machines could learn from data, recognize issues, and make decisions with little assistance or involvement from humans. Machine learning applications include fraud detection, self-driving Google cars, and online recommendation services similar to Netflix and Amazon[17]. Another branch of artificial intelligence is machine perception, which is the design and construction of machines that can infer information about the various facets of the world from sensory inputs. Computer vision refers to a machine's capacity to interpret visual inputs, including gestures, objects, and facial data[18]. AI has been the subject of a number of misconceptions, critiques, and skepticisms, most of which have to do with safety and the potential risks that come with building machines that are as intelligent as humans. One of Forbes' five predictions for 2019[19] is that national politics may be influenced by AI. In addition to worries that AIs could be used as weapons of mass destruction and conflict, some people are worried that the development of AI systems through general AI that are more intelligent than humans could be even more deadly and spell the end for the human race. They

think that humans might wind up under the control of these extremely intelligent machines and that we won't be able to predict the behavior of AI systems that are smarter than we are. If the "goals" of these machines can be made to coincide with our own, scientists believe that most of the safety concerns regarding super intelligent AI systems in the future may be addressed [19].

Applications of AI

AI for targeted genetic therapies and diagnosis AI is used in hospital-based health care systems in a variety of ways, including the organization of dosage forms for specific patients and the selection of appropriate or practical administration routes or treatment policies [20, 21].

- Maintaining of medical records: Keeping up with patient medical records is a difficult task. By using the AI system, data collection, storage, normalization, and tracking are made simpler. The Google Deep Mind health project [22], which was created by Google, helps quickly uncover medical records. Thus, this project is helpful in providing faster and better healthcare. This project helps to improve eye treatment at the Moor fields Eye Hospital NHS.

- Treatment plan designing: AI technology makes it possible to create treatment plans that are both effective and efficient. An artificial intelligence (AI) system is required to take control of the situation when a patient develops a critical condition and choosing an appropriate treatment plan becomes challenging. The treatment plan suggested by this technology takes into account all of the prior data and reports, clinical expertise, etc. With the aid of insights gained from working thousands of hours with physicians at Memorial Sloan Kettering Cancer Center, IBM Watson for Oncology[23] is a software as a service that facilitates cognitive computing decision support. It compares patient data to thousands of past cases and offers treatment options to assist oncology clinicians in making well-informed decisions. The literature selected by Memorial Sloan Kettering, which includes more than 200 textbooks, 300 medical journals, and nearly 15 million pages of text, supports these treatment options [24].

- Assisting in repetitive tasks: AI technology also helps with some repetitive tasks, like analyzing radiology, ECHO, ECG, and X-ray imaging to identify and detect diseases or disorders. An algorithm developed by IBM

called Medical Sieve[24] is a "cognitive assistant" with strong analytical and reasoning skills. In order to combine deep learning with medical data and improve the patient's condition, a medical startup is required. For every body part, there is a specific computer program that is used in a particular disease state. For practically any kind of imaging analysis, including X-ray, CT, ECHO, ECG, etc., deep learning can be used.

- Health support and medication assistance: AI technology has been shown to be effective in recent years for both medication assistance and health support services. Molly[25], a virtual nurse created by start-up, is greeted with a friendly face and voice. Its goal is to support patients with their chronic conditions during doctor visits and assist them in directing their own treatment. An app called Ai Cure[26] that works with a smartphone's webcam tracks patients and helps them manage their conditions. Patients who take part in clinical trials and those with severe medication situations can both benefit from this app.

- Accuracy of medicine: AI shows a good impact on genomics and genetic development.

Using patterns found in genetic data and medical records, Deep Genomics[27], an AI system, can be used to find mutations and their connections to diseases. This system provides physicians with information about what happens inside a cell when genetic variation modifies DNA. Craig Venter, the father of the human genome project, created an algorithm[28] that uses a patient's DNA to provide physical characteristics. When vascular diseases and cancer are still in their early stages, "Human Longevity" AI technology can be used to pinpoint their precise location.

- Drug creation: Pharmaceuticals require billions of rupees and more than ten years to develop or create. Utilizing supercomputers, "atom wise"[29] is an AI technology that can be used to identify therapeutics from a molecular structure database. It launched a virtual search program for an Ebola virus treatment that is both safe and effective using currently available medications. Two medications that led to an Ebola infection were found using technology. In contrast to months or years when analysis was done by hand, this analysis was finished in a single day. Big data was created by a Boston-based Biopharma company for patient management. It stores information to determine the causes of some patients' illness survival. They distinguished between air conditions that are

conducive to health and those that are conducive to disease using biological data from patients and artificial intelligence.

- AI helps people in the health care system: Among the ten most promising technologies of 2016, the "open AI ecosystem" [30] was listed. Compiling and contrasting the data from social awareness algorithms is helpful. A great deal of data, including treatment history and patient medical history from childhood to that age, is recorded in the healthcare system. Ecosystems can analyze this massive amount of data and provide recommendations regarding the patient's lifestyle and habits.

- Healthcare system analysis: Data retrieval is made simple in the healthcare system if all of the data is computerized. Ninety-seven percent of Dutch invoices are kept in digital format [31] and include information about treatments, doctor names, and hospital names. As a result, these are easily retrievable. Zorgprisma Publiek, a nearby business, uses IBM Watson cloud technology to analyze the invoices. In the event of an accident, it detects it right away and reacts appropriately. As a result, it enhances and prevents hospitalization of patients.

Use of Artificial Intelligence In Pharmaceutical Marketing

The process of promoting a business's products and services for sale is known as marketing [32]. "Machine learning and artificial intelligence allows the global life science sales, marketing, and branding team to come up with more successful and practical commercialization strategies from the insights uncovered from AI," stated in an interview with Jon Resnick, President, Real-world & Analytics Solutions, IQVIA. He also emphasized how AI/ML enables healthcare organizations to delve deeper into more intricate layers of payer, patient, and HCP data in order to find previously undiscovered insights, forecast potential future courses of action, and speed up and improve decision-making. [33].

Improved value propositions, optimal resource allocation for greater market share gains, the ability to maximize growth, and specialized sales and marketing data and channels [advanced analytics for pharma marketing efficiency and growth] are further advantages of applying AI in the pharmaceutical industry. Businesses like IBM, Google, and a few more are starting to concentrate on using AI to identify

illnesses. India is using both descriptive and predictive artificial intelligence. Descriptive and predictive AI is also used by Indian companies that supply medical supplies and equipment.

A physician provided information that the organization used to classify physicians and develop a digital engagement strategy. It showed an increase in the quantity of emails addressed to HCP that were read and requests for more details about the products. There are numerous examples of AI use and acceptance throughout the healthcare network. Artificial intelligence can help with the analysis of an individual's genome to determine the optimal treatment option with the least amount of side effects [34].

Artificial intelligence is being adopted by businesses worldwide, particularly those in the healthcare and pharmaceutical industries. AI may be used to improve commercialization strategies, from patient compliance to a sales call, and to make faster, better-informed decisions at every stage of the molecule-to-market journey. Many pharmaceutical companies, such as Pfizer, GSK, Novartis, Lundbeck, Takeda, AstraZeneca, and Teva, are utilizing artificial intelligence to improve their marketing campaigns for both new and current drugs. A report published by Eularis states that using artificial intelligence analytics to customize sales communications resulted in a 43% increase in prescribing compared to non-prescribers among sales professionals. [40]. Increased online interaction is becoming a reality, as stated by Bjarni-Kornbech, VP, Marketing & Communications at Agnitio. The remote channel, he continued, is the one that is growing the fastest.

A survey by eyeforpharma indicates that one of the main obstacles to marketers' adoption of new technologies is their incapacity to demonstrate the technology's worth and return on investment. CRM system usage training is a must for the sales force. Still, comparatively few companies are spending money on this kind of training for their sales staff. Bjarni Kornbech's observations indicate that in order to provide true value, customer interaction data must be linked into the CRM and, ideally, paired with data from the marketing engine. After that, everything needs to be available to the field force in one place [35]. Marketing and sales teams had long since had conversations with physicians who would likely write about their product in a variety of ways. The approach

results in an excessive use of financial and human resources and has been shown to be ineffective for product promotion. More sophisticated and effective brand strategies and sales tactics have been developed with the help of machine learning in business applications through analytics. Healthcare providers are becoming more eager to take part in digital healthcare businesses. Currently, alpha geeks make up 70% of medical professionals. Pharma sales must adapt to the changing needs and preferences of physicians.

Physicians are gradually interacting with medical staff less in person and are also becoming more open to using online resources. Brand teams can use machine learning to make the most of these brief interactions by assessing each customer's preferred mode of contact, such as call, text, email, webinar, in-person meeting, etc. It may also be established to what tone they would respond. In order to boost their engagement in the digital sphere, brand teams can now execute more targeted multi-channel marketing campaigns [36].

IV. PHARMACEUTICAL ADVERTISING

Purpose: The Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954 and The Drugs and Cosmetics Rules, 1945 govern pharmaceutical advertising in India. The "minimum essential information requirements" for an advertisement are not specified by these acts, leaving this area vague. In its "Code of Pharmaceutical Marketing Practices," the "Organization of Pharmaceutical Producers of India (OPPI)" establishes guidelines for the information that must be included in advertisements. Our goal is to examine, within the framework of the OPPI code, the "completeness of information content" of pharmaceutical advertisements that were published in Indian Scientific journals between 2009 and 2010.

Pharmaceutical advertising: from prospectus to marketing

Thirty years or so ago, Merck Pharmaceuticals director Henry Gadsden confided in Fortune magazine that he was concerned that the potential market for his products would be limited to sick people. After thirty years, the main pharmaceutical companies are increasingly targeting healthy individuals with their marketing strategies. 1. Pharmaceutical companies use advertising as one of their marketing strategies to

educate doctors prescribing treatments as well as the end user. Advertising messages, on the other hand, are defined as a blend of persuasion and information (from prospectus to marketing), as they employ logical sales discourse executed through advertising language, potentially necessitating the use of pharmaceutical treatment, which may not always be the best or most necessary solution to the issue.

This would enable us to make well-informed decisions about the caliber of medications, based on the most up-to-date scientific data. The World Health Organization² has issued guidelines for how pharmaceutical information should be presented in advertisements in an effort to control this situation.

This was due to their observation that advertising strategies react less to informative functions and more to market interest, which increases the target public. Nonetheless, customers require this feature in order to use the promoted goods in a proper and secure manner. Several investigations into advertising discourse have been conducted in recent years. Numerous studies have come to the conclusion that advertisements ought to provide information more accurately because, occasionally, they provide details that are not relevant to clinical trials or because it is challenging, if not impossible, to locate the bibliographical references that support advertising campaigns. As a result, medical professionals and consumers need to critically assess advertising and the data it presents. However, manufacturers are required to provide accurate information. They ought to consider the advice of specialized international organizations in order to accomplish this. By adding credibility to the advertising strategy, this could also serve to strengthen it. (38, 39)

The Promotion of Pharmaceutical Products

"Advertising often sparks controversy." However, few industries' promotional efforts evoke such strong emotions as the pharmaceutical industry does. The topic of promotional activities in the pharmaceutical industry is not new; after more than 35 years of use, the same emotional charge and controversy still exist. This indirectly verifies that the issue is unlikely to be resolved anytime soon or for as long as the available resources are insufficient to meet needs that are limitless. Pharmaceutical companies' promotional activities are now strictly regulated as a result of the controversy and intense emotion. "Pharmaceutical

industry marketers are equipped with every tool in the promotional mix, as well as every combination possible, to reach the intended audience and deliver the desired message. Because of the nature of the product, ethical standards, and legal requirements, marketers must choose the right communication channels, craft messages with exceptional creativity, and pay close attention to target audience and message content in order to achieve the intended results. Prescribers are the main target of marketing industry promotional efforts regarding ethical drugs. Since 1997, there has been a notable increase in the United States of America's spending on DTC (direct-to-consumer) advertising campaigns concerning morally-responsible pharmaceuticals that target patients or final consumers. Other than this market, only New Zealand allows direct-to-consumer (DTC) drug promotion. Pharmaceutical companies are pushing for DTC to be legalized in Europe as well, according to Medawar (2002), but aside from talks, no concrete steps have been taken in that direction. OTC medications can be marketed to end users because they are prescribed for ailments for which self-care is feasible, have relatively simple and concise package inserts, and have been used for a considerable amount of time and have a wealth of information ensuring their safety and efficacy. Advertising in print and electronic media indicates that the manufacturers of over-the-counter programs are actively involved in product promotion. Promoting OTC products is comparable to promoting any other consumer goods. The important thing to remember is that, in this market, direct consumers have the final say over whether or not to buy a product; doctors and pharmacists only offer advice. Examine the variables influencing the pharmaceutical industry's increasing emphasis on promotional activities. Regulatory agencies find it more difficult to monitor promotional activities when the industry and its practices become more complex:

1. The growth of competition shortens product exclusivity periods and expands the pool of therapeutic options, which prompts pharmaceutical companies to make greater efforts to set their products apart from the competition.
2. New drugs: as biotechnology advances and more alternative therapies are developed with the goal of personalized medicine, the current guidelines for assessing the efficacy and deficiency of medications will be called into question. Examples of these

guidelines include how to manage clinical trials for medications meant for specific patients or how to establish guidelines for the labeling and promotion of such medications. medications? Contrary to Morris and Pines' (2001) assertion, it is important to note that differing viewpoints exist. A profusion of medications with only a slight therapeutic benefit has resulted from the traditional pharmaceutical industry's declining R&D activity and focus on chronic illnesses in developed nations (Finale, 2001; Medawar, 2002). Companies look to gain an advantage through marketing initiatives when there are no therapeutic benefits.

3. New channels of communication: Given the fragmentation of the media landscape and the increasing number of points of contact between the industry and consumers and prescribing physicians, is it possible to customize messages for individual users and is their number approaching "innumerable"? In the context of a geometrically expanding universe of health information that people can access through the internet and other, more and more specialized media channels, the promotion of pharmaceutical products "operates."

4. New information requirements: As the role of other stakeholders in the healthcare system expands, so do information "appetites." As a result, businesses must cater to the various information needs of prescribers, payers, and patients. Because of medical specialization, patients now frequently consult multiple specialists for the treatment of a single disorder, expanding the target market that pharmaceutical companies need to reach. There are particular information needs that go hand in hand with the growth of lifestyle drugs.

5. Off-label use: When developing a new active ingredient, pharmaceutical companies look for uses outside of the approved uses of the drug, or clearly indicated therapies. Although these alternate applications cannot be encouraged, peer-to-peer communication and clinical trials are focused on them. The problems associated with using pharmaceutical products off-label are also highlighted by Sterling and Ravich (2002). Many medications have multiple therapeutic uses, but in order to demonstrate their efficacy and safety, manufacturers must submit applications for sales licenses and complete a full cycle of clinical trials, just like they would for a brand-new medication. Pharmaceutical firms are

discouraged, as they try to spread information about other ways to use drugs, not only because of the lost time but also because of the required funds. This contentious practice is caught between the requirement to give doctors access to all reliable information that could aid them in selecting the best course of treatment for their patients and the legal prohibition against promoting such drug use. The article by Donahue (2008), which examines the moral and ethical aspects of Fox's popular TV series "Dr. House," in which the drug Lupron was used in an unconventional manner, highlights the delicate nature of the issue of using drugs for unapproved indications. The article raises important questions about whether or not this was a promotion of the off-label use of this medication. Internationalization: The pharmaceutical industry is truly worldwide; there is no single body of law governing R&D, national boundaries are not recognized by media platforms like the Internet, and not for production, marketing, or clinical trials. Where is the contentious aspect of pharmaceutical product promotion coming from? The conflict stems from differing perspectives on pharmaceuticals and the business rationale behind their manufacture and distribution. What is the foundation upon which attitudes regarding pharmaceuticals are formed? The nature of pharmaceutical products, which are meant for sick people, is the clear starting point. This causes certain physical and biological effects, but more significantly, it causes social and cultural phenomena (e.g. the feeling of empathy with the sick person). The fact that pharmaceuticals are complex substances with the potential to benefit or harm the human organism is the next important factor in the formation of the attitude toward them (with a focus on the fact that this attitude has three key components: cognitive, emotional, and native). The cost of pharmaceuticals is the third characteristic, which can restrict a drug's accessibility to those who truly need it. The manufacturing and marketing of pharmaceuticals makes sense economically, right? The sale of a pharmaceutical company's goods generates its profits. It is economically reasonable to assume that the goal of any commercial organization is to sell as many of its products as possible. Placing as much of their product as possible on the market and achieving their business goals through education, persuasion, and reminders are the interests of all advertisers. The fact that the production and consumption of drugs combine

the interests of multiple parties, many of whom have competing interests, creates an additional layer of complexity to this intricate market. These parties include legislators, payers, producers, consumers and patients, as well as members of different social groups and society at large. Peer-to-peer refers to interactions between individuals of the same status or occupation, so in this instance, it would mean expert discussions between, say, two medical specialists (39, 40). Doctor-to-Patient Direct (DTP) Mix of Promotions The goal of "selling a unit more of its product" should not be the main driving force behind pharmaceutical promotion. The pharmaceutical industry is distinct from other industries due to the fact that national regulatory bodies determine "its product, message, promotional channels, even the audience." The main goal of pharmaceutical promotion is to provide the target audience with impartial, balanced information. Prescribers' (and other stakeholders') needs for pertinent information are met by the promotional message, and its content becomes the foundation of

The content of promotional message in pharmaceutical industry.

The message's objectivity is supported by clinical trials. The scientific context and the promotional message are inextricably linked in the pharmaceutical industry. The content of promotional messages may only contain data that has been validated and proven through clinical trials. This data is taken from applications for sale licenses that were filed with supporting documentation. A pharmaceutical product's promotional message must have an equal amount of positive (airmative) and negative information, according to the information balances rule. The primary issue is that it is challenging to distinguish between promotion and education. The pharmaceutical industry is the only one mandated by law to disclose the unfavorable aspects of its products. When it comes to pharmaceutical products, scientific (expert) communication and promotion invariably collide (Morris, Pines, 2001; Smith et al., 2002). Promotional efforts that are grounded in clinical trial outcomes disseminate scientific knowledge, but publications that emerge from clinical trials may also serve a promotional purpose. Moreover, we must reiterate the contradiction that exists between economic and scientific reasoning when it comes to research and development in the pharmaceutical

sector. Any other R&D-based industry would consider this data to be confidential. In order for research to produce a suitable contribution to the body of knowledge on medicine, pharmacology, epidemiology, and other related topics, the scientific component of the R&D process requires that this knowledge be shared with the knowledgeable public. However, laws mandate that pharmaceutical companies disclose information about their R&D procedures, product ingredients, and clinical trial outcomes. By drawing a comparison with Azoulay's (2002) perspective on the acceptance of technological innovation, one can deduce that the availability of pertinent information to prescribing physicians contributes to the dissemination of new knowledge in medicine and pharmacological therapies. As soon as they graduate from college and throughout their careers, doctors must stay up to date on the latest advancements in medical science. Given that "the body of knowledge regarding pharmaceutical products is dynamic and growing," a sizable portion of this body of knowledge is related to the pharmacological therapies that are currently in use. Physicians possess a multitude of information sources at their disposal; the most important ones include information from pharmaceutical companies, conferences, seminars, and articles published in periodicals. In light of "information overload," Lob and Kolassa (2005, p. 4) ask whether prescribing physicians can objectively stay current on new developments in the field of pharmacy. The authors have determined that, for every 25 best-selling medication, 214 articles in specialized journals and 158 conference abstracts were published between 2000 and 2003 on average. Prescribers' attitudes toward different sources of information about pharmaceutical products are examined by Gaither et al. (1997). The Physician's Desk Reference, medical books and textbooks, print media articles, publications supplied (sponsored) by drug manufacturers, sales force associates of pharmaceutical companies, and other physicians were among the information sources assessed by the survey (peer-to-peer). as well as pharmacists. The responsibility for actively developing and taking part in the prescribing physicians' education in new pharmacological therapies has been assumed by the pharmaceutical industry. The prescribing physician's goal is obviously to select the best course of treatment for the patient, as this is within their professional purview when it comes

to selecting moral medications for patients. Personal selling is now the most common method of pharmaceutical promotion due to the interests of both parties in the dissemination of necessary information. The "selection" of conferences and conventions as important channels for disseminating information on pharmacological therapies is another outcome of the complex nature of products and the targeted audience. The industry makes active use of specialized journals for the distribution of information. The increased involvement of patients in their own care has also given rise to debates about advertising medications directly to patients or final consumers. There is still much to be said about the advantages and disadvantages of this route of communication. [41] [42].

CONCLUSION

In conclusion, the intersection of pharmaceuticals, digital marketing, AI, and advertising represents a transformative landscape that has the potential to revolutionize pharmaceutical sales and marketing strategies. The integration of digital platforms and AI technologies allows for personalized and targeted approaches, enabling pharmaceutical companies to reach specific audiences with tailored messages. This not only enhances the efficiency of marketing campaigns but also fosters a more meaningful engagement with healthcare professionals and consumers.

The advent of AI in pharmaceutical advertising brings forth advanced analytics, predictive modeling, and automation, optimizing resource allocation and improving decision-making processes. Real-time data analysis facilitates rapid adaptation to market trends and consumer behaviors, enabling companies to stay agile in a dynamic industry. Furthermore, the use of AI-driven chatbots and virtual assistants enhances customer interactions, providing immediate and accurate responses to queries, thereby enhancing customer satisfaction.

However, it is crucial for pharmaceutical marketers to navigate the ethical considerations associated with data privacy and compliance with regulations such as GDPR and HIPAA. Striking a balance between innovation and regulatory adherence will be paramount for the successful implementation of digital marketing and AI in the pharmaceutical sector.

In essence, the synergy of pharmaceutical digital marketing, AI, and advertising holds immense promise for improving outreach, optimizing operational efficiency, and fostering innovation in the pharmaceutical sales and marketing landscape. As the industry continues to evolve, embracing these technologies will be pivotal for pharmaceutical companies striving to stay competitive and make a positive impact on healthcare delivery.

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