ABSTRACT:
The pharmaceutical industry is undergoing rapid changes with substantial investments in drug discovery and extensive clinical trials leading to market approval. This drug development process typically spans 10-15 years. Substantial resources are also devoted to marketing drugs to boost sales, but the profitability window is limited, as generic competitors can enter the market after the patent expires. To maximize revenue, there's a need for greater efficiency in drug marketing. Despite increasing the number of sales representatives, revenue per salesperson is declining, and sales effectiveness is diminishing.

Pharmaceutical marketing, also known as pharma marketing, involves promoting pharmaceuticals and healthcare products to the general public and healthcare professionals. This includes online activities, test distribution, creating informative materials, disease awareness campaigns, patient resources, and hosting events for medical professionals. Changes in consumer preferences, economic factors, and public health improvements have made pharmaceutical advertising increasingly important. (Mackey, 2016)

Keywords: Marketing, Pharmaceutical Marketing, Green Marketing, Artificial intelligence, Social media statagy.

I. INTRODUCTION:

India's pharmaceutical industry holds the position of being the third-largest in the world in terms of market size, with an estimated value of around $50 billion. India exports pharmaceutical products to over 200 countries, making it a major player in the global pharmaceutical market. The Indian pharmaceutical sector fulfills approximately 50% of Africa's generic pharmaceutical needs, 40% of the demand in the [1] United States, and 25% of the demand in the United Kingdom. India also plays a vital role in providing vaccines for diseases like measles, mumps, and rubella, meeting over 60% of the global demand according to World Health Organization (WHO) guidelines.

In September 2022, pharmaceutical and medical exports from India totaled $2,052.78 million, constituting 6.29% of the overall export value. During the fiscal year 2021-2022, the average industrial production index for pharmaceutical, chemical, and botanical products increased by 1.3%, reaching a value of 221.6. The value of pharmaceutical and medical exports in 2021-2022 amounted to $24.6 billion, a significant increase compared to the previous year's total of $24.44 billion. Between 2014 and 2018, the Indian pharmaceutical market more than doubled in value, surging from $11.6 billion to $24.6 billion, reflecting remarkable growth. [2]

Pharmaceutical marketing plays a vital role in raising awareness about treatments for chronic diseases, which are the primary driver of healthcare spending. It also ensures timely access to new studies, clinical data, dosing information, and updated drug safety profiles.

Roles and Responsibilities:

Roles:
Product Managers (PMs) have a multifaceted role that covers a broad spectrum of responsibilities throughout a product's life cycle. Typically, a Product Manager is responsible for managing a product or a specific aspect of it, starting from the initial concept all the way to its distribution.

Responsibility:
Collects and assesses market and competition research data. Collaborates with internal teams to define product requirements, enhance existing features, and develop new ones as instructed. Assists in testing, troubleshooting issues, and finding solutions.
Generates and delivers reports on findings, defects, enhancements, project status, and risk management. This role encompasses all the tasks of a Product Manager but at a smaller scale, without major decision-making responsibilities, aimed at acquiring the skills necessary for career advancement. [29]
Gathers customer feedback, including feature requests, creates comprehensive requirements, schedules release timelines, and effectively manages project sprints. Leverages a deep understanding of customer needs to identify and define Personas, create Epics, and User Stories aligned with the overall strategy. Manages and prioritizes backlogs while monitoring and enhancing team productivity. Solves challenges within the allocated timeframes and collaborates with development, engineering, and quality assurance teams to ensure the effective resolution of customer issues. \[3\]

**Product Management Role Hierarchy**
Becoming a product manager doesn't require specific qualifications in computer science or design. This career offers the chance to create products and enjoy a fulfilling income for individuals with strong communication, leadership, and business skills. However, a genuine passion for understanding and addressing customer needs is essential.

The appealing aspect of this career path is the abundance of growth opportunities. It's important to note that titles, roles, and responsibilities can differ from one company to another. Variations arise from factors like a company's size, organizational structure, product funding, and the nature of the product itself, which contribute to unique job descriptions within different organizations.

Engaging in conversations with medical professionals to discern the demand for new products, including their specific requirements and optimal timing for their introduction across various medical practice sectors. \[4\]

**Studying of the need for medical products:**
Different methods are employed to determine the need for medical products, depending on the type of product:
1. Medicines with specific actions: These are tailored to address particular diseases or functions within the body. The need is calculated using the formula \( N = (\Pi \times K \times X) \), where \( \Pi \) represents the general annual need for a specific medicine, \( K \) is the number of treatment courses prescribed to one patient per year, and \( X \) is the number of patients requiring the medicine for their diseases.
2. Medicines with consumption strictly regulated: This category includes narcotics, psychotropic substances, and alcohol drugs. The need for these products is determined based on the consumption specification per 1000 people per year, using the formula \( N = (S \times P / 1000) \), where \( N \) is the estimated annual need for these medical products, \( S \) is the consumption specification per 1000 people, and \( P \) is the population. \[5\]
3. Identifying the right time and product types for introducing them into specific market categories is achieved through a literature review. Markets are crucial in managerial practice, and they can evolve or give rise to entirely new segments. For example, Low Emission Vehicles (LEVs) introduced a new
market space in the automotive industry, requiring decisions on technology design, overcoming industry players' resistance to change, shaping consumer preferences, and navigating complex stakeholder networks to ensure market legitimacy. Gaining knowledge about various aspects of product formulations is essential for understanding different products.\textsuperscript{28}

- **Studying of a supply and demand of medical products:**
  
  The fundamental components of a market mechanism include demand, price, and the supply of goods in the market. The interaction of these elements will be discussed in detail in the section dedicated to pricing within the marketing system. This section explores the methods for studying the economic situation, with a focus on researching the supply and demand of medical products, directly linked to satisfying consumer needs.\textsuperscript{6}

1. **Negative demand:** Negative demand occurs when a significant portion of the market dislikes a product or service and is willing to incur certain costs to avoid it. Examples include inoculations, dental procedures, or specific surgeries like gallbladder removal.

2. **Absence of demand:** In this case, target consumers might not be interested in a product or are indifferent to it. The marketing challenge is to find ways to align the product's benefits with individual needs or interests.

3. **Latent demand:** Latent demand represents desires of consumers that cannot be fulfilled by existing goods or services in the market. The marketing goal is to determine the potential market size and create effective products or services capable of satisfying this latent demand.

4. **Decreasing demand:** When there is a declining demand, marketing efforts aim to reverse this trend by creatively reevaluating the offered products.

5. **Irregular demand:** Many organizations experience seasonal, daily, or even hourly fluctuations in sales, causing challenges with both underloads and overloads. The marketing task is to find ways to smooth demand fluctuations over time using flexible pricing, incentives, and other strategies.\textsuperscript{7}

6. **Stable demand:** Organizations consider the demand stable when they are content with their trading activities. The marketing challenge here is to maintain the current level of demand despite changing consumer preferences and increasing competition.

7. **Excessive demand:** Some organizations face demand levels higher than they can or want to meet. In such cases, the issue of demarketing arises, aiming to reduce demand either temporarily or permanently.

8. **Irrational demand:** Managing demand for products that can be harmful or unhealthy, such as narcotics or alcohol, requires deliberate efforts. Marketing strategies may involve spreading awareness about associated risks, raising prices, and limiting access to the products.

- **In the context of medical products:**
  
  - **Effective demand** refers to the actual sale of medical products with consistent availability in pharmacies.
  - **Unsatisfied demand** is characterized by a shortage or irregular supply of medical products within the pharmacy network.
  - **Formed demand** represents the demand for new and lesser-known medical products.\textsuperscript{8}

- **Marketing strategies employed by companies:**
  
  The Indian government places a strong emphasis on advertising and public engagement, particularly in the healthcare sector, where the engagement with physicians through medical representatives has been a distinctive feature. However, doctors' satisfaction with the products is not always guaranteed.

  In the United States, pharmaceutical companies have been granted permission to promote tranquilizers through television advertising, and they have invested significantly in various advertising efforts, including informative websites about diseases, treatments, symptoms, and healthcare.\textsuperscript{9}

  To successfully engage industry specialists, it is essential to have expertise in traditional media production, combining different media types. This could lead to increased reliability in the production of over-the-counter drugs, which is becoming more intricate.\textsuperscript{9}

  One notable example of the power of emotions in business is the success of Johnson & Johnson's touch treatment division.

  Market research in the Indian pharmaceutical industry ranges from simple consultations with professionals, retailers, and medical facility organizations to more complex studies involving statistically significant samples of healthcare providers and corporate clinics.
reflecting a growing demand for healthcare services. The findings of marketing studies serve as a starting point for more comprehensive activities. Each organization or brand has a limited time combination of advertising, personal selling, and a clear relationship between the two.

Due to concerns about the abuse of personal selling in the pharmaceutical industry and the regulatory limitations on marketing pharmaceutical products imposed by the FDA, there is potential for the role of public relations in the pharmaceutical industry to be explored and expanded. This is partly due to the misuse of medicinal agents.

In the pharmaceutical sector in India, advertising is rarely employed as a strategy. Some companies, particularly smaller ones, mistakenly believe that issuing press releases, attending meetings, and hosting launch parties are sufficient to promote a new product or service.

Public relations often lead to intimate conversations with wide-ranging implications for businesses and their employees. Cipla, for instance, shifted to public relations strategies after its primary method of communication through medicinal agents became less effective several years ago.

**Additional Strategies:**

The results of marketing studies should be seen as a starting point for more comprehensive actions. A typical approach for each specific organization or brand involves a combination of advertising, personal outreach, and fostering a clear relationship between the involved parties.

In the pharmaceutical industry, there is a history of misusing personal outreach, primarily through the use of medicinal agents, and the FDA's regulatory constraints on pharmaceutical marketing. This situation opens the door to evaluating and potentially misusing the role of public relations in the pharmaceutical sector.

In the Indian pharmaceutical sector, advertising is rarely employed as a primary strategy. Some companies, particularly smaller ones, incorrectly assume that issuing a few press releases, attending meetings, and hosting launch events are sufficient for promoting new products or services.

The outcome of effective public relations often involves intimate conversations, which carry significant implications for businesses and their employees. Cipla, for instance, shifted to public
relations strategies after their primary communication method, medicinal agents, became less effective in previous years.

Email marketing has become a highly effective strategy, especially in the rental sector. Businesses can generate revenue by renting their email lists to other companies. This allows the latter’s clients to access the subscribers on the email list, increasing the likelihood of those clients purchasing products from the renting company.\[12\]

- **Market segmentation:**
  
  Due to variations in people's ages, incomes, education levels, and life experiences, not all members of a target market will share an interest in a specific product or react the same way to a marketing message. Smart segmentation allows you to tailor your messages and campaigns to a specific portion of your audience. Creating buyer personas is a valuable starting point as it helps you focus on the exact type of individuals you should be addressing, saving you time in the process.\[13\] Additionally, consider the concept of lifecycle targeting, which involves engaging with individuals at specific points in the buying process.

- **Product and Service Positioning:**
  
  In many cases, companies offer products and services similar to those offered by their competitors, whether they do so in physical stores or online. To set yourself apart from the competition, it’s essential to carefully position your products and services, along with your company’s brand and unique selling proposition (USP).\[14\]

- **Brand Development:**
  
  A company’s brand is the reputation it holds among its ideal customer base. A brand strategy can be used to differentiate a company from its competitors.\[16\] A brand is more than just a name, slogan, design, or symbol; it’s the perception associated with the product or service. Effective brand management begins with an analysis of how the market currently perceives the brand, followed by plans for how the brand should be perceived to achieve its goals.

- **Online/Offline Value Proposition:**
  
  To differentiate yourself and strengthen your argument, you must provide a value proposition that goes beyond a basic list of customer benefits.\[15\] It should also serve as a catalyst for creating content and delivering messages aligned with your target audience, giving all marketing communications a clear purpose.

- **Content/Inbound Marketing:**
  
  Content marketing involves creating and sharing content to inform a specific audience about a product or service, its benefits, and answers to their questions. This approach helps in acquiring new customers and retaining existing ones. Content marketing is also valuable when expanding into new markets, aiding in product positioning, brand awareness, and lead generation.\[16\]

- **Social Media Strategy:**
  
  Social media platforms offer opportunities for highly engaged audiences that can be reached organically or through paid methods. Components like sharing and commenting sections can be integrated into business websites as part of social media optimization. Social media strategy can focus on the platforms where your ideal customers spend the most time, including major platforms like Twitter, LinkedIn, Facebook, and Instagram.

- **Current trends:**
  
  A comprehensive marketing and sales strategy is essential in today’s landscape, encompassing both online and traditional methods. It’s increasingly evident that a significant portion of pharmaceutical marketing efforts must be directed towards digital channels. This shift is driven by the reduced frequency of physical interactions and the growing preference of medical professionals for digital channels when exchanging information. What used to be mandatory in the past is evolving into a more adaptable approach (Lotfi, 2016).\[17\]

  The central management of client interactions through digital-focused Customer Relationship Management (CRM) tactics is crucial. Many leading pharmaceutical companies in India continue to use traditional closed-loop marketing techniques. Sales representatives employ these techniques for planning call routes, marking their geographical locations, and tracking expenses and comments. It’s vital to enable and monitor communications via phone calls, video calls, text messages, emails, and messaging apps like WhatsApp. The majority of future customer interactions will occur online or remotely, making it imperative for businesses to facilitate and track communications through these digital channels (Lokesh, 2014).

  With the widespread use of digital technologies, the volume of collected datasets is...
continuously increasing. This provides a wealth of data for understanding physician preferences regarding specific illnesses, patient engagement levels, preferred communication methods, and nuanced variations based on specialization and geographic location. [18] Optimizing sales staff allocation based on doctors' preferences for both face-to-face and online interactions can potentially boost profits. However, to derive insights from these datasets, they need to be standardized and organized for the development of effective applications (Emami, 2020).

The hybrid approach, blending physical and digital elements, blurs the lines between larger corporations with sizable field forces and smaller companies with more modest field staff. This approach empowers smaller businesses to compete effectively by enabling communication with doctors in regions where field staff may be limited or absent.

**Value of Pharmaceutical Marketing and Promotion:**

Pharmaceutical company representatives play a critical role in delivering FDA-regulated, scientifically grounded information to physicians. This serves as a vital channel for disseminating knowledge about medications. Furnishing healthcare professionals with current information on pharmaceutical products assists them in making well-informed decisions, ultimately contributing to improved health outcomes. [19]

Additionally, pharmaceutical representatives offer healthcare providers essential information regarding new studies, clinical data, updated dosing guidelines, and safety and risk updates. This timely access to such information is instrumental in facilitating effective patient care, and pharmaceutical representatives are responsible for conveying these updates to healthcare providers.

**Boosting Pharmaceutical Sales and Marketing with Artificial Intelligence:**

Recent advancements in artificial intelligence and advanced analytics are opening up opportunities for enhanced performance and efficiency across various industries and markets. Although experiments with AI have been ongoing for over two decades, it's only in recent years that progress in data collection, processing, algorithm development, and computing speed has made it feasible to successfully implement AI at an industrial scale.

Artificial intelligence has substantial commercial potential on a global scale, with particularly significant impacts in developed economies characterized by a high GDP per capita. These economies are proactively addressing challenges, such as rapidly aging populations, where AI can offer substantial benefits. [20]
• The Potential of AI in Pharmaceutical Sales and Marketing

The pharmaceutical industry, especially in the U.S., has a rich history of data collection. This sector has gathered substantial information about healthcare professionals, encompassing their demographics, specialties, educational backgrounds, institutional affiliations, and prescription practices. Over the last five years, the pharmaceutical industry in most major markets has shifted towards a more structured approach in gathering data, both from internal sources and third-party vendors, while also enhancing data quality processes.

❖ Benefits of Artificial Intelligence:

Machine learning in the pharmaceutical industry offers various applications, but we believe that the following five use cases can substantially benefit commercial organizations:

1. Predicting Customer Affinity:

According to research by ZS, tailoring promotional content and channels to the preferences of healthcare professionals can lead to three times higher engagement. To predict these affinities, we analyze the interaction data of healthcare professionals across various channels like email, websites, and mobile alerts.

2. Designing Customer Journeys:

Many brands that have implemented healthcare professional journeys have typically relied on general brand goals and existing content, giving less attention to data-driven insights that could enhance customer-focused campaigns.

3. Next-Best Actions and Recommendations:

Forward-thinking marketing organizations are now experimenting with next-best action programs that utilize real-time customer interaction data and complex calculations. These programs leverage customer preferences and optimal sequences of tactics, making healthcare professional engagement strategies more dynamic.

   This approach offers predictions for customer engagement, including recommendations for the right customer, channel, content, and timing, all based on the most up-to-date data. While these recommendations are generated analytically and often executed by machines, they should be designed to be understandable and adaptable by humans, allowing sales reps to use them to enhance their customer interactions while still retaining the ability to exercise their judgment.

4. Predicting Patient Switching and Adherence:

In various medical fields, companies are in a competitive pursuit to attract patients during the period between diagnosis and the start of therapy. Algorithms that can uncover connections between diagnoses, treatments, procedures, and prescriptions can provide a substantial edge in this race.

These algorithms help in predicting when patients might switch to competitive brands and when they might discontinue their treatment. According to ZS's analysis of a specialty brand, even a 1% improvement in patient adherence can result in up to $100 million in peak sales.

5. Mapping Key Opinion Leaders (KOLs) and Their Networks:

Identifying prominent healthcare professional influencers and their influence networks, using data from social media and online communities, offers valuable insights to commercial organizations. These insights can be beneficial for various purposes, such as collaborating with them on research and clinical trials, and pinpointing ideal targets for new product launches.

   This approach also assists in recognizing both treating and referring physicians, while establishing referral patterns and influence networks. ZS suggests that for specific specialty brands, referrals can contribute to as much as 50% of the total prescription volume.

❖ Limitations and Considerations with Machine Learning:

• While machine learning systems offer a significant competitive advantage, it's crucial for companies to thoroughly understand the limitations and potential accuracy of predictive models.
• Pharmaceutical commercial organizations developing models should consider a broader range of factors, including competitive product launches, shifts in local market access conditions, and recent marketing campaigns. This broader perspective allows for more accurate predictions, considering factors like the product's life cycle.
• Furthermore, if models heavily rely on dynamic variables, it's important to carefully determine the training data window that the algorithm uses.
• Companies that overly prioritize one type of promotion, like sales rep visits, may find their
historical data dominated by that channel. This can limit the richness and capabilities of the predictive algorithm, especially in the early stages.

II. CONCLUSION:
Pharmaceutical marketing presents unique challenges and opportunities that differ from conventional marketing for non-pharmaceutical companies. These challenges include globalization, increased competition, and the pursuit of global market dominance, all of which require specific strategies within the core marketing elements of Product, Price, Place, Promotion, People, Physical Evidence, and Process.

Innovation within the pharmaceutical sector enhances performance, and the adoption of Green Marketing practices further strengthens the industry. The pharmaceutical consumer base is diverse, ranging from physicians and pharmacists as customers to patients as the end consumers. Marketing over-the-counter (OTC) products bears similarities to regular marketing efforts, but the marketing of life-saving drugs involves a distinct set of strategies, essentially selling an idea that patients will demand the product and doctors will prescribe it.

In the competitive business world, success is typically attributed to either offering unique products or the most competitive prices. However, pharmaceutical companies' success is also tied to their manufacturing infrastructure, particularly in transitioning from acute treatment to chronic treatment markets. Understanding a company's customers' mobility needs can provide valuable insights for optimizing operations, and account segmentation is a valuable method for assessing these needs.

REFERENCE:
profile on physician prescribing behaviour.


