



The Influence of Pharmaceutical Companies Marketing Activities on Physicians' Prescribing: Literature Review

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ABSTRACT

Background: Pharmaceutical companies through marketing strategies introduce the products to the user. Physicians are the target of prescription drug marketing. For a long time, pharmaceutical companies have done many marketing activities. They spend a big portion for the marketing activities. The aims of that activities, to influence physicians' prescribing.

Objectives: This article aimed to examine the influence of marketing activities from pharmaceutical companies on physicians' prescribing in various countries.

Methods: Scopus is used as a database to collect articles with keywords named "pharmaceutical marketing" and prescribing. Inclusion criteria are original articles, published in 2018-2023, in English, open access. In the end, eight articles were reviewed in this study.

Results: The result of this study shows pharmaceutical companies apply a marketing mix strategy to promote their product. This strategy consists of four elements product, price, place, and promotion. All of the element influences physicians' prescribing, generally. Promotion strategies such as medical representative visits and gifts are the most influential strategies for physicians' prescribing. The influence can't be generalized because it also depends on the socioeconomic state of the country, culture, work location or environment, practice experience, geography, and ethical issues.

Conclusion: Promotion strategy is the most influential for prescribing than product, place, and price but the influence based on the physicians' characteristics. So, pharmaceutical companies must identify their user to decide an appropriate strategy.

Keywords: marketing mix; medical representative; pharmaceutical marketing; physicians' prescribing; promotion

INTRODUCTION

A company will try to maintain and even improve its competitive advantages, including pharmaceutical companies. Competitive advantages are companies' assets to win the market competition¹. Generally, pharmaceutical companies have two types of products namely over-the-counter (OTC) products and ethical/prescription products. Prescription products are a big contributor to pharmaceutical companies' income. Division prescription pharmaceuticals of Kalbe Farma contribute 21,3% of total net sales in 2022². Kalbe's prescription pharmaceuticals consist of unbranded generics, branded generics, and licensed products. Their contribution to prescriptions net sales are 27%, 50%, and 23% respectively. Kimia Farma Corporate also shows the same condition, prescription drugs contribute 45,61% of their total net sales³.

Pharmaceutical companies spend a big portion of their asset on marketing activities. Pharmaceutical companies spend one-third of their revenue on marketing, which is twice that spent on research and development⁴. Kalbe Farma's selling expenses in 2022 are around 5,749 billion in rupiah, an increase of 3,6%

from 2021². This is many times over than expenses for research and development only 292 billion in rupiah. The same condition is seen in Kimia Farma Corporate, with operating expenses for promotion around 18,92% and 3,54% for research and development³. Nine of 10 big pharmaceutical companies in the world spent more on marketing than research and development⁵.

There are 232 pharmaceutical manufacturers in Columbia, the largest expenditure for advertising is around 75%, and the smallest for detailing expenses is 8,5%⁶. Detailing expenses are payment for marketing and promotional activities such as sales representative operations. Other marketing activities include giving gifts to individual recipients. District of Columbia reported a total of gift expenses is \$19.7 million for cash, food, or in-kind consideration. The target of these expenses are physicians, nurses, dentists, medical staff, and pharmacists⁶. In 2016, pharmaceutical companies in the United States invested 13.5 USD to free samples for physicians⁷. Anthony A. Barrueta at Kaiser Permanente website reported in 2016 pharmaceutical industry spent \$13.5 billion on free samples⁸.

All of the marketing activities especially prescription drugs make physicians the main target because the use of the product is based on physicians' prescribing. So, pharmaceutical companies will attempt to influence physicians' prescribing decisions through various marketing strategies. Free sample drugs have an impact on physicians' prescribing in Quebec, Kanada⁹. Also in Pakistan, gifts from pharmaceutical companies create interest in physicians' prescribing¹⁰. This kind of condition has been going on for a long time in various countries. This article will resume some research from various countries around 2018-2023. Previous literature studies conducted by Murshid *et al* reviewed 40 studies published from 2000 to 2016¹¹. They investigated the influence of medical representatives and other promotional tools on prescribing behavior. So, this research will give an idea of the marketing strategies that have influenced physicians' prescribing in various conditions for at last 5 years. The results can be a consideration for pharmaceutical companies to arrange effective and efficient marketing strategies.

METHODS

Study design

This is research with a literature study design.

Search strategy

The article-collecting process focused only on Scopus. This database is used because Scopus is the biggest article source, a good reputation and credibility. The article which Scopus indexed is acknowledged good quality article internationally. The keywords to search the articles are "pharmaceutical marketing" and "prescribing" within the article title, abstract, and results.

Eligibility criteria

The inclusion criteria are an original article, publication in English, an open-access article, and an article published in 2018-2023. That period was chosen because we want to know the up-to-date pharmaceutical marketing' trend last 5 years. Articles that don't meet these criteria will be excluded.

Data Extraction

One hundred twenty articles were found based on keywords. The first selection is based on the published date, 88 articles were published before 2018 so they are deleted. After that, 32 articles were selected by looking at the type of article and the language, 25 articles met the criteria, namely original articles in English. Next, based on accessibility, only 14 open-access articles for this review. The last is an assessment of the articles regarding the suitability of the title to the content and research objectives, only 8 articles met the criteria.

Data Analysis

Figure 1

RESULT AND DISCUSSIONS

From this review know that there are various strategies for pharmaceutical companies to market their products. This strategy is used to influence the physicians' prescribing behavior. The strategies used by various pharmaceutical companies around the world such as Jordania¹², the United States¹³, Ethiopia¹⁴, Lebanon¹⁵, India^{16,17}, Australia¹⁸, and Belgium¹⁹. Mix marketing strategy is the most strategy used by pharmaceutical

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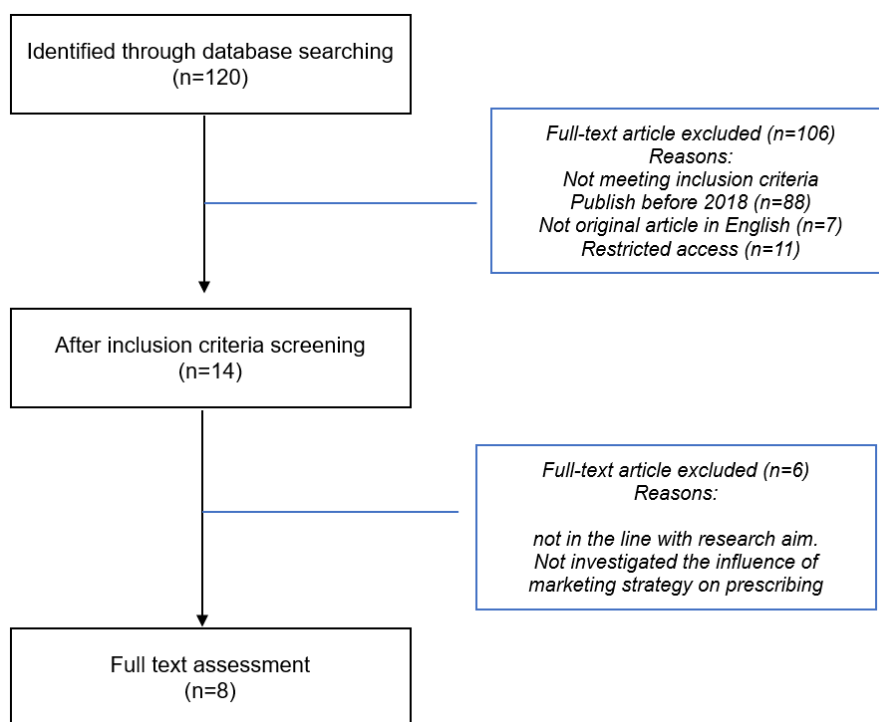


Figure 1. The study flow chart of articles is included in this review.

companies. Pharmaceutical companies apply all of the marketing mix elements or only one of them such as promotion. Table I.

Al Tabbah *et al*¹² and Hailu *et al*¹⁴ assess the influence of marketing mix strategies on Jordanian¹² and Dessie¹⁴, Ethiopia physicians' prescribing. Their quantitative study shows the same results that marketing mix influences physicians' prescribing, generally. All elements of the marketing mix namely product, price, place, and promotion have an influence on physicians prescribing in the different portions. Price is the most influential strategy in Jordanian physicians and promotion strategy has the lowest impact. Meanwhile, in Dessie promotion strategy is the most influential in their physicians' prescribing followed by product, price, and place strategy respectively.

Other articles in this review focus on promotion strategy in physician prescribing. Eisenberg *et al*¹³, in the United States, assess the influence of pharmaceutical promotion activities like medical representative visits and giving a gift and/or meals to the physicians prescribing opioids. These activities show that they have an impact on opioid prescribing. The result is increasing opioid prescribing and opioid overdose cases in the US. So, The United States government made some policies, one of them being a restriction on gifts and meals for physicians and medical representatives' access to the health centers. This policy has a good impact on opioid prescribing, medical representative visit restrictions reduce 4,7 percent of days for all types of opioids prescribed (4.87 percent on generic opioids and 11 percent on brand-name opioids marketed). Khazzaka¹⁵ through quantitative research wants to know correlated promotion tools from pharmaceutical companies and Lebanese physicians prescribing. The results show that being visited by medical representatives is the most important promotion tool that influences Lebanese physicians' prescribing, followed by free drug samples, supporting continued medical education (CME). These results are in line with Vandenplas *et al* research¹⁹, Belgium physicians are also influenced by medical representative visits for their prescribing especially on biological products with new mechanisms of action. The phenomenon is also seen in India, Sharma *et al*¹⁷, results of their research show that medical representative visits influence the physicians' prescribing.

Krunal *et al*¹⁶ conducted further research about medical representatives in India. They are focused on medical representative qualities. A medical representative with good qualities has a high impact on physicians' prescribing. Based on this research, a good medical representative has a good skill in detailing for describing the product and building good communication and interaction with the physicians. Next, the medical representative

Table I. Characteristics of the included article in this review

No	Author	Date	Place	Research Method	Participant	Marketing Strategies	Main Found
1	Al Tabbah et al ²⁰	2022	Jordan	Cross-sectional, quantitative	315 physicians (general practitioners and specialists, private and public sector)	Marketing mix (product, price, place, and promotion)	Marketing mix has a moderate to high influence on Jordan physicians' prescribing. Pricing strategy has the greatest impact on prescribing. Restriction of medical representative visits and gifts reduces the volume of opioid prescriptions.
2	Eisenberg et al ¹³	2020	United State	Retrospective, quantitative	Physicians who prescribed medications covered by Medicare Part D (85 US Academic Medical Center)	Promotion strategy (medical representative visit and gift)	All of the elements in the marketing mix influence Dessies' physician prescribing. Promotion strategy has the greatest influence on prescribing.
3	Hailu et al ¹⁴	2021	Dessie, Ethiopia	Mix Method	136 physicians (quantitative), 14 specialist physicians (qualitative)	Marketing mix (product, price, place, and promotion)	The most important promotion tools that influent prescribing behavior are medical representatives visiting followed by free drug samples, the company's participation in CME, and sponsors for personal tours or traveling.
4	Khazzakaet al ¹⁵	2019	Lebanon	Cross-sectional, quantitative	282 physicians who practice in urban and rural regions of Lebanon	MRS' visits, Sales calls, Free drug samples, Brochures, Gifts (medical equipment), Low-cost gifts, Sponsorship for personal tours or conferences, Direct mail, Journal Subscription, Participating in CME	A medical representative with good skill in detailing, scientific knowledge, and a good personality influences physicians' prescribing.
5	Krunal et al ¹⁶	2021	Gujarat, India	Cross-sectional, quantitative	122 physicians (general practitioners and specialists)	Medical Representative	free samples, lunches, financial links, fund trials, and routine visiting hospitals' staff influence drug list decisions.
6	Parker et al ¹⁸	2020	Australia	Qualitative	28 members of NSW DTCs	Promotion	

Table I. (Continues)

No	Author	Date	Place	Research Method	Participant	Marketing Strategies	Main Found
7	Sharma et al ¹⁷	2021	Maharashtra, India	Cross-sectional, quantitative	100 clinicians in a teaching hospital	drug literature, promotional representatives, advertisements, journals, brochures, and direct mailing)	Brochures are the most useful for clinicians followed by medical representatives.
8	Vandenplas et al ¹⁹	2022	Belgia	Qualitative	19 specialist physicians	Marketing mix (product, price, place, promotion)	All of the marketing mix elements influence physicians' prescribing.

must have a good personality and good skill of grooming. The last, medical representative must have good knowledge, not only about their products but also the scientific ones.

All of the research above shows that pharmaceutical marketing influences physicians' prescribing. Parker *et al*¹⁸ through their research in New South Wales, Australia complements these findings. They involved all members of the drug and therapeutics committee (DTC) consisting of physicians, pharmacists, and nurses. The results show that pharmacists and nurses also be the target of pharmaceutical marketing strategy especially in the process of inputting the product to the hospital drug list.

Pharmaceutical companies invest their asset in a large portion for marketing strategies. From the action, pharmaceutical companies want to make their product known and superior in the eyes of physicians. That is the purpose of marketing strategy^{12,13}. Marketing mix is a general strategy to market products or services¹. The marketing mix consists of four elements product, price, place, and promotion. They are linked to each other²¹. Pharmaceutical companies combine all of them to influence physicians' prescribing behavior^{12,14}.

Price

Physicians in Jordania¹² and Dessie¹⁴ are influenced by pricing strategy. The price of the drug will impact on medication cost that the patient must pay. That has a high impact on medication adherence¹². So, when choosing the product, physicians consider the product's price that is suitable for patients' wealth. This is correlated with the economic static of the country, The World Bank classified Jordania as a lower-middle-income country and Ethiopia as a lower-income country. Different results show in Belgium¹⁹, a country with better economic status, the cost of the products has a limited effect on physicians' prescribing.

Product

Effective and safety are criteria of the good quality of pharmaceutical products. Products with good quality increase customer satisfaction and loyalty to repeat use of the products²²⁻²⁴. Related to a product strategy, senior physicians with long-time experience in practice are more influenced. They have many experiences in handling patients with various cases and conditions. They have more experience with the products and the alternatives in their practice. They have a strong basis for drug choice¹². Not only related to practice experiences but product strategy is also related to the type of health centers. Physicians in the private sector are more influenced by product strategy because they are allowed to mention the name/brand of the products in their prescribing¹². So, product strategies such as creating an easy-to-remember product name can influence physicians' prescribing. In different conditions seen in Indonesia, the quality of the product does not influence physicians' loyalty to prescribing. In line with Chang *et al*²⁵ found that product quality does not directly influence customer loyalty but indirectly through customer satisfaction.

Place

Place strategy is known as a distribution strategy. Jordanian physicians mostly agree that this strategy influences their prescription¹². Distribution strategy related to product availability, availability of local agents representing the principal company, and fast delivery. Physicians will prescribe the product which is ready in pharmacy installation^{12,14}. Physicians in Dessie, in the private sector, emphasized that improving companies' supply chains made their work easier. Meanwhile, in Dessie's public sector, found that agents in the city made physicians easy to prescribe the products.

Promotion

There are many activities related to promotion strategy. Research in Saudi Arabia involving 250 physicians found 99,5% of them agree that they are exposed to pharmaceutical promotion at least once time²⁶. Promotion strategy has the most influence on physicians' prescribing followed by product, place, and price¹². Khazzaka¹⁵ investigated some promotional tools from pharmaceutical companies especially medical representative visits, free drug samples, brochures, gifts (medical equipment, low-cost gifts, sponsorship for personal tours, direct email, journal subscriptions, and participating in CME. Parker mentioned that pharmaceutical companies will influence members of DTC with various activities to submit the product to the hospital drugs list¹⁸. The activities include medical representative visits, fund trials of new medicines, and providing lunches for staff in hospital meetings. All of the articles in this research have the same found that medical representatives as a part of the promotion strategy have an impact on physicians' prescribing behavior. Medical representatives are spearheads of pharmaceutical companies because one of their jobs is visiting physicians to describe the product and build a good relationship with the physicians²⁷. Physicians who practice in Yaman said that medical representative visits

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are something normal²⁸. Ali *et al* capture that in Jordania-Iraq, face-to-face meetings between medical representatives and physicians an important and influence physicians' prescribing²⁹. The face-to-face meetings will increase physicians' belief in the medical representatives, the information, and the products.

Al-Areefi through qualitative research identifies physicians' reasons for accepting or rejecting medical representative visits²⁸. There are some reasons for accepting medical representative visits. First, physicians presume medical representatives are a source of drug information²⁸. When visiting physicians, medical representatives describe and present the product offered, the information about the indications, side effects, and contraindications, and compare their product with the competitor. This is in line with other research that medical representatives are a source of drug information for physicians, especially new drugs^{19,30}. Information from medical representatives is useful for physicians because they don't have much time to search for new drugs and medication information^{17,28,31,32}. Second, moral considerations such as friendship and the idea of helping each other are the physicians' reasons for accepting medical representative visits²⁸. The last reason is medical representatives' visits give them financial benefits²⁸.

Gifts from pharmaceutical companies influence United States physicians to prescribe opioid¹³. Providing a meal for lunch or dinner also has an impact on physicians' prescribing^{14,18}. The other researcher also captures the same found that free drug samples, gifts (medical equipment), and sponsorship for personal tours or conferences have an impact on prescribing^{15,33}. This acceptance is based on some reason³³. First, common sense for something free, the uncomfortable to refuse, and the physicians said that the gift from pharmaceutical companies helps them to remember the drug/product because 74,7% of gifts are accompanied by the name of the companies and product also their logo³³. The same condition is also found in Indonesia, the physicians' loyalty to prescribe a product is influenced by gifts received from pharmaceutical companies³¹. Wood *et al*³⁴ found that Columbia physician prescribing was also influenced by gift-giving from the pharmaceutical company. Gift-giving correlates with an increasing number of prescriptions, the number of drugs on prescription for patients, the cost that patients must pay, and increasing prescriptions for branded drugs. Otherwise, found in Russia³⁵ and Iraq³⁶ that gift-giving from pharmaceutical companies doesn't influence significantly physicians' loyalty to prescribe the product.

Not often do the physicians reject medical representative visits. There are physicians' reasons to reject the visits²⁸. First, ethic consideration. Second, a conflict between physicians and pharmaceutical companies related to the previous commercial commitment. Third, the medical representative came at the wrong time, disrupting the physicians' practice hours. Last, low-quality of medical representatives. Related quality of medical representatives, Krunal *et al*¹⁶ investigated the medical representative quality in physicians' eyes. The results show medical representatives who have good skills in detailing, dressing neat and professionally when visiting physicians, and also have a good knowledge of the product and scientific evidence correlated with physicians' prescribing in India. As mentioned above, medical representatives as an information source for physicians must provide accurate and credible information. Sharma *et al*¹⁷ found that the accuracy of the claims by pharmaceutical companies was between 50%-75% and mostly supported by poor evidence. This was found not only in medical representatives but also in the leaflets or brochures.

CONCLUSION

Pharmaceutical companies through marketing strategies to physicians introduce their prescription products. The marketing mix is used to influence physicians' prescribing behavior. Promotion strategy has the most influence on physicians' prescribing than product, price, and place strategies. Medical representatives and gifts as a part of the promotion strategy are impactful on physicians' prescribing. The influence of marketing strategy on physicians' prescribing depends on various backgrounds like socioeconomic status, work environment, practice experience, and ethical issues. Therefore, pharmaceutical companies must identify their physicians' characteristics to decide the appropriate strategy. Pharmaceutical companies must have good-quality medical representatives. Periodic training can be carried out to maintain and improve the quality of medical representatives.

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STATEMENT OF ETHICS

This article was written in accordance with the code of ethics and not published or under review in other journals.

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