



The Effect of Pharmaceutical Company's Corporate Brand Image on Physicians' Prescriptions

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Abstract

Purpose: As the government supports the pharmaceutical industry as a next-generation growth industry, there has been a change in the generic-oriented market. The government is trying to lower the price of generic medicines and change the market with rebates. If there is no difference in the marketing methods of pharmaceutical companies, corporate brand image can be an important attribute to consider when doctors prescribe generic drugs. **Research design, data, and methodology:** The brand image of pharmaceutical companies consists of communication with customers, social responsibility, ethical behavior, and the image of MR. Other factors than the corporate brand image have little effect on doctors' intention to prescribe. The subjects of this study were limited to the generic drug market and clinic doctors with no restrictions on prescribing authority. **Results:** First, the customer and communication components of corporate brand image influenced prescribing intention. Second, social responsibility, a component of corporate brand image, influenced prescribing intention. Third, ethical behavior as a construct of corporate brand image influenced prescribing intention. Fourth, the effect of MR's image on prescription intention was confirmed. **Conclusions:** To differentiate from previous studies, this study focused on generic prescriptions in hospitals and confirmed that the corporate brand image of pharmaceutical companies had a positive effect on doctors' prescription.

Keywords : Pharmaceutical Company, Corporate Brand Image, Generic Drugs, Prescription.

JEL Classification Code: F1, Q56, M00, M31.

1. Introduction^a

The pharmaceutical industry as a new industry has a promising future. Since aging and population growth are global trends, the size of the pharmaceutical industry is expected to grow in the future. Government and corporate interest and investment in the pharmaceutical industry are increasing.

The pharmaceutical industry is a knowledge industry

that requires long-term investment in technology and capital to produce results. In order to develop a new drug, long-term R&D of about 10 years must be conducted and continuous investment of capital and manpower must be made. Nevertheless, the success rate of new drug development is very low, so successful results cannot be guaranteed in the early stages of development. Therefore, the pharmaceutical industry is a high-risk, high-return, and long-term investment industry.

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The domestic pharmaceutical industry is highly dependent on generics. Almost all drugs produced domestically are generics. In the case of Korea, the price of generic drugs is relatively high compared to other countries, so many pharmaceutical companies generate profits by handling generic drugs rather than investing in long-term R&D. In this way, the entry barrier for new businesses to enter the market is not high, so new competitors easily entered, leading to the proliferation of small pharmaceutical companies. In addition, the fierce competition among existing pharmaceutical companies led to the use of profits as operating expenses rather than as resources for R&D investment (Kim et al., 2010).

The distribution structure of the pharmaceutical industry, which relies on sales centered on generics, must be improved. It is time to foster pharmaceutical companies with capital that can make long-term R&D investments through restructuring the pharmaceutical industry. In fact, the government is making policy efforts to lower generic drug prices and change the distribution structure that relies on rebates. If the government lowers the profits of generic drugs so that pharmaceutical companies engage in less sales activities with hospitals, sales of original drugs or large pharmaceutical companies are expected to increase. In the generic market where product differentiation is difficult, the brand image of a company can affect sales.

In order for the Korean pharmaceutical industry to advance into a future growth industry, the existing distribution structure and methods of marketing must change. However, if pharmaceutical companies abandon the practice of relying on rebate-based sales capabilities in the high-profit generic market, they must find an effective new marketing strategy to replace it. However, since advertising for prescription drugs that depend on doctors' prescriptions is restricted to consumers, marketing targeting patients, the final consumers, is impossible. Therefore, there is no choice but to find a way to increase doctors' preference for prescription drugs.

However, since Korea has strict laws on the sale and distribution of drugs, medical care benefits, and punishment, the sales activities of pharmaceutical companies are significantly restricted. In addition, although most Korean pharmaceutical companies depend on generic products for their sales, the lack of product differentiation in generic drugs prevents pharmaceutical companies from conducting marketing activities that differentiate them from their competitors.

In this situation, doctors have no choice but to consider the pharmaceutical company's brand when prescribing generic drugs. In other words, when the efficacy of generic drugs is not significantly different and the activities of pharmaceutical sales representatives are restricted, the corporate brand image of the pharmaceutical company can

be an important consideration. This study aimed to identify the elements that constitute the corporate brand image and then confirm the influence of these on the corporate brand image and the prescription intention of doctors. If a pharmaceutical company's brand image actually contributes to increasing sales, it is expected that the pharmaceutical company will invest human and material resources to increase its marketing efforts to improve its corporate brand image.

2. Literature Review

Previous studies related to this study can be divided into three categories. First, there are studies related to the formation of corporate image and value formation of pharmaceutical companies. Second, there are studies related to the influence of corporate reputation, brand image, and reputation on customers' prescriptions or purchases. Third, there are studies related to the influence of the company's marketing, promotion, and products on customers' purchasing intentions. However, most of these studies did not consider the characteristics of drugs and were conducted on general consumers rather than prescribers. In addition, there are few studies that only target the out-of-hospital distribution market of clinics when confirming the influence of corporate brand image on prescribers' intention to prescribe.

2.1. Corporate Image and Value Formation of Pharmaceutical Companies

Yoo (2007) analyzed the corporate image components of pharmaceutical companies by dividing them into contribution image, proximity image, product image, notability, and appearance image. The factors that constitute the corporate image of pharmaceutical companies were identified as contribution image, proximity image, product image, low reputation, and appearance image (Yoo, 2007). Yoon (2004) conducted a study on the valuation and accounting of brand assets of pharmaceutical companies. In this study, it was confirmed that there was a correlation between the publicity effect, awareness, marketing effect, and brand image as a result of the marketing effect due to the introduction of brand assets (Yoon, 2004). Park (2002) found out about the operating status of brands, the introduction of brand assets, brand asset evaluation, and the accounting introduction plan for brand assets. The research results showed that there are unique brands in terms of the operating status of brands, but brand unity and education are lacking. Regarding the introduction of brand assets, it was found

that brand value evaluation helps in evaluating corporate value. The biggest factor affecting brand assets was sales force, and It is appropriate to disclose brand assets as a footnote to the financial statements (Park, 2002).

Table 1: A preliminary study on the evaluation of the corporate image and corporate value of pharmaceutical companies

Researcher	Research Contents	Research Subjects	Independent Variables	Dependent Variables
Yoo (2007)	Analysis of the components of the pharmaceutical company's corporate image	General public	Corporate contribution image, corporate proximity image, corporate product image, corporate reputation, corporate appearance image	Corporate image of pharmaceutical company
Yoon (2004)	Valuation and accounting of brand assets	Accounting and marketing staff of domestic pharmaceutical companies	Publicity effects, Consumer awareness, Marketing effects	Brand image
Park (2002)	Survey on the brand assets of domestic pharmaceutical companies	Domestic pharmaceutical company employees	Brand management, brand assets, brand asset evaluation, brand asset accounting introduction	Corporate value evaluation

2.2. The Impact of Corporate Brand Image, etc. on Purchase

Kim (2019) studied the mutual influence of corporate reputation, brand equity, and customer purchasing behavior of pharmaceutical companies. The results of the study showed that the corporate reputation of pharmaceutical companies affects brand equity, and that the corporate reputation and brand equity of pharmaceutical companies partially affect customer purchasing behavior. When divided into pharmacists and consumers, the impact of corporate reputation on brand equity and the impact of the corporate reputation and brand equity of pharmaceutical companies on customer purchasing behavior were different (Kim, 2019). Kim and Lim (2019) studied the impact of brand quality and brand CSR (social responsibility activities) perceived by general consumers of pharmaceutical companies on purchase intention. It was confirmed that brand quality and brand CSR affect brand purchase intention, and that perceived quality has a greater effect (Kim & Lim, 2019). Ion et al. (2020) studied the impact of pharmaceutical company

corporate reputation on drug prescriptions in Romania. Among the related prior studies, it is the only one that targeted prescription drugs and used prescribers as the research subjects. It confirmed the extent to which the reputation of pharmaceutical companies affects general practitioners' intention to prescribe drugs. The results showed that the reputation of pharmaceutical companies had a positive effect on the intention to prescribe (Ion et al., 2020).

Table 2: Previous studies on the impact of corporate brand image on purchases

Researcher	Research Contents	Research Subjects	Independent Variables	Dependent Variables
Kim (2019)	The impact of a pharmaceutical company's corporate reputation on brand equity and customer purchasing behavior	Pharmacist, general pharmaceutical consumer	Corporate reputation, Brand equity	Customer purchasing behavior
Kim & Yim (2019)	The impact of brand quality and CSR perceived by consumers of pharmaceutical companies on purchase intention	Domestic general consumers	Brand quality, brand CSR	Purchase intention
Ion et al. (2020)	The impact of pharmaceutical company reputation on general practitioners' drug prescribing in Romania	Doctors	Pharmaceutical company reputation (Communication, Socially responsible behavior, Ethical behavior, Image of medical representatives)	Prescribing intention

2.3. The Impact of Marketing and Other Activities on Customer Purchases

Lee (2007) conducted a study on the marketing strategies of domestic pharmaceutical companies. He investigated the impact of domestic pharmaceutical companies' marketing and promotion activities in the hospital market on doctors and evaluated the factors affecting prescriptions. As a result, it was found that pharmaceutical companies' marketing needs to strengthen salespeople, detailing and non-detailing, and e-detailing promotions to increase doctors' product awareness and pharmaceutical company recognition, and that premarketing significantly affected product awareness depending on the doctor's place of work (Lee, 2007).

Jung (2012) analyzed the impact on pharmaceutical market share in the generic drug market where patents were lifted. The main variables were the number of

competing products, entry order, entry time difference, and sales of competing companies and analyzed them in conjunction with patent strategy variables. As a result, the number of competing products, entry order, and sales of competing companies were all significant, and in particular, sales of competing companies were the most important variable (Jung, 2012).

Park (2011) analyzed how the sources of information on medicines and promotional activities used by doctors affect doctors' prescription criteria and whether this leads to different results depending on the type of doctor. The results of the study showed that since doctors prescribe medicines based on their experience, marketing effects are relatively low. In addition, since pharmaceutical quality is important in prescribing medicines, it is difficult for pharmaceutical companies with poor product quality to influence prescriptions no matter what marketing activities they do. Finally, the awareness of pharmaceutical brands or pharmaceutical companies is a segment where pharmaceutical companies can expect the greatest effect of marketing activities, and salaried doctors tend to prefer marketing to pharmaceutical information support compared to private practitioners (Park, 2011).

Park and Kim (2018) showed that due to the drug price system that changed to the same price, low price was no longer a major factor in selecting medicines if the quality was the same. It was confirmed that the tendency to prefer domestic pharmaceutical companies and the relationship between doctors and pharmaceutical companies are important factors in choosing medicines for practicing doctors (Park & Kim, 2018).

Ion (2013) calculated the ranking of 29 marketing factors recognized as important in the Swiss pharmaceutical market. They ranked 17 related marketing factors that affect doctors' drug prescribing behavior. It was found that the drug efficacy, drug price, availability, company image, and frequent visits by the person in charge influenced the choice of medicines in order of doctors' prescriptions (Ion, 2013).

Ankush and Kapur (2017) confirmed the effect of pharmaceutical marketing activities on doctors' prescriptions based on the responses of 470 practicing doctors in India. This study was conducted by setting new drug ingredients, brands, promotions, and drug sampling as factors affecting doctors' prescriptions. The results of the study showed that drug sampling, new drug ingredients, and promotions had a positive effect on doctors' prescriptions, but brands had no effect. However, this result may be due to the difference that branded drugs are much more expensive than generic products (Ankush & Kapur, 2017).

Table 3: Previous studies on the impact of marketing, etc. on customers' purchasing intentions

Researcher	Research Contents	Research Subjects	Independent Variables	Dependent Variables
Lee (2007)	A study on the marketing strategies of domestic pharmaceutical companies	Doctor	Pre-marketing, Promotion	Product awareness, Corporate awareness
Jung (2012)	The impact of variables related to patent strategy on market share	558 domestic pharmaceutical products	Competitors' sales, number of competing products, entry order, entry time difference, patent expiration date, patent dispute	Pharmaceutical market size
Park (2011)	The Impact of Pharmaceutical Company Promotional Strategies on Prescriptions	Doctor	Information Sources, Promotional Activities, Types of Doctors	Prescribing Criteria
Park & Kim (2018)	Drug selection factors, awareness of price reduction policies	Focus group (general practitioners, hospital doctors, pharmacists, pharmaceutical companies, health policy experts)	Qualitative research	Qualitative research
Ion(2013)	Identifying relevant marketing factors in the Swiss pharmaceutical market	Focus group (Swiss medical professionals)	Qualitative research	Qualitative research
Ankush & Kapur (2017)	The Impact of Pharmaceutical Marketing on Physician Prescribing in the Indian Market	Doctor	New Drug Ingredients, Brands, Promotion, Sampling	Doctors' Prescribing

2.4. Differences from Previous Studies

The significance of this study can be found through the differences between the numerous previous studies examined above and this study. First, this is a study on the corporate brand image of pharmaceutical companies and the prescription intentions of doctors. This study was conducted only on pharmaceutical companies, not general companies, and the subjects of the study were limited to doctors who are prescribers of drugs, not general consumers. Second, the subjects of the study were limited to clinic doctors, not all doctors. Most clinic doctors, whether they are private practitioners or salaried doctors, have the prescribing authority themselves, so they can prescribe without restrictions according to their choice. Third, the target drugs for prescriptions were limited to outpatient drugs. Unlike outpatient drugs, inpatient drugs

are sold by a limited number of pharmaceutical companies, and the price factor of inpatient drugs has a large impact on purchase and prescription. Therefore, the outpatient drug market, where various pharmaceutical companies compete with the same ingredients and the policy of the government sets similar drug prices, is suitable for this study. Fourth, among outpatient drugs, generic drugs were targeted. The preference for original drugs was excluded, and the generic market, where many pharmaceutical companies compete with drugs with the same ingredients, was targeted.

3. Research Method

3.1. Research Model and Hypothesis

This study aims to study the factors affecting the corporate brand image of pharmaceutical companies and the relationship between the corporate brand image of pharmaceutical companies and the influence of the corporate brand image of pharmaceutical companies on doctors' intention to prescribe. Referring to the study of Ion et al. (2020), the brand image of pharmaceutical companies is composed of communication with customers, social responsibility, ethical behavior, and MR image, and the difference in the influence of each variable on doctors' intention to prescribe is examined.

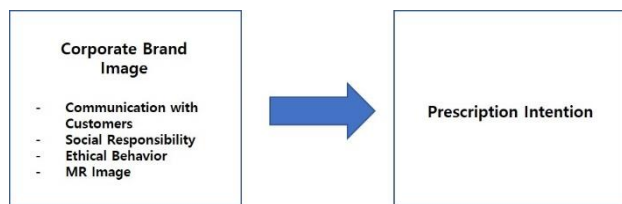


Figure 1: Research model

The following hypotheses were established regarding the relationship between the corporate brand image of pharmaceutical companies and their intention to prescribe.

H1: Communication with customers will have a significant effect on intention to prescribe.

H2: Social responsibility will have a significant effect on intention to prescribe.

H3: Ethical behavior will have a significant effect on intention to prescribe.

H4: The image of MR will have a significant effect on intention to prescribe.

3.2. Description of Variables

The pharmaceutical industry has historically relied heavily on communication with customers. The quality of pharmaceutical-related information provided by pharmaceutical companies to customers, the company's promotional activities, and its reputation related to pharmaceuticals affect its corporate image (Karayanni & Georgi, 2012). For example, pharmaceutical companies create their own official online channels and deliver product information, internal news, and content through blogs. In addition, each pharmaceutical company strives to deliver high-quality product information to specific customers, such as doctors, through academic events and symposiums.

Kotler (2002) defined corporate social responsibility (CSR) as 'a promise to improve the welfare of local communities through a company's business activities and contribution of resources.' Consumers show favorable attitudes toward companies with good images and negative attitudes toward companies with bad images. Consumer attitudes do not end with a simple image, but become intangible assets that affect sales in the short term and corporate growth in the long term (Lee, 2002). Corporate social responsibility consists of six dimensions: environmental, social, economic, stakeholder, and voluntary (Dahlsrud, 2008).

In corporate management, ethical behavior refers to the recognition of a company's basic obligation to comply with not only its original legal responsibilities but also the ethical responsibilities expected by society in conducting business activities. It also means that a company is transparent, fair, and reasonable. In the past, corporate ethical behavior was a concept included in corporate social responsibility, but recently it has been emphasized as a separate concept. In particular, this study intends to deal with it separately, reflecting the situation in which the pharmaceutical industry emphasizes ethical management for reasons such as the eradication of rebates. Activities such as reliable pharmaceutical production, corporate integrity management, and national health promotion by pharmaceutical companies affect the corporate image (Ion et al., 2020).

A pharmaceutical company representative whose job is to provide, collect, and deliver information related to the company's pharmaceuticals through interviews with medical professionals such as doctors and pharmacists is called an MR, or medical information representative. An MR works for a pharmaceutical company that manufactures or imports prescription drugs, and provides information on quality, efficacy, and safety related to drugs to medical professionals on behalf of the company for the purpose of appropriate use and distribution of drugs. The

MR interacts with medical professionals on behalf of the company, so the image of the MR directly affects the corporate image. It is said that when MR provides information related to medicine, when MR is trustworthy as an information provider, and when the relationship with MR is satisfactory, a positive image of MR is formed (Karayanni & Georgi, 2012).

For the analysis of this study, prescription intention was set as the dependent variable, and the independent variables were communication with customers, social responsibility, ethical behavior, and MR image. The independent variable of corporate brand image was configured by referring to the study of Ion et al (2020), but the questionnaire was simplified to make it easier for the survey subjects to understand.

In addition, this study differs from previous studies in that it is limited to clinic doctors and prescriptions of out-of-hospital generic drugs. Separately identifying the influence on clinic doctors' intention to prescribe out-of-hospital generic drugs can clearly show the results of the study.

4. Analysis Results

The hypothesis that the elements that constitute the brand image of a pharmaceutical company, such as communication with customers, corporate social responsibility, ethical corporate management, and MR image, will significantly affect the prescription intention (dependent variable) was verified. The four independent variables (communication with customers, social responsibility, ethical behavior, and MR image) were factor analyzed, factor scores were extracted, and then multiple regression analysis was performed.

The regression analysis results showed that the R value was 0.513, R square was 0.263, the standard error of the estimate was 0.812, and Durbin-Watson was 1.921. R square is a statistic that indicates how much the independent variable explains the dependent variable. Since it is 0.263 here, it can be said that this model explains about 26.3%. If the Durbin-Watson value is between 1 and 3, it can be said that there is no particular problem with the independence of the residuals. Since the above value is 1.921, it can be said that the independence of the residuals is satisfied.

The beta values of the standard coefficients are 0.342 for 'customer communication', 0.227 for 'social responsibility', 0.143 for 'ethical behavior', and 0.135 for 'MR image'. Since all beta values have positive values, it can be said that all independent variables have a positive (+) effect on 'prescription intention' (dependent variable). In terms of significance level, 'customer communication'

is significant at the 0.001 level, 'social responsibility' is significant at the 0.001 level, and 'ethical behavior' is significant at the 0.01 level. 'MR image' is significant at the 0.05 level, so all variables have significant values. Multicollinearity problems can be checked through the VIF value. If the VIF value is less than 10, it is said that there is no multicollinearity problem. In this model, the VIF value of 'communication with customers' is 1.027, 'social responsibility' is 1.042, 'ethical behavior' is 1.065, and 'MR image' is 1.075. Since the VIF values of all variables are very small, close to 1, there is no multicollinearity problem. In conclusion, Hypotheses 1, 2, 3, and 4 were all accepted.

Table 4: Regression analysis model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Significance Level	Collinearity Statistics	
	B	Standard Error	Beta			Tolerance	VIF
(Constant)	3.953	.049		80.87	.000		
Communication with Customers	.321	.050	.342	6.476	.000	.974	1.027
Social Responsibility	.213	.050	.227	4.260	.000	.960	1.042
Ethical Behavior	.134	.051	.143	2.654	.008	.939	1.065
MR Image	.127	.051	.135	2.497	.013	.930	1.075
Dependent variable: Prescription intention							

5. Conclusions

5.1. Summary of Research Results

In this study, we investigated the influence of the corporate brand image of pharmaceutical companies on doctors' prescriptions. We set the attributes of the corporate brand image as communication with customers, social responsibility, ethical behavior, and the image of salespeople, and confirmed the influence of the corporate brand image on prescriptions.

In addition, we conducted a survey targeting 286 clinic doctors and secured a valid and sufficient sample of 276. The results of the analysis are as follows.

First, 'communication with customers', which refers to the activities of pharmaceutical companies providing customers with high-quality information on

pharmaceuticals and enhancing the reputation of the company and its products through promotional activities, had a positive effect on prescription intentions. Second, 'social responsibility', which refers to the activities of pharmaceutical companies such as contributing to the local community, contributing to economic development, treating stakeholders, and making efforts to reduce environmental pollution, had a positive effect on prescription intentions. Third, 'ethical behavior', which helps produce reliable pharmaceuticals and promote national health, had a positive effect on prescription intentions. Fourth, 'MR image', which refers to the efforts of pharmaceutical company salespeople to faithfully provide information on their pharmaceuticals and form positive relationships, had a positive effect on prescription intentions.

When comparing the relative influence of each independent variable on clinic doctors' out-of-hospital generic prescriptions, communication with customers had the greatest influence, followed by social responsibility, ethical behavior, and MR images.

5.2. Research Implications

This study is significant in that it analyzed the influence of a pharmaceutical company's brand image on the prescription of generic drugs by outpatient doctors. There are many products competing in outpatient generic drugs, but there is little difference in drug price and ingredients. Within the limited marketing, the outpatient generic drug market is a market where corporate brand image has the greatest influence on prescription intention, but there has been no related research to date. This study can serve as a new and clear model for the corporate brand image that influences doctors' prescription intention.

The Korean pharmaceutical industry is expected to be a future growth industry, but regulations on pharmaceutical companies' marketing activities, such as the double penalty system for rebates and the anti-corruption law, are increasing in order to eradicate illegal activities such as rebates. Therefore, pharmaceutical companies must seek new sales strategies in response to the new regulations. In other words, pharmaceutical companies must devise new marketing strategies centered on corporate image rather than sales.

The practical implications of this study are as follows. First, it is an implication derived from the result that 'communication with customers' has a positive influence on prescription intention. Pharmaceutical companies need to provide quality information and conduct corporate promotional activities targeting customers. By fully utilizing the given marketing means to deliver product

information and actively advertising general drugs, they also have a positive effect on prescriptions for prescription drugs. Pharmaceutical companies need to develop methods to select and deliver quality information in order to efficiently promote products and companies.

Second, this is an implication derived from the result that 'social responsibility' has a positive effect on prescription intention. This study confirmed the effect of CSR activities and environmental protection activities as social responsibility on doctors' prescription intention. Recently, the Korean pharmaceutical and bio industries have emphasized ESG (Environment, Social, and Governance) management. This is a concept that emphasizes corporate social responsibility for sustainable development, and is consistent with the results of this study.

Third, this is an implication derived from the result that 'ethical behavior' has a positive effect on prescription intention. Pharmaceutical companies' prescription drugs directly affect the patient's body, so product reliability is important. In addition, the Korean pharmaceutical industry has recently suffered from issues such as rebates, and ethical values and ethical management are being emphasized. The Ministry of Food and Drug Safety of Korea has set GMP (Good Manufacturing Practice) standards for domestic pharmaceutical manufacturers, and pharmaceutical companies are gradually acquiring cGMP (USA) and EU GMP (Europe) or applying their standards.

Fourth, this is an implication derived from the result that 'MR's image' has a positive effect on prescription intention. Information delivery activities for prescription drugs targeting doctors are carried out through MR. Usually, pharmaceutical companies have adopted a motivational method that provides incentives to high-performing MRs. However, in the future, pharmaceutical companies need to provide MRs with education related to delivery of pharmaceutical information and develop and provide education programs to form smooth relationships with customers.

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