

Promotion and Market Share in the Proton Pump Inhibitor Market: A Case Study

Yite John Lu
Joel F. Farley
Richard A. Hansen

ABSTRACT. This case study of the proton pump inhibitor market examines prescription volume, promotional spending, and their interrelatedness between the years 2000 and 2004. Our results show that share of voice and share of market are strongly correlated (r^2 values from 0.79 to 0.91) and that the temporal relationship is clear: share of market follows share of voice. Exogenous market factors such as generic entry and over-the-counter entry disrupt the relationship between share of market and share of voice and influence the decision to advertise. For example, generic entry increased pantoprazole (Protonix[®]) advertising ($p < 0.05$) while over-the-counter availability decreased rabeprazole (Aciphex[®]) and pantoprazole advertising ($p < 0.01$ and $p < 0.05$, respectively). In comparing the different promotional media, direct-to-

Yite John Lu is a PharmD candidate and Joel F. Farley, PhD, and Richard A. Hansen, PhD, are assistant professors, all in the Division of Pharmaceutical Outcomes and Policy, School of Pharmacy, University of North Carolina at Chapel Hill.

Address correspondence to: Richard A. Hansen, PhD, Division of Pharmaceutical Outcomes and Policy, School of Pharmacy, University of North Carolina at Chapel Hill, Campus Box 7360, Chapel Hill, NC 27599 (E-mail: rahansen@unc.edu).

This work was supported by the American Foundation for Pharmaceutical Education New Investigators Program and the Pharmacy Foundation of North Carolina. Dr. Hansen is supported by grant K12 RR023248.

Journal of Pharmaceutical Marketing & Management, Vol. 17(3/4) 2006

Available online at <http://jpmm.haworthpress.com>

© 2006 by The Haworth Press, Inc. All rights reserved.

doi:10.1300/J058v17n03_04

39

000001

Exhibit 1095
IPR2017-00807
ARGENTUM

consumer advertising did not statistically significantly increase prescription volume, but physician-directed advertising was related to an additional 43,662 prescriptions for every 1% increase in share of voice ($p < 0.001$). For marketing managers, our study demonstrates the relationship between share of voice and share of market and sheds light on the relative effectiveness of advertising strategies in the proton pump inhibitor market. doi:10.1300/J058v17n03_04 [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <<http://www.HaworthPress.com>> © 2006 by The Haworth Press, Inc. All rights reserved.]

KEYWORDS. Advertising, promotional effectiveness, promotional spending, generic entry

INTRODUCTION

Pharmaceutical promotion has undergone considerable scrutiny as the cost of prescription medications continues to rise. The pharmaceutical industry spent \$30 billion on advertising and promotions in 2003, and that number remains on an upward trend (1). These promotional efforts have been shown to influence which medications physician prescribe and the way patients use medications (2, 3). Pharmaceutical promotion is especially important in oligopolistic markets, where only a few brands compete. When the difference in therapeutic efficacy between competing drugs is small in such markets, companies are able to use promotional efforts to push their brand. When a newcomer drug enters such an established drug market, it may be difficult for the marketing team to overcome the pioneer brand's hold of market share. To overcome this barrier to entry, companies often spend large amounts of money on promotion (4). However, it is difficult to know how to budget advertising expenditures and which promotional efforts are most effective.

Pharmaceutical promotion comes in several forms, such as physician visits (detailing), direct-to-consumer (DTC) advertising, drug sampling, and medical journal advertising. Detailing historically has received the largest share of any promotional budget. In a survey of 2,700 physicians, the Kaiser Family Foundation showed that three quarters of physicians rate information from pharmaceutical representatives as either "very" or "somewhat" useful (5). A literature review by Wazana

showed a number of interesting relationships between detailing and physician prescribing (6). Physician detailing was shown to cause greater prescribing of newer single-source medications and fewer generics, leading to greater medication costs. Furthermore, although detailing increased physicians' awareness of medications, it tended to cause physicians to prescribe nonrationally. A frequent component of detailing involves the provision of free prescription samples to physicians. In a study performed by Mizik and Jacobson, detailing and sampling were both shown to have a modest effect in increasing physician prescribing (7).

Despite evidence of effectiveness with physician-directed promotions, a recent study suggests that managers who continue to increase their sales force are experiencing diminished effectiveness with this approach (8). As an alternate venue of marketing efforts, DTC advertising has witnessed significant expansion during the past decade. To illustrate, spending on DTC advertisements increased from approximately \$800 million in 1996 to \$2.7 billion in 2001 (9). Although spending on DTC advertisements has grown over the past decade, DTC advertisements tend to be focused in a handful of disease areas. Studies which have investigated the effect of DTC advertising within these therapeutic markets have shown them effective at increasing prescription sales. In the non-sedating prescription antihistamine market, for example, DTC advertising has been shown to increase both brand share and category sales (10). The same study also concluded that DTC advertising had a positive synergistic effect with detailing, although the return on investment for DTC advertising was not as high as for detailing (10).

Another medium frequently used by pharmaceutical firms for advertising is professional journals. A study by PERQ/HCI Research concluded that journal ads provide positive return on investment, especially in conjunction with pharmaceutical detailing (11). Similarly, in the ROI Analysis of Pharmaceutical Promotion study, 391 different drugs' sales and marketing data were analyzed monthly from 1995 to 1999 (12). Regression analysis determined that the median (or average) return on investment (ROI) was \$1.72 for detailing, \$0.19 for DTC advertising, and \$5.00 for journal advertising. The authors concluded that DTC is overused and journal advertising is underused (12). Conversely, other studies have shown that journal advertising does not increase ROI, and when analyzed together with promotional efforts at meetings and events, journal advertising decreases the ROI of detailing and DTC (10). When looking at relative media value, which is defined as "the relative ability of the next exposure to communicate a message as part of a normal media

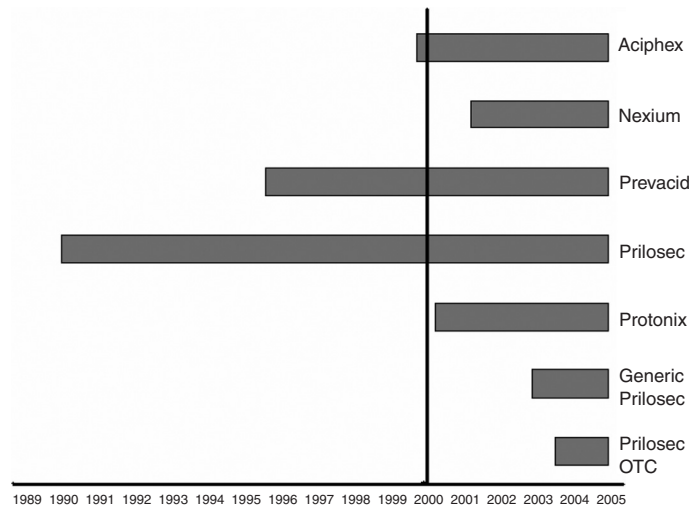
mix,” journal advertising seems to be less effective than DTC advertising and detailing (13).

In reviewing the literature, it seems apparent that each of the different types of promotional spending employed by pharmaceutical firms has a positive relationship with prescription sales. For most pharmaceutical markets, we believe that the amount of money spent on advertising by a drug manufacturer in relation to its competitors’ spending will influence its prescription market share. In this article, we use this concept to evaluate promotional spending in relation to prescription volume in the pharmaceutical market using a single drug class as a case study. We examine the impact of various forms of promotional spending using a share of voice (SOV) and share of market (SOM) approach. SOV is a term used to describe the fraction of promotional spending between competitors in the same therapeutic class. SOM, which is also known as share brand, describes the fraction of prescriptions written for one drug in relation to all prescriptions written in that therapeutic class.

Evaluation of SOV and SOM is based on the premise that competing products can affect market share through their promotional voice. This is especially important in an oligopolistic, highly competitive market because competitors will keep track of each others’ advertising and counter by changing their advertising budget (14). For example, if a competing company’s brand is the sole DTC advertiser for a given therapeutic market, then consumers are less likely to become aware of other firms’ products. Similarly, if a company has five salesmen for every competitor’s salesman, then physicians will have more exposure to the first company’s brand. Past studies which have looked into the relationship between SOV and SOM have shown a high correlation between the two (15). Authors have also concluded that gaining SOM requires a very high SOV and that losing SOV causes a decrease in SOM (15). Using SOM and SOV allows for managers to plan their current and future expenditures based on the market environment, not inwardly on revenue, expense, and profit values.

As a case study, we examine promotional spending and prescription volume data for the proton pump inhibitor (PPI) market (Figure 1), where the competing brands are believed to be similar in scientific efficacy (16). By looking at past trends (between the years 2000 and 2004), we test the correlation between SOV and SOM in the PPI market. Because promotion is not the only factor likely to influence prescription sales, we also investigate the role of other market variables that may have influenced advertising expenditures and prescription volume. The specific goals of this study are to determine the relationship between

FIGURE 1. Proton Pump Inhibitor Market Timeline.



SOM and SOV, to determine the influence of exogenous market factors on the decision to advertise, and to examine the relationship between advertising and prescription volume conditioned on the effect of these exogenous market factors.

METHODS

Data Sources

We studied the PPI market (rabeprazole, Aciphex[®], Eisai Inc.; esomeprazole, Nexium[®], AstraZeneca; lansoprazole, Prevacid[®], Tap Pharm; omeprazole, Prilosec[®], AstraZeneca; Prilosec OTC[®], AstraZeneca; pantoprazole, Protonix[®], Wyeth) by combining data representing US prescription volume, promotional spending, and drug approval dates. Estimates of PPI prescription volume (Uniform System of Classification class 23420) were obtained from IMS Health's National Prescription Audit Plus[™] (NPA Plus) for the time period spanning January 2000 through October 2004. The NPA Plus estimates the number of prescriptions dispensed nationally using data collected from 34,000 independent,

000005

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.