Analyzing the Effectiveness of Pharmaceutical Marketing Using Business Intelligence Methods

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ABSTRACT
Pharmaceutical companies have traditionally marketed their products through a combination of several channels: sales details to physicians, direct-to-consumer advertising, professional medical journal advertising, sponsorship of meetings and events and e-promotion. With an impending patent cliff and subsequent loss in revenue, the industry must depend on, among many factors, recently launched products to offset the revenue loss. Coupled with increased generic competition, companies must evaluate the return on investment of their marketing dollars. This paper analyzes the effectiveness of traditional marketing methods, both industry-wide and for recently launched products, using the latest Business Intelligent methods. The dataset used in this paper is a sample of prescription, promotional, competitive, and product data from SDI Health. The analysis in this paper reveals that traditional marketing methods have a decreasing level of impact with the number of prescriptions dispensed, and describes new potential channels for marketing, as well as collecting and analyzing data to aid the industry improve its resource utilization.

Keywords: Data Mining, Data Warehousing, Mobile Healthcare Applications, Pharmaceutical Marketing, Pharmaceutical Social Media, Prescriptions

INTRODUCTION
Entering the second decade of the 21st century, the United States pharmaceutical industry is undergoing a period of unprecedented change. Over the next 5 years, companies in this industry are projected to lose $16 billion dollars in revenue to generic competition (“The Patent Cliff”, 2011) and many companies have no impending replacements in their drug pipelines to offset this revenue loss. Making matters worse, the research, development and approval process of a prescription drug can span 15 years; and therefore, pharmaceutical manufacturers must rely on existing branded products to replace this lost revenue. However, in 2010, 72% of all prescriptions dispensed through a retail pharmacy were generic (SDI Health, 2011). With so much generic competition, manufacturers must re-visit their business models of developing and marketing drugs in order to stay competitive in this new space. More specifically, companies must re-evaluate their marketing mix and determine if traditional methods of marketing drugs...
(including sales reps and direct-to-consumer advertising) are still effective in today’s market. This paper applies Business intelligence methods, including data warehousing and data mining, to analyze this question.

Business intelligence can be defined as the knowledge and value created in an organization by the use of tools and techniques to analyze data and make better decisions faster. It is with the emergence of structured and robust conversion of tacit knowledge to explicit knowledge (Herschel, Nemati, & Steiger, 2001), as well as knowledge warehousing concepts and research (Namati, Steiger, Iyer, & Herschel, 2002), the growth of successful business intelligence applications have accelerated in recent years.

Using comprehensive data collected in the pharmaceutical industry including prescription, promotional, competitive, product, and cost data, this paper shows how traditional marketing is becoming less effective when measuring the number of prescriptions dispensed relative to specific marketing techniques. Furthermore, evidence provided in this paper will reveal an even more alarming trend: products which launched within the past five years have a lower correlation with traditional marketing methods than those that have been on the market for a longer period of time. This suggests that pharmaceutical manufacturers should focus their budgets away from traditional marketing models and look for other opportunities to engage with patients and healthcare providers. This paper will examine several of these opportunities, including social media and mobile healthcare applications.

This paper is organized as follows. The next section examines the history of the pharmaceutical industry, showing the evolution of today’s multi-billion dollar industry in the context of both internal (marketing and research & development) and external (regulatory and managed care) factors. Then, it examines the outlook for the future and explores why manufacturers must move beyond what has worked historically to effectively compete in today’s market. The data collection, methodology and results from data mining are then discussed. Finally, this paper analyzes the results, speaks to their implications for pharmaceutical manufacturers and potential future studies.

HISTORY OF DEVELOPMENT AND MARKETING IN THE PHARMACEUTICAL INDUSTRY

Today’s drug development model had its origins in the mid 20th century, after the discovery of life-saving medicines like penicillin and insulin. The onset of World War II encouraged U.S. and European pharmaceutical companies to invest their research and development dollars in drug categories such as analgesics and antibiotics. Pharmaceutical manufacturers at this time had full support of the government, who even sponsored many R&D efforts and provided funding for mass production of these new therapies (Walsh, 2010).

From a marketing standpoint, medicines were advertised through two channels in the years prior to World War II. The first channel was print advertisements targeting physicians in professional medical publications and the second channel targeted consumers directly (known as DTC advertising). However, resistance from the public soon pressured the industry to cease DTC advertising shortly thereafter. Then, a new marketing channel emerged when federal regulations began requiring prescriptions for certain classes of drugs and pharmaceutical companies began promoting their products directly to doctors; the cornerstone of pharmaceutical marketing, the pharmaceutical sales representative was born (Johnmar, 2006). Known as “detailing,” these sales calls to physicians complimented advertising in professional medical journals. These two channels remained the primary methods of pharmaceutical marketing for the majority of the 20th century (Donohue & Berndt, 2004). These tactics were met with criticism from outside the industry, who maintained that pharmaceutical manufacturers were downplaying side effects and directly controlling physicians’ prescribing behavior (Johnmar, 2006).
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