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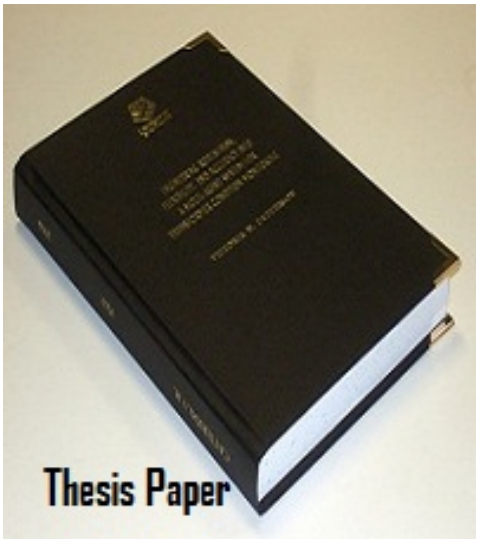
Essays on Evaluation of Sales and Marketing Strategy: A Perspective from Pharmaceutical Industry in Thailand, a Survey



A Thesis Presented to the Faculty of IICSE University …a liberal arts education.

In Partial Fulfillment of the Requirements of the Degree of PhD in Management

By:

Kitcha Ing-udomnoogoon,
February 2019

ABC Research Alert, Vol 7, No 1 (2019)
ISSN 2413-5224

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CERTIFICATION OF APPROVAL

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by

Dr. Robert Cyril

Acknowledgements

Firstly, I would like to express my sincere gratitude to my advisor Dr. Robert Cyril for the continuous support of my Ph.D. study and related research, for his patience, motivation, and immense knowledge. His guidance helped me in all the time of research and writing of this thesis. I could not have imagined having a better advisor and mentor for my Ph.D. study.

I would also like to thank Academic Office team of IICSE University who has been always responsive whenever I ran into a trouble or had a question about my study and research thesis.

My sincere thanks also go to IMS Health business excellence and consulting team, who provided me an opportunity to join their team as intern, and who gave access to the laboratory and research facilities. Without they precious support it would not be possible to conduct this research.

Finally, I must express my very profound gratitude to my parents and to my partner for providing me with unfailing support and continuous encouragement throughout my time of study and through the process of researching and writing this thesis. This accomplishment would not have been possible without them. Thank you.

Author

Kitcha Ing-udomnoogoon

TABLE OF CONTENTS

PAGE

LIST OF FIGURES

FIGURE PAGE

ABSTRACT

This thesis was conducted during the author's final year of a three-year PhD program at the IICSE University, USA. The research has its focus on the constant need for new, innovative ways for marketers in pharmaceutical industry in Thailand to reach target physicians (customers) and also adapt to marketing changes. To be able to detect what changes need to occur in the industry, we need to understand the impact that medical representatives (or pharmaceutical representatives) have on the prescription-writing habits of doctors, and competitive landscape in terms of sales and marketing performance of different players in the domain.

Physicians are solely responsible in the prescription of pharmaceuticals elsewhere in this world, including in Thailand. The medical representatives are responsible for detailing physicians and other healthcare professionals the information on medical products, so that patients can get the best medicine for their disease treatment. Both physicians and medical representatives can have a large effect on the perception of a certain pharmaceutical from a certain company. Physicians also need to be educated by medical representative, and medical representatives must find the best approach to selling their medical products based on the needs of the physician’s patients.

Different companies have drugs that have very different molecular compositions or classification that treat same diseases. Usually one expensive original drug can be prescribed for a single disease, so it is important for medical representatives to point out how their medicine will best treat a certain disease in a certain type of person. This in turn requires asking some questions on how the medical representative can achieve their selling goals.

What selling method makes one drug more desirable over the other? Do physicians respond better to a friendlier, more relational and educated sales representative? What kind of marketing methods are the most effective or preferable by physicians? How do physicians perceive the different ways of selling? This research was conducted by looking into the selling techniques and marketing strategies used by pharmaceutical companies and medical representatives in Thailand. This should help to distinguish the best sales and marketing methods for pharmaceutical companies and medical representatives, especially in today's industry.

CHAPTER I

INTRODUCTION TO THE STUDY

The introduction chapter starts off with informing the reader about the background of pharmaceutical industry operating environment followed by a problem discussion where the researchers problematize the research area. Lastly, the chapter ends with the author's stating the purpose of the study.

1.1 Background

Pharmaceutical marketing, sometimes called medico-marketing or pharma marketing in some countries, is the business of strategic sales and advertising or otherwise promoting the sale of pharmaceuticals or drugs.

Many countries have measures in place to limit advertising by pharmaceutical companies.

Pharmaceutical company spending on marketing far exceeds that spent on research and development (R&D) investment. In Canada, $1.7 billion was spent in 1004 to market drugs to physicians; in the United States, $21 billion was spent in 2002. In 2005 money spent on pharmaceutical marketing in the US was estimated at $29.9 billion with one estimate as high as $57 billion. In Thailand, it was estimated that $46 million was spent by both multinational and local pharmaceutical companies in sales and marketing activities in 2010. When the US numbers are broken down, 56% was free samples, 25% was pharmaceutical sales representative "detailing" (promoting drugs directly to) physicians, 12.5% was direct to user advertising, 4% on detailing to hospitals, and 2% on journal ads. There is some evidence that marketing practices can negatively affect both patients and the health care profession.

The marketing of medication has a long history. The sale of miracle cures, many with little real potency, has always been common. Marketing of legitimate non-prescription medications, such as pain relievers or allergy medicine, has also long been practiced, although, until recently, mass marketing of prescription medications has been rare. It was long believed that since physicians made the selection of drugs, mass marketing was a waste of resources; specific ads targeting the medical profession were thought to be cheaper and just as effective. This would involve ads in professional journals and visits by medical sales staff to physician's offices and hospitals. An important part of these efforts was marketing to medical students.

Marketing to health care providers takes many forms: such as gifting, activity by pharmaceutical medical representatives, provision of drug samples, and sponsoring continuing medical education (CME), etc. E-detailing (electronic detailing) is widely used to reach "no see physicians", particularly those live and work in remote areas; approximately 23% of primary care physicians and 28% of specialists prefer computer-based e-detailing, according to survey findings reported in the April 25, 2011, edition of American Medical News (AMNews), published by the American Medical Association (AMA).

The Pharmaceutical Research and Manufacturers of America (PhRMA) released updates to its voluntary Code on Interactions with Healthcare Professionals on July 10, 2008. The new guidelines were effective in January 2009."

In addition to prohibiting small gifts and reminder items such as pens, notepads, staplers, clipboards, pill boxes, etc., the revised Code:

1. Prohibits company medical representatives from providing restaurant meals to healthcare professionals, but allows them to provide occasional meals in healthcare professionals' offices in conjunction with informational presentations"

2. Includes new provisions requiring companies to ensure their representatives are sufficiently trained about applicable laws, regulations, and industry codes of practice and ethics.

3. Provides that each company will state its intentions to abide by the Code and that company CEOs and compliance officers will certify each year that they have processes in place to comply.

4. Includes more detailed standards regarding the independence of continuing medical education.

5. Provides additional guidance and restrictions for speaking and consulting arrangements with healthcare professionals.

However, the Good Works Health government-approved platform offers physicians and other health care professionals the opportunity to direct donations to charities of their choice in exchange for participation in pharmaceutical promotional/educational programs.

In Thailand, all pharmaceutical companies extensively invest on sales and marketing initiatives following the nature of this local pharmaceutical market, defined as highly promotion sensitive market among healthcare professionals. The basic commercial believe is that, the more a company spends to the right target group of healthcare professionals, the higher return on drug prescriptions and so revenue sales to the company.

1.2 Statement of The Problem

With increasing pressure from national cost containment policies to maintain healthcare expenditure in many countries, as well as growing intensified competitions among players in pharmaceutical industries worldwide; most multinational and local pharmaceutical companies are struggled to expand their market revenue shares as opposed to investor's expectations. While extensive commercial excellence strategies have been heavily implemented to grow topline business performance, most pharmaceutical companies are rethinking on their investment portfolio trying to optimize their spending on sales and marketing activities ensuring commercial effectiveness and highest return on investment (ROI). The ultimate business expectation is in fact to maximize total net profit.

With intensified competitive market environment in pharmaceutical industry worldwide, public pressure on cost containment, and challenges in new drug launches; many pharmaceutical companies simply cut their investment spending on sales and marketing initiatives which results in poor commercial performance in the end. How to define and implement effective commercial excellence investment is the biggest challenge of most pharmaceutical companies around the world, including Thailand.

1.3 Purpose of the Study

The primary purpose of this study is to identify areas of high impacts on physicians' preference on sales and marketing activities by assessing how promotional tools influence physicians' prescription patterns and behaviors, using Thailand as case example. In addition, it is important to evaluate competitive landscape in terms of sales and marketing performance of different

pharmaceutical companies as perceived by physicians (customers), measured by mean of their appreciations.

Marketing tools are considered to be key determinants in influencing a physician's choice for a specific pharmaceutical brand. Reported that physicians' decisions regarding the use of a specific drug could be influenced by the distribution of free drug samples by medical representatives or during conferences sponsored by companies. However, the study failed to elaborate on how demographic factors such as gender, age, and area of medical specialization by physicians influence their choice for a specific drug. Instead, the authors only used demographic factors to present sampling strategies and descriptive statistics of the participants that took part in the research.

CHAPTER II

LITERATURE REVIEW

From an academic perspective this literature review is relevant in providing a more holistic insight in the field of pharmaceutical marketing and its possible effects. In current research controversy exists about the influence of pharmaceutical marketing on physician prescribing behavior. Some studies suggest positive effects, whereas other studies suggest negative effects (Kremer, Bijmolt, Leeflang, & Wieringa, 2008). Relatively little information and data is to be found on pharmaceutical marketing in Thailand.

From a managerial perspective, conclusions of this research can be used for further analysis regarding the influence of pharmaceutical marketing on physician prescribing behavior. Multinational pharmaceutical companies that deal with the challenges of expanding to Thailand will need to know how to cope with their marketing strategies. The differences between countries are very relevant in choosing the pharmaceutical marketing strategy for the company. The benefits of a good marketing strategy can have major influences on profits and market share. This is well known to be very important for the existence of a company. In addition, conclusions about the effects of pharmaceutical marketing can have a significant impact on public policy makers' concerning welfare effects and can eventually facilitate appropriate regulations. (De Laat, 2002) (Windmeijer, de Laat, Douven, & Mot, 2005)

Physician prescribing behavior is a very broad concept including various dimensions. In order to answer the question what pharmaceutical marketing is; a clear definition of the concept is highly relevant. In this research the American definition of pharmaceutical marketing is relied on. According to the Prescription Drug Marketing Act (PDMA), a law of the United States federal government, "pharmaceutical marketing is the business of advertising or otherwise promoting the sale of pharmaceuticals or drugs" (U.S. Department of Health and Human Services, 2006).

According to Smith (1991) the main goal of pharmaceutical marketing is pharmaceutical care, care that is required for patients and consumers and declares safe and rational drug usage (Issets, Schondelmeyer, Heaton, Wadd, Hardie, & Artz, 2006). This involves providing solutions for diseases and sickness in order to improve overall health and public's knowledge of health (Sheehan, 2007).

Moreover, marketing practices are also aimed at increasing sales and profits for manufacturers and wholesalers (Rubin, 2004). Via marketing efforts directed at consumers, the pharmaceutical industry aims at expanding the market and influencing market share (Bala & Bhardwaj, 2010). Other key goals of marketing are the exchange of information and matching as closely as possible the marketing mix of their companies to the needs of their physicians and patients (Smith, 1991). The exchange function of pharmaceutical marketing entails the exchange of information, products, use right and payment at every stage of the supply chain as well as upwards (towards the manufacturer/wholesaler) as downwards (towards the physicians) (Smith, 1991). The exchange of information is part of a larger goal of pharmaceutical marketing, communication. Through marketing efforts, it becomes possible for pharmaceutical drug manufacturers and drug wholesalers to communicate new developments in pharmaceuticals and drugs, and to promote their products to physicians and patients. The content of the information notifies physicians and patients about the efficacy and the characteristics of a drug, which eliminates any uncertainty and initiates the process of diffusion and early adoption of the new drug (Manchanda, Phil, & Honka, 2005). With promotion through advertising one can increase brand awareness, this way drug manufacturers can be competitive with other pharmaceutical manufacturers in the pharmaceutical industry. Whether the pharmaceutical promotional expenditures are effective and accomplish its

goals depends on a wide range of variables and appears to be heterogeneous (Singh & Smith, 2005).

Beliefs about marketing efforts in the pharmaceutical industry are extremely at odds. However, an undeniable fact is that marketing efforts do have a significant impact on physicians' decision to adopt (Van den Bulte & Lilien, 2001) (Narayanan, Manchanda, & Chintagunta, 2005) and can initiate the process of diffusion (Hahn, Park, Krishnamurthi, & Zoltners, 1994). This thesis considers informative and persuasive effects and elaborates on the effects of Direct to Physician marketing.

In the early stages of the product life cycle marketing functions more as an informative instrument, later this function becomes more persuasive (Osinga, Leeflang, & Wieringa, 2010) (Gonül, Carter, Petrova, & Srinivasan, 2001). The informative effect implies that marketing serves as a communication channel, which educates physicians and exposes consumers to information that may improve their health outcomes and medical options. (Rubin, 2003) (Rosenthal, Berndt, Donohue, Frank, & Epstein, 2002). The persuasive effect eventually will lead to overuse, misuse and wrong prescription of drugs (Chetley, 1995). It will put extra pressure on physicians to prescribe onerous expensive drugs even when a cheaper generic drug would be appropriate (Windmeijer, de Laat, Douven, & Mot, 2005). These findings are in accordance with the findings in former research by Caves & Hurwitz (1988) and Rizzo (1999).

Physician prescription behavior is affected by pharmaceutical marketing in a significant, positive way (Manchanda, Phil, & Honka, 2005) (Nair, Manchanda, & Bhatia, 2009). Marketing efforts create awareness among physicians about new drugs and their specifics (Gonül, Carter, Petrova, & Srinivasan, 2001). Due to the promotional activities directed at physicians, physicians learn and

experience the effectiveness of the new drugs more rapidly when exposed to marketing communication (Narayanan, Manchanda, & Chintagunta, 2005).

Pharmaceutical marketing can have direct effects and indirect effects. Direct effects, also called reminder effects are effects that directly influence physician adoption of drugs, here goodwill, achieved by constant interaction between pharmaceutical representatives and physicians, influences the preferences for certain drugs and products (Narayanan, Manchanda, & Chintagunta, 2005). The direct effects positively influence physicians' probability to prescribe (Manchanda, Phil, & Honka, 2005). Indirect effects can be explained as effects that indirectly affect physician adoption. Important is the perceived product quality, marketing communication makes it possible for consumers to change attitudes and reduce uncertainty about the exact quality of a new drug through a process of learning (Narayanan, Manchanda, & Chintagunta, 2005).

Another important influence that direct to physician marketing practices on the adoption of new drugs is social contagion. That is, physicians are influenced by exposure to other physicians' attitudes, knowledge, or behavior when deciding to adopt a drug (Van den Bulte & Lilien, 2001). When a physician makes a decision to adopt he/she influences other physicians near him/her (Berndt, Pindyck, & Azoulay, 2003).

A study by Osinga, Leeflang, & Wieringa (2010) suggests that marketing effects are largest in size in the period right after the introduction of a brand or a new drug and that the marketing efforts directed at physicians become less effective at a later stage in the product life cycle. This can be explained by the fact that most information is dispersed in the early stages in the product life cycle of a new drug (Manchanda, Phil, & Honka, 2005). In addition, a study by Gonül, Carter, Petrova,

& Srinivasan (2001) suggests that up to a certain point marketing communication directed at physicians positively affects the prescription probability of a drug, when passing that point excessive marketing efforts generate adverse effects.

According to several studies (Manchanda, Phil, & Honka, 2005) (Nair, Manchanda, & Bhatia, 2009) physician prescribing behavior is affected by pharmaceutical marketing directed at physicians in a significant, positive way. This is because marketing efforts make physicians aware of new drugs and their specifics. However, this positive effect occurs up to a certain point, after which the effects of marketing efforts generate adverse effects (Gonül, Carter, Petrova, & Srinivasan, 2001).

CHAPTER III

THEORETICAL FRAMEWORK

The theoretical knowledge is presented in this chapter. The main objective is to present general sales and marketing theories in pharmaceutical industry as framework for further analysis. Finally, theoretical framework and research hypotheses are developed at the end of this chapter.

3.1 Overview on pharmaceutical marketing

The global pharmaceutical industry is one of the most important driving forces of, and dominant players in the global modern economy, securing approximately one trillion US dollars in revenues every year. According to the International Trade Administration (2016), in the past decade, the pharmaceutical market has consolidated its position as one of the fastest growing markets in the world, with the US, China, and Japan ranked as the first, second, and third largest pharmaceutical markets in the world, respectively. However, as noted by competition in this large pharmaceutical market is intense. Therefore, most pharmaceutical companies spend more than one-third of their sales revenues on marketing, which is approximately double the amount they spend on research and development, in an attempt to retain and maximize their market share. Pharmaceutical marketing is unique and diverse compared to other forms of general marketing, since the focus is on the physicians as opposed to the patients. Market strategies in non-pharmaceutical sectors are easier to study and understand, as it is the clients who decide on the product they wish to purchase. The pharmaceutical industry, however, is faced with a complex situation in which the customer is not the client. Physicians, therefore, are the chief players in pharmaceutical marketing since they specify the prescriptions to be used by the patients. As a result, pharmaceutical organizations

understand that it is crucial to influence the prescription behavior of physicians by utilizing different types of promotional tools, such as sales promotion, public relations, direct marketing, personal selling, and advertising. Although there are several information resources available to physicians, growing evidence from the literature indicates that pharmaceutical companies often attempt to influence the information that reaches physicians. For instance, many researchers believe that promotions to physicians by pharmaceutical companies have a direct influence on drug choices and prescriptions issued for a particular drug. Hence, physicians do not seem to widely use alternative information resources such as medical journals and formularies. Instead, information is mainly obtained from promotional packages, company medical representatives, and sponsored workshops. This trend has been observed to be particularly true in less developed and developing countries including Thailand, where representatives from pharmaceutical companies are the only source of information on the latest developments in medication and therapeutics. It is also believed that most promotional activities undertaken by pharmaceutical corporations are crucial sources of information for care providers. As a result, the availability of regular and up-to-date information has enormous educational value for physicians in ensuring that optimal care is delivered.

Since the main customers of pharmaceutical industries are physicians and other medical practitioners, these care providers are perceived by pharmaceutical companies as the ultimate decision makers regarding which drugs should be prescribed to patients. Pharmaceutical companies have, therefore, used different marketing tools to draw physicians' attention to pharmaceutical products and influence the decisions made regarding adopting and using these products. Some of the traditional marketing tools that pharmaceutical companies have used include

product promotions, price, differentiation, and other incentives. Some of the promotional techniques that pharmaceutical companies have used to maximize their profit margins are informed by two factors: the need to promote specific drugs; and the need to enhance company reputation through stronger relations with physicians. However, a pharmaceutical company that improves its reputation is likely to sell more drugs, while a company that enhances the sale of specific drugs will also have improved chances of acquiring a positive reputation. As an effective way of promoting specific drugs, companies use drug advertisements mainly in formularies and medical journals. Other promotional tools used include presentation on new drugs at workshops and conferences, sending direct mails to physicians, extensive product detailing by medical representatives, and giving physicians free samples to distribute to patients. One of the common approaches is the use of medical representatives, with the largest portion of the pharmaceutical budget for drug promotions being spent on this. In part, medical representatives give detailed information about the new medications to care providers and also act as a support team in answering their queries. Besides the information provided orally by the medical representatives, they also give expensive gifts, such as buying dinners or lunches when they visit, or even more exclusive and lucrative gifts, such as event tickets, electronic devices, sponsored travel, meals and vacations for families, educational seminars, honorariums to promote the product at events, and funding for research projects. Compared to investment in research and development, pharmaceutical companies place a high value on product promotion and marketing techniques. In most cases, these companies spend a large proportion of their resources targeting physicians to increase their market share and profitability. These elevated costs for marketing are ascribed to the fact that most companies are not quite sure of the marketing technique that works best for them, therefore employing several methods, some of which are ineffective though costly

In Thailand, pharmaceutical companies have been investing in numerous promotional tools to raise their market share and make more profits. As a result, most of these companies allocate large budgets for the various promotion tools as they seek to gain popularity and expand their market base. Although in a different context, most pharmaceutical companies appear to be employing many different marketing strategies that leave them open to various risks, including inadvertently raising the profile of the competition, missed opportunities, failing to clearly understand the target market, and wasting valuable time and resources. Clearly, investing in a variety of marketing and promotional tools, some of which are ineffective, increases the costs borne by the company and reduces profitability.

3.2 Pharmaceutical marketing process and its challenges

While many pharmaceutical companies have successfully deployed a plethora of strategies to target the various customer types, recent business and customer trends are creating new challenges and opportunities for increasing profitability. In the pharmaceutical and healthcare industries, a complex web of decision-makers determines the nature of the transaction (prescription) for which direct customers (physicians) of pharmaceutical industry is responsible. Essentially, the end-users (patients) consume a product and pays the cost.

Use of medical representatives for marketing products to physicians and to exert some influence over others in the hierarchy of decision makers has been a time-tested tradition. Typically, sales force expense comprises an estimated 15 percent to 20 percent of annual product revenues, the

largest line item on the balance sheet. Despite this other expense, the industry is still plagued with some very serious strategic and operational level issues.

From organizational perspective the most prominent performance related issues are:

1. Increased competition and unethical practices adopted by some of the propaganda base companies.
2. Low level of customer knowledge (physicians, retailers, wholesalers).
3. Poor customer (both external & internal) acquisition, development and retention strategies.
4. Varying customer perception.
5. The number and the quality of medical representatives.
6. Very high territory development costs.
7. High training and re-training costs of sales personnel.
8. Very high attrition rate of the sales personnel.
9. Busy physicians giving less time for sales calls.
10. Poor territory knowledge in terms of business value at medical representative level.
11. Unclear value of prescription from each physician in the list of each sales person.
12. Unknown value of revenue from each retailer in the territory.
13. Absence of ideal mechanism of sales forecasting from field sales level, leading to huge deviations.
14. Absence of analysis on the amount of time invested on profitable and not-so-profitable customers and lack of time-share planning towards developing customer base for future and un-tapped markets.

Major challenges in pharmaceutical marketing process can be summarized as follow:

Patents

Patents are a vital aspect of the global pharmaceutical industry. Patent protection is essential to spur basic R&D and make it commercially viable. But only the developed nations endorse product patents. Most third world countries (including Thailand, unfortunately) have patent laws but enforcement is totally lax.

New Drug Approval (NDA)

Prior to launching its products in any country, a pharmaceutical company undertakes patent registration to protect its own interests. To protect the interests of the consumers, it is necessary that the product be approved by the drug authorities in that country. Mostly the process for seeking approval is initiated alongside the patent registration process.

WTO (World Trade Organization)

Due to pressure from the developed countries, across the world uniformity in patent laws is being implemented under WTO (World Trade Organization - earlier GATT i.e. General Agreement on Tariffs & Trade). Presently, different countries have different patent types and life period. WTO has decided upon a product patent life of 20 years in all countries.

Research & Development (R&D)

The pharmaceutical industry is characterized by heavy R&D expenditure. It is only the large pharmaceutical companies who can allocate significant resources for R&D to introduce new products. As the products are an outcome of significant R&D expenditures incurred by these companies, they have their products patented. The patent allows the companies concerned to wield immense pricing power for their new products.

The Competition

The level of competition on day to day basis is very high in Acute segment, however the degree of competition in not as much as high in Chronic therapy area. As doctor has to prescribe drug for a long time in chronic cases and patient is supposed to consume it without any change of brand. While in acute cases doctor is changing brands on day to day basis. In acute area however there is a large competition from local and propaganda companies.

3.3 Top marketing strategies to reach physicians

As the ones who write the scripts, physicians are the most important audience in pharmaceutical sales. Government regulations that place a heavy emphasis on disclosure and industry self-policing efforts, such as the PhRMA Code on Interactions with Healthcare Professionals, have required changes in how pharmaceutical companies market products to physicians. But those are not the only factors. Physician reliance on Internet technology for information and communicating is also forcing pharmaceutical companies to re-tool their marketing strategies.

Traditional Marketing

Physicians value free drug samples and are willing to meet with medical representatives to get them unless their medical network bans free samples. The industry finds samples the most effective marketing tool and spends billions annually distributing free drug samples.

Critics of the practice say drug samples steer physicians to prescribe new, higher cost medications when generics or lower-priced brand drugs are available. "Once therapy has been initiated, patients and their insurers are likely to continue to pay for the new, costly drugs," according to research by the Pew Charitable Trust Prescription Project.

Gifting of things such as meals, travel expenses, books, and speaking fees is a traditional marketing tool under heavy fire. Some state governments have banned all gifts to physicians, which can be confusing to marketers wanting to provide something as basic as an ice cream cone at a national medical convention.

That image certainly illustrates how complicated it has become, and medical representatives need to be familiar with the laws and regulations in each state. Pharmaceutical company representative often develops working relationships with key opinion leaders or "thought leaders" who influence other physicians through their professional status.

Emerging Tactics

Physicians have been among the earliest of the early adopters of mobile technology, beginning with beepers and pagers, and then PDAs, smartphones, tablet PCs and other handhelds that make patient records and reference materials portable.

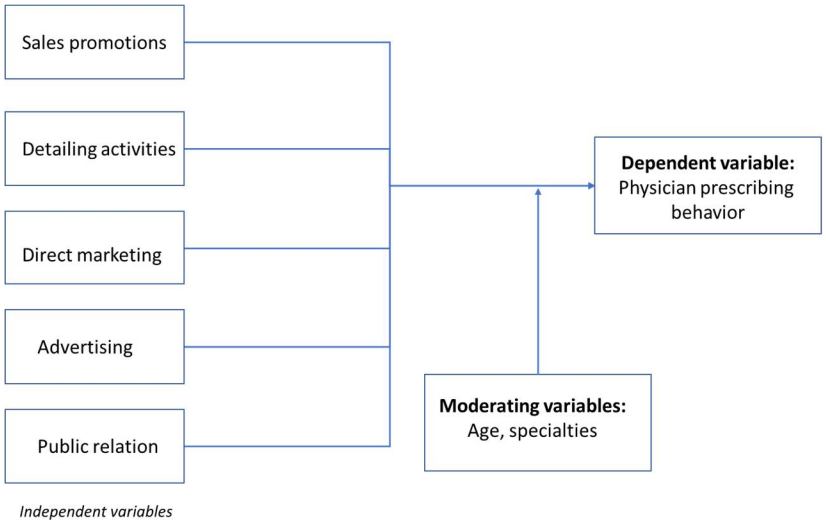
With so many physicians already married to their electronic devices, apps for the iPad and Smartphone seem a ripe niche for pharmaceutical companies.

The global healthcare sector invested $8.2 billion in handheld devices and related applications in 2009. Social networks like Facebook, LinkedIn and Twitter, and hundreds of smaller niche sites allow physicians to organize professional online communities for collaboration.

3.4 Conceptual framework

The conceptual framework of this study, based on the stimulus organism response (S-O-R) paradigm, is presented in Figure 1.

Figure 1: S-O-R Model



The S-O-R model was initially proposed, and the model has subsequently been widely applied in the relevant literature to understand how customers make their buying decisions. When consumer purchase patterns are interpreted through the S-O-R model, the responsible stimulus is an external one. This defines independent variables as the stimuli from pharmaceutical companies (sales promotion, personal selling, direct marketing, advertising, and public relations), since they potentially influence the emotional responses of the physicians. Organisms involved in the S-O-R system possess intrinsic structures and processes that intervene between the external stimulus and the generated response(s), reaction(s), and/or action(s), elaborated that intervening structures and processes include feelings, physiological activities, perceptions, and cognitive processes. These moderating variables are likely to inform the decisions and strategies of pharmaceutical companies with regard to which marketing tools to adopt; arguably, effective tools are meant to evoke positive feelings among physicians and influence their prescription decisions. Responses in the S-O-R model (i.e. the actual outcomes, in this case the final decisions by the consumer) can be either acceptance or avoidance/rejection. Physicians' prescriptions represent, in this conceptual paper, the dependent variable that is influenced by external stimuli.

3.5 Research hypotheses

Physicians are the main decision makers regarding drug prescription. This motivates pharmaceutical companies to employ various promotional strategies to influencing physicians' prescribing behavior. Physicians, on the other hand, are bound by professional ethics that apply to their relationships with pharmaceutical companies, patients, and the drug to prescribe. Consequently, different studies have investigated the influence of pharmaceutical promotional

tools on the prescription behavior of physicians. In some of these studies, physicians have denied being influenced by promotional activities in their prescription behavior, asserting that they abide by professional ethics and institutional policies when prescribing any drug to their patients. In support of their arguments, these physicians have indicated that pharmaceutical promotional activities have negligible effects on prescription behavior since companies develop different brand names for a similar drug and, therefore, doctors prescribe drugs depending on their affordability for the patient. Other studies have, however, linked pharmaceutical promotional activities with the inflation of drug prices, thus negatively affecting their consumption by primary consumers (patients). Regarding the effectiveness of various promotional tools/strategies in influencing physicians' prescription behavior, various studies report different findings depending on the region in which they were conducted.

Based on the conceptual framework (Figure 1), the above arguments, this thesis paper hypothesizes that:

Hypothesis 1: The effectiveness of pharmaceutical companies' promotional tools varies regarding influencing the prescription behavior of physicians.

In addition, following to diversified market revenue share performance of different pharmaceutical companies in Thailand, this implies the different level of success that these companies have performed and achieved in terms of their sales and marketing investment performance.

Hypothesis 2: Different pharmaceutical companies have different performances in terms of sales and marketing initiatives and executions which yields different perceptions and appreciations among physicians.

CHAPTER IV

METHODOLOGY

In order to prove hypotheses outlined in this thesis study, primary research survey method was conducted. The scientific research design is discussed in this chapter, focusing on the ways in which the data were gathered and analyzed in order to find answers to the pre-defined hypothesis. The discussion includes research methods, the research process, data collection and analysis and limitations of research.

4.1 Research Method

Quantitative interviews were conducted with physicians across various specialties and geographies throughout Thailand in face-to-face at own medical settings. Research objectives were clearly defined following research hypothesis. Detail research objectives are:

- To evaluate the medical representatives of pharmaceutical companies in Thailand in terms of
    - Call frequency
    - Value added of visiting
    - Relationship with physician
    - Effectiveness of main product key messages
    - Services
    - Other performance which related to company image and encourage prescribing of their products

- To evaluate the activities provided by pharmaceutical companies in terms of participation and satisfaction
- To identify high influencing sales and marketing factors on physicians' prescribing preferences

Sampling

Statistically, a representative sampling design is required to draw research implications at country level in Thailand. A total of 560 physicians nationwide were recruited for this study. Sampling design is illustrated in Figure 2.

Figure 2: Sampling plan

Specialty	Total
IM	50
Cardiologist	40
Endocrinologist	30
Nephrologist	30
Neurologist	30
Infectious	15
Pulmonologists	30
ENT	30
Orthopedic Surgeon	30
Ob-Gynecologist	30

Specialty	Total
General Surgeon	30
Urology Surgeon	30
Oncologist	30
Psychiatrist	30
Ophthalmologist	20
Rheumatologist	15
Rehabilitation	15
Anesthetist	15
Pediatrician	30
Gastroenterology	30
Total	560

With this sampling plan;

- Majority of physicians were recruited from Bangkok (392 samples, or 70%), the rest were recruited from upcountry (168 samples, or 30%)

- Physicians were recruited randomly from both public and private medical settings, approximately 85% public vs 15% private following actual proportions
- Geographically, all 5 regions were well covered across Thailand

Recruitment criteria are:

- All physicians were recruited randomly following sampling plan and recruitment criteria
- Qualified physicians must have been recently visited and detailed by 4 medical representatives of any pharmaceutical company during the past 1 month
- Qualified physicians much have been working in their current specialty for more than 2 years, but less than 25 years

4.2 Data Collection and Analysis

Data collection

Data collection was based on pre-recruitment arrangement with face-to-face interviews conducted at physician's own medical setting.

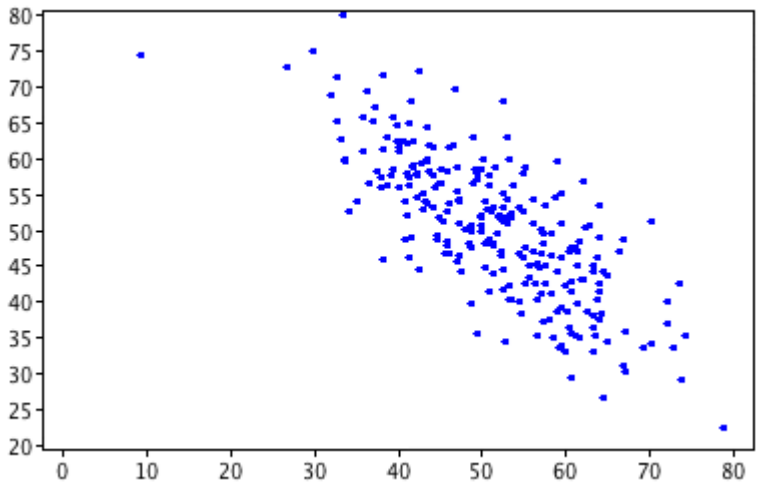
Data analysis

Apart from typical data tabulation analysis techniques commonly used, a few major techniques were employed using SPSS application as explained below:

- Correlation analysis: refers to the degree of relationship (or dependency) between two variables. Linear correlation refers to straight-line relationships between two variables. A correlation can range between -1 (perfect negative relationship) and +1 (perfect positive relationship), with 0 indicating no straight-line relationship. Correlation measures the extent to which variables:
    - covary
    - depend on one another
    - predict one another

  The extent of correlation between two variables is denoted r, and the correlation between variable X and variable Y is indicated by rXY as illustrated in Figure 3.

Figure 3: Correlation scatterplot sample



- Multi-variable regression analysis: Multi-variable regression is an extension of simple linear regression. It is used when we want to predict the value of a variable based on the value of two or more other variables. The variable we want to predict is called the

dependent variable (or sometimes, the outcome, target or criterion variable). The variables we are using to predict the value of the dependent variable are called the independent variables (or sometimes, the predictor, explanatory or regressor variables). The multiple linear regression equation is as follow:

$$\hat{Y} = b_0 + b_1 X_1 + b_2 X_2 + \ldots + b_p X_p ,$$

where equation image indicator is the predicted or expected value of the dependent variable, X1 through Xp are p distinct independent or predictor variables, b0 is the value of Y when all of the independent variables (X1 through Xp) are equal to zero, and b1 through bp are the estimated regression coefficients. Each regression coefficient represents the change in Y relative to a one unit change in the respective independent variable. In the multiple regression situation, b1, for example, is the change in Y relative to a one-unit change in X1, holding all other independent variables constant (i.e., when the remaining independent variables are held at the same value or are fixed). Again, statistical tests can be performed to assess whether each regression coefficient is significantly different from zero.

4.3 Limitations of Research

The main limitation of the survey study was difficulty in physician recruitment following their very busy schedules. Sampling was also considered as big issue of this study survey, since

recruiting 560 physicians in Thailand is considered very difficult and challenging, owning to high turn down rate nature of this respondent type. Furthermore, the study questionnaire comprises of many rating questions, each question contains many attributes that require all participating physicians to proving rating scores. The interview process becomes repetitive in questions and could potentially diminish quality of rating inputs from respondents.

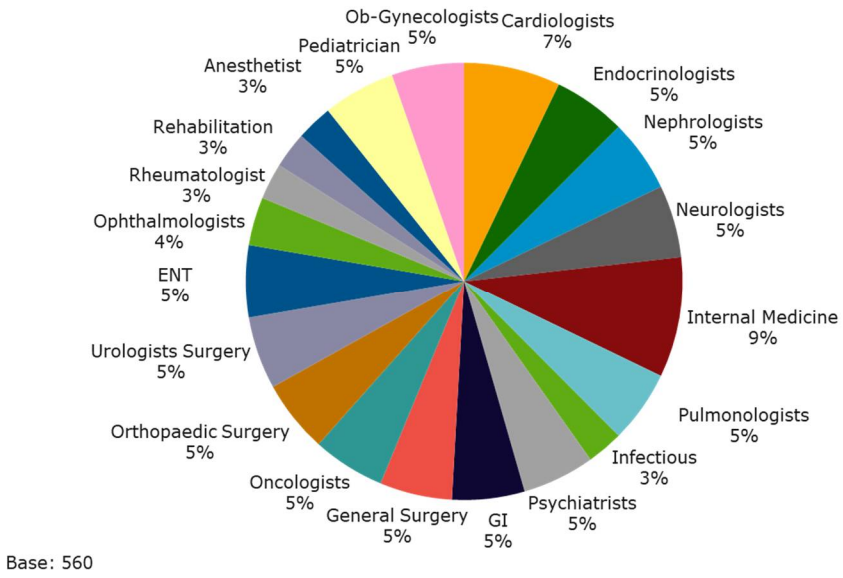
CHAPTER V

RESULTS

In this chapter, results of the research survey study will be discussed in detail.

The quantitative survey designed for this thesis study was well distributed across respondent demographic profiles in Thailand as illustrated in Figure 4.

Figure 4: Respondent demographics



Pharmaceutical company abbreviations used throughout this thesis study report are shown in Figure 5.

Figure 5: Company name abbreviations

Company name

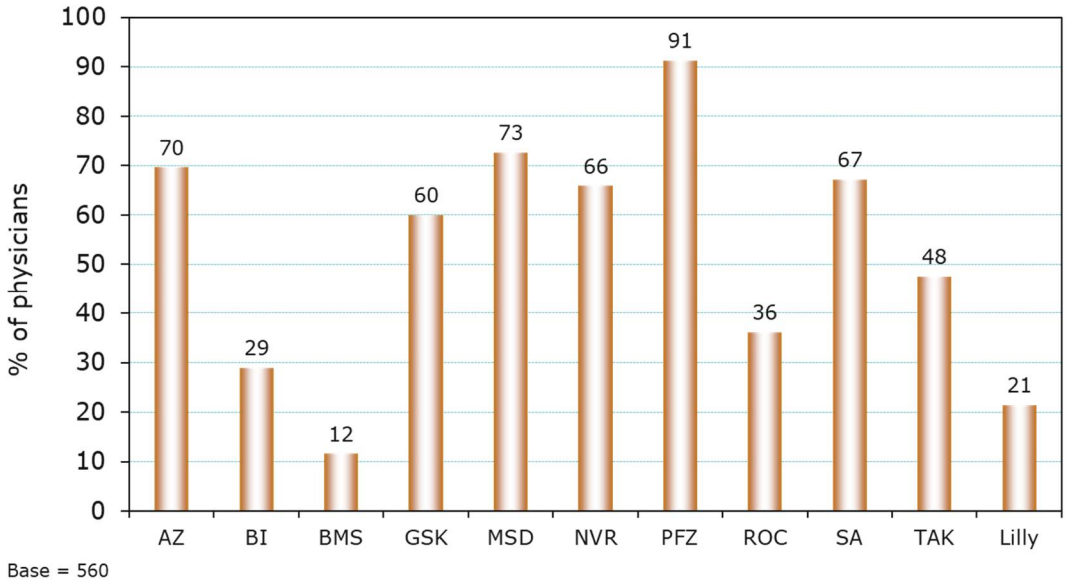
AZ	= AstraZenaca	NVR	= Novartis
BI	= Boehringer Ingelheim	PFZ	= Pfizer
BMS	= Bristol Myers Squibb	SA	= Sanofi
GSK	= GlaxoSmithKline	TAK	= Takeda
MSD	= Merck Sharp & Dohme	Lilly	= Eli Lilly
AST	= Astellas	JAN	= Janssen
All	= Allergan	ALC	= Alcon

5.1 Detailing coverage performance

One key performance factor is how well pharmaceutical company can cover target physicians in terms of detailing visit by medical representatives. Basic principle is that, the more physicians covered, the better reach to potential customers.

Findings reveal diversified performances of different pharmaceutical companies in terms of detailing coverage to physicians throughout the country, as illustrated in Figure 6.

Figure 6: Detailing coverage performance



In Thailand, Pfizer has claimed the dominant player in terms of customer detailing coverage with 91% reach to participating respondents, followed at a far distant by MSD (73%) and then AstraZeneca (70%). BMS is ranked in the bottom of the table with only 12% detailing coverage.

Deep dive analysis reveals an interesting finding that different companies tend to focus on detailing coverage to different specialties, following their product portfolio as highlighted in Figure 7.

Figure 7: Detailing coverage performance by specialty

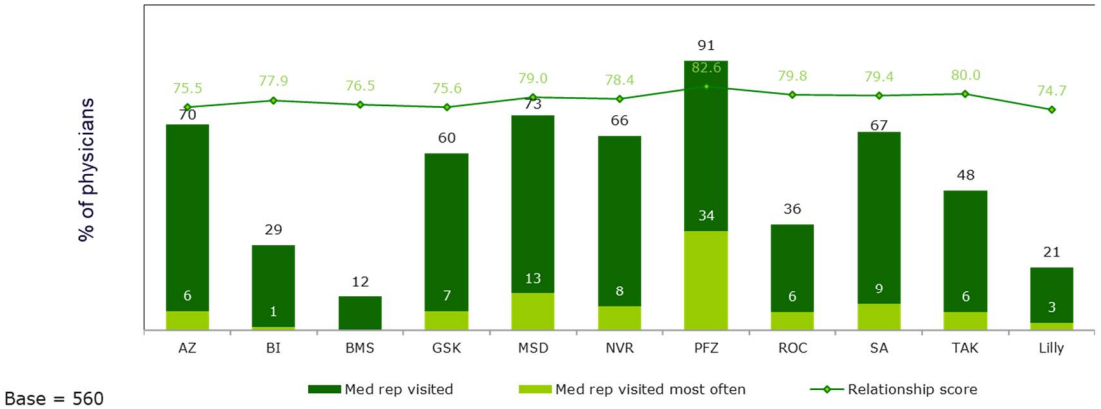
Specialties	Company' medical representative										
Based = 560	AZ	BI	BMS	GSK	MSD	NVR	PFZ	ROCHE	SA	TAK	Lilly
Total	**70**	**29**	**12**	**60**	**73**	**66**	**91**	**36**	**67**	**48**	**21**
Cardiologists	93	63	10	30	88	90	95	33	95	75	13
Endocrinologists	77	37	13	23	87	83	93	20	90	73	57
Nephrologists	80	47	7	67	77	83	100	67	73	83	23
Neurologists	80	77	3	67	60	87	100	43	90	50	40
Internal Medicine	78	36	14	66	90	80	92	24	80	78	8
Pulmonologists	90	87	13	97	97	60	90	23	50	47	13
Infectious	87	20	53	73	100	33	93	13	47	40	7
Psychiatrist	83	3	0	70	30	63	97	10	73	17	80
GI	73	17	37	57	90	70	63	73	27	80	3
General Surgeon	73	3	7	70	57	70	93	53	33	27	7
Oncologist	70	13	37	60	60	83	80	97	83	20	73
Orthopedist	53	47	0	10	93	60	97	67	67	33	30
Urologist	77	3	7	83	57	70	100	13	87	63	3
ENTs	80	7	7	87	77	33	93	7	93	30	7
Ophthalmologist	10	0	0	5	5	65	75	0	0	0	0
Rheumatologist	47	40	7	40	67	73	100	87	47	40	0
Rehabilitation	60	33	0	33	87	53	93	20	73	27	20
Anesthetist	53	0	0	40	60	27	93	7	40	13	0
Pediatrician	43	3	13	100	73	33	93	7	80	13	10
Ob-Gynecologist	37	7	7	83	73	43	83	47	43	60	10
Bangkok	70	31	11	62	72	62	92	33	69	51	24
Upcountry	70	23	13	55	74	75	89	42	64	39	15

For instance, GSK with strong pediatric vaccine portfolio is doing the best in terms of detailing coverage among pediatricians in Thailand, while Roche has covered oncologists the most following to their strong oncology portfolio.

5.2 Visit frequency, detailing time per visit, and total relationship score

In total, Pfizer has proven a clear leader in terms of salesforce initiatives in Thailand with best indicators as shown in Figure 8.

Figure 8: Visit frequency, detailing time per visit, and total relationship score



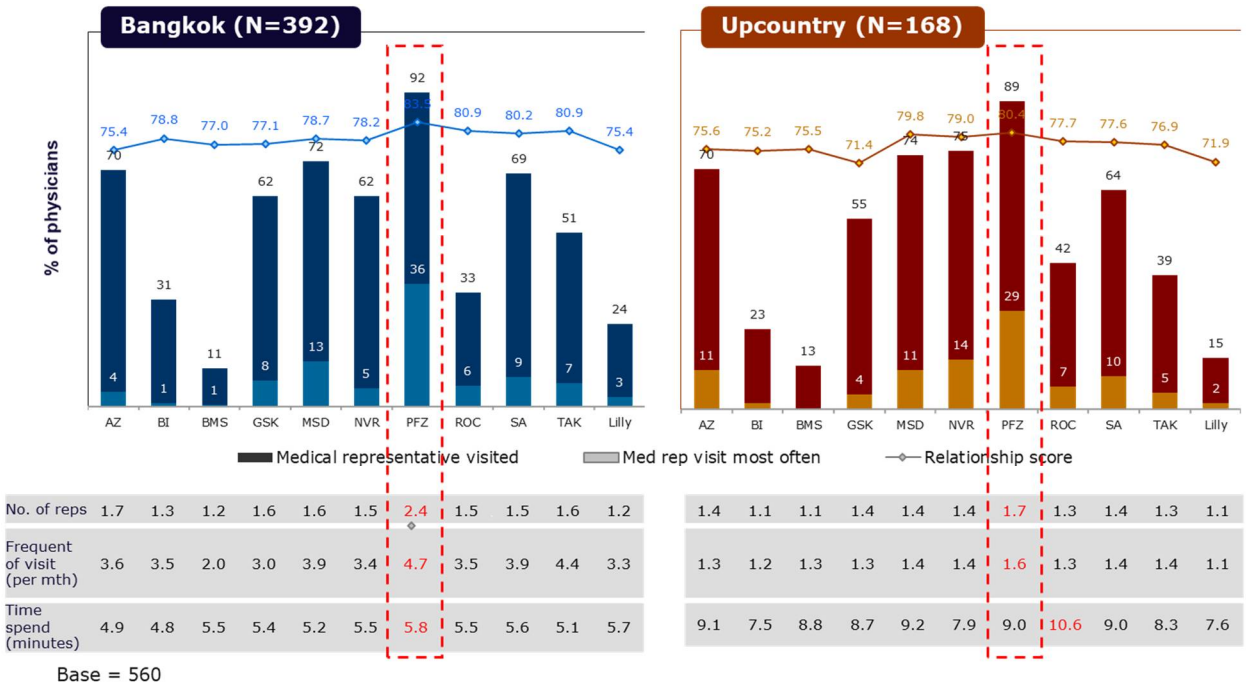
Base = 560

	AZ	BI	BMS	GSK	MSD	NVR	PFZ	ROC	SA	TAK	Lilly
No. of reps	1.6	1.3	1.2	1.5	1.6	1.5	2.2	1.4	1.5	1.5	1.2
Frequency of visits (per mth)	2.9	2.9	1.8	2.5	3.1	2.7	3.8	2.7	3.2	3.7	2.9
Time spend (minutes)	6.2	5.4	6.6	6.3	6.5	6.3	6.7	7.3	6.6	5.9	6.1

34% of physicians mentioned they have been recently visited by Pfizer medical representatives most often, and the average of visit frequency per month is 3.8 times. Interestingly, physicians claim they have been visited by many medical representatives from Pfizer (average 2.2 medical representatives per physician) more than other companies.

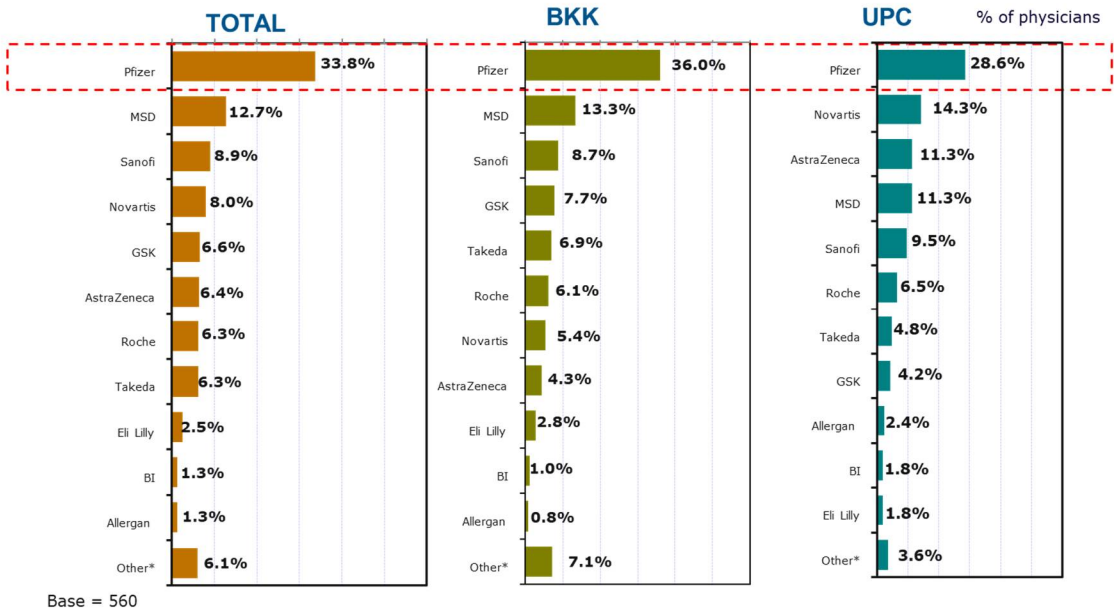
Performance of Pfizer by mean of visit frequency, detailing time per visit, and total relationship score between Bangkok and Upcountry regions are indifferent as shown in Figure 9.

Figure 9: Visit frequency, detailing time per visit, and total relationship score by geography



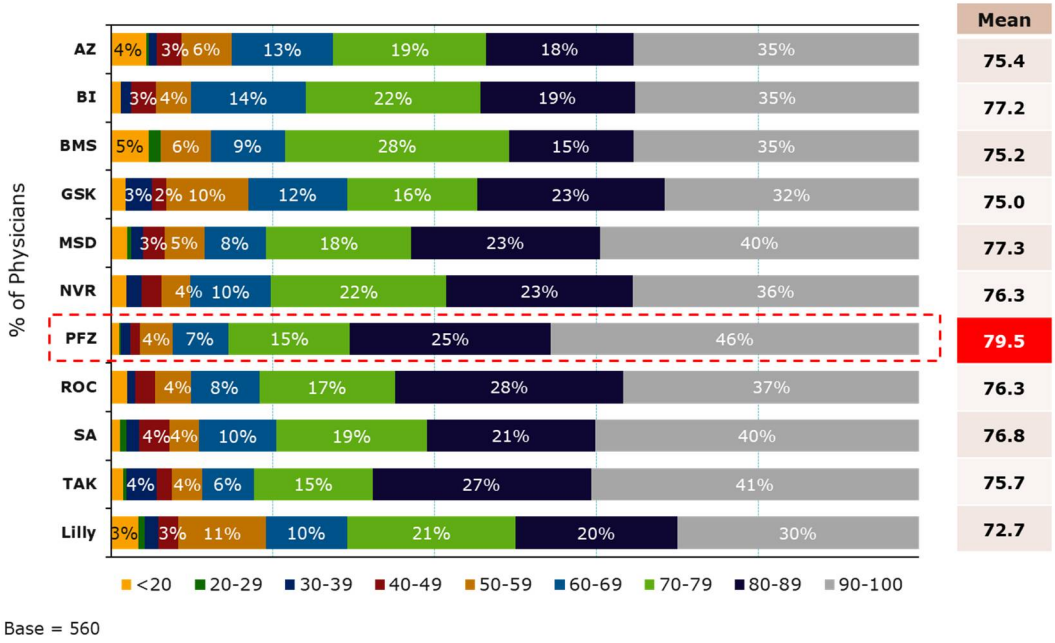
To summarize, Pfizer leads Thailand pharmaceutical market in terms of visit detailing performance with equal performance between Bangkok and Upcountry.

Figure 10: Most often visit medical representative by geography



Even through Pfizer representatives have achieved highest total relationship score with physicians as shown in Figure 8, the variation on opinions is observed from different individuals as illustrated in Figure 11.

Figure 11: Relationship rating score



Base = 560

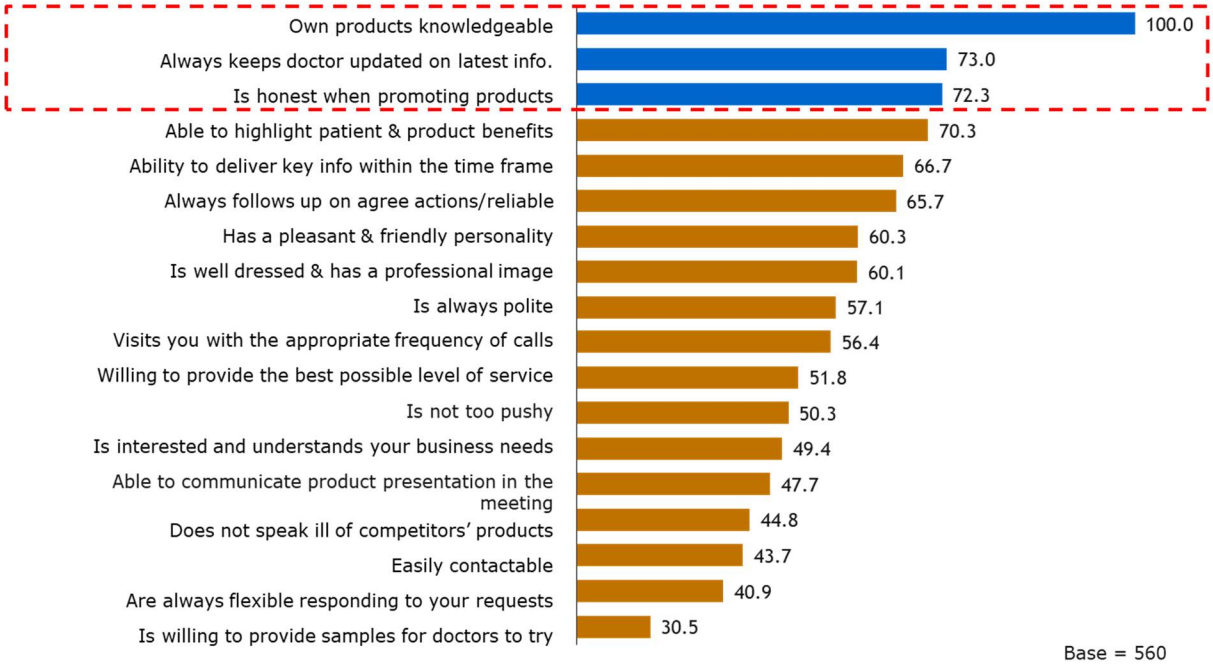
An interesting question for pharmaceutical companies is, what should be the optimum detailing visit frequency to these target physicians in Thailand? The answer of this question would highly impact on call frequency planning of the companies, and so investment and detailing effectiveness. According to participating physicians, twice per month visit frequency seems to be the most preferred visit frequency by overall. Physicians in Bangkok prefer higher visit frequency (4 times per month) compared with those physicians in Upcountry region (once a month).

Figure 12: Preferred detailing visit frequency

5.3 Medical representative performance and expectation

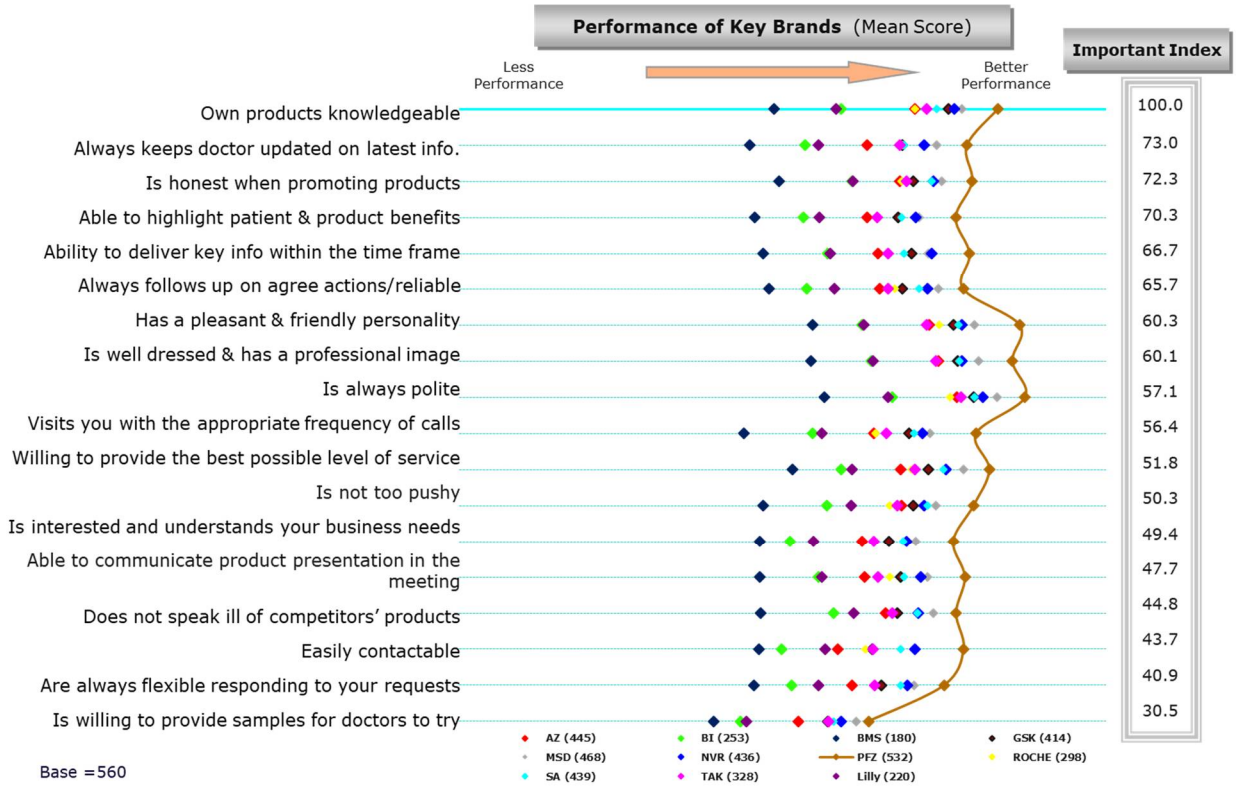
Physicians in Thailand expect three most important qualities from medical representatives, which are: very good knowledge of own medical product, actively keep physicians up-to-date on medical product information, and being honest in detailing and promoting medical products to physicians. These are the three attributes that all pharmaceutical companies in Thailand should pay high priority focus to train their medical representatives to best match with their target physicians.

Figure 13: Medical representative attribute importance index



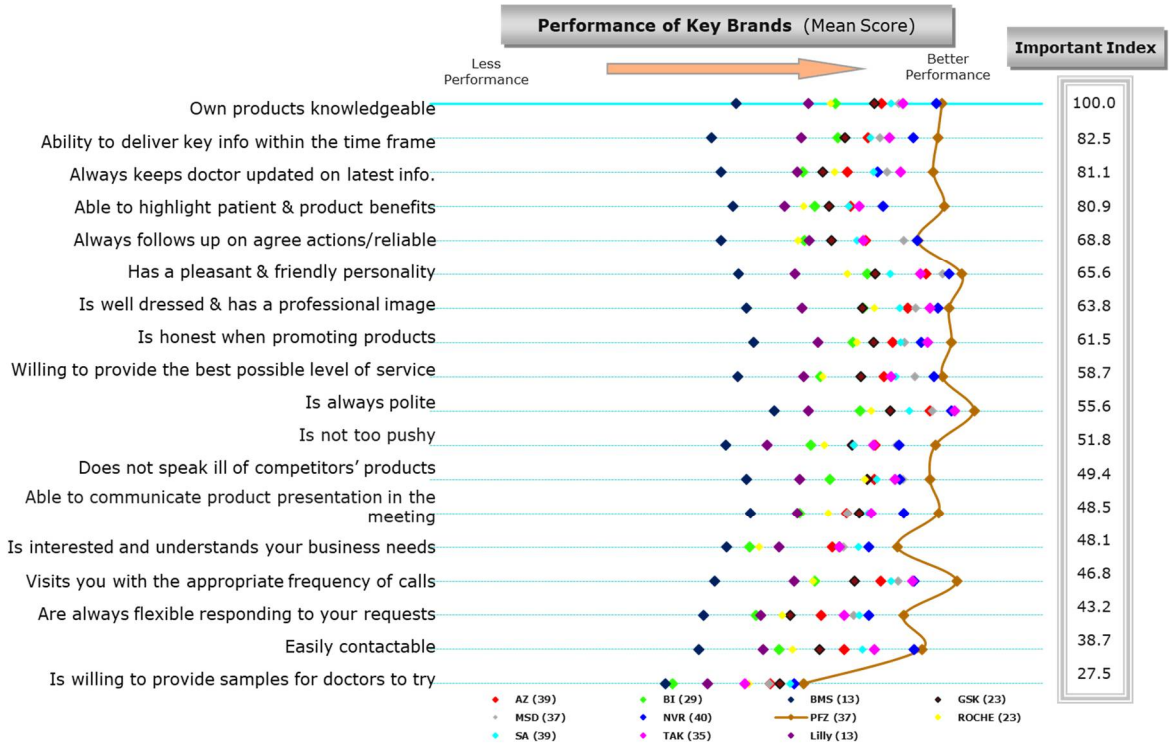
In terms of medical representative quality, Thailand pharmaceutical market is proven to be dominant by a single player, Pfizer, who has mostly appreciated by physicians in all related attributes as clearly illustrated in Figure 14.

Figure 14: Medical representative performance evaluation, Total



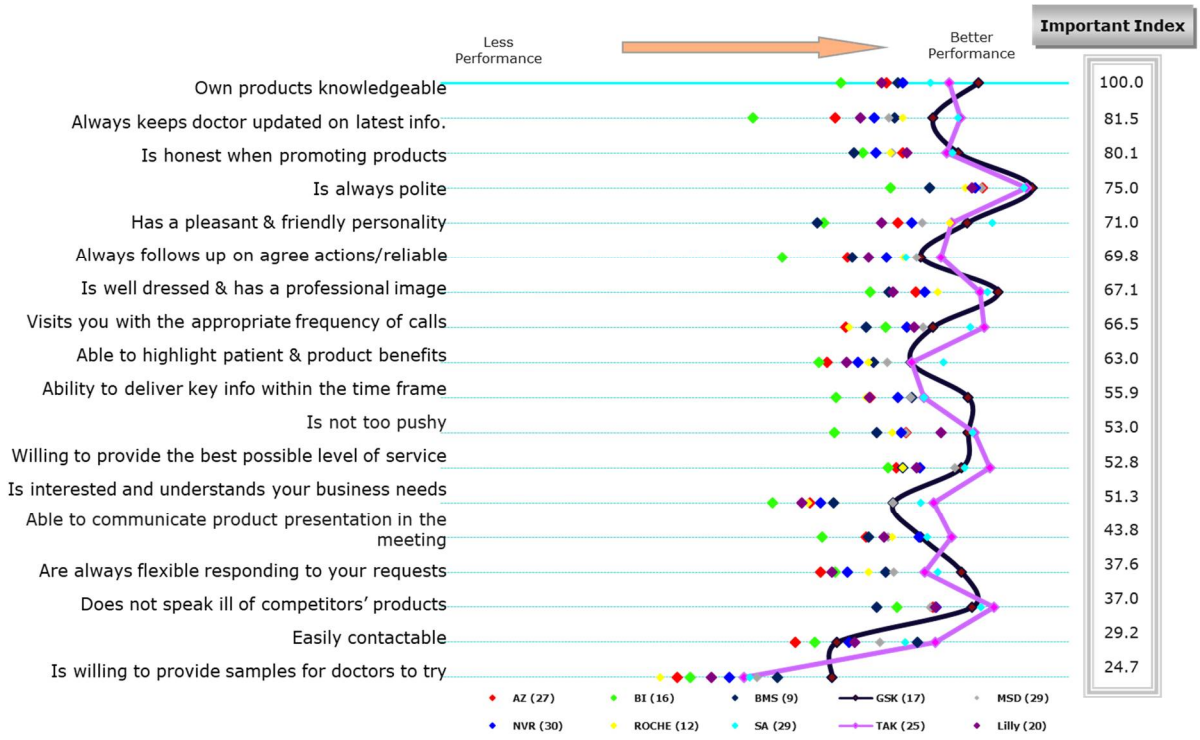
However, different medical representative performances are observed by different specialties. For the purpose of highlighting some diversity in medical representative performance evaluation by different specialties, some medical representative performance evaluation data by selected specialties are presented as follow.

Figure 15: Medical representative performance evaluation, Cardiologist



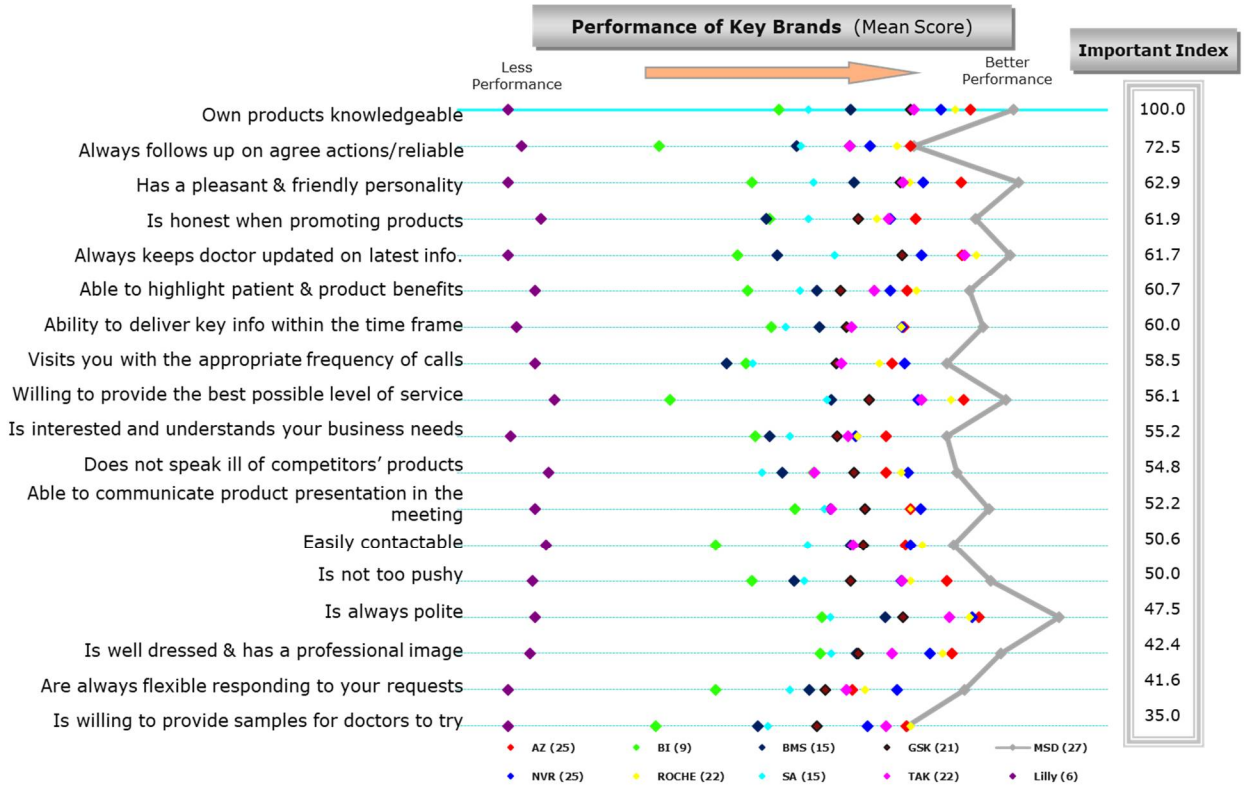
Similar to total picture, Pfizer medical representatives are clearly preferred by cardiologists in Thailand. However, GSK and Takeda medical representatives are mostly preferred among endocrinologists in Thailand, as illustrated in Figure 16.

Figure 16: Medical representative performance evaluation, Endocrinologist



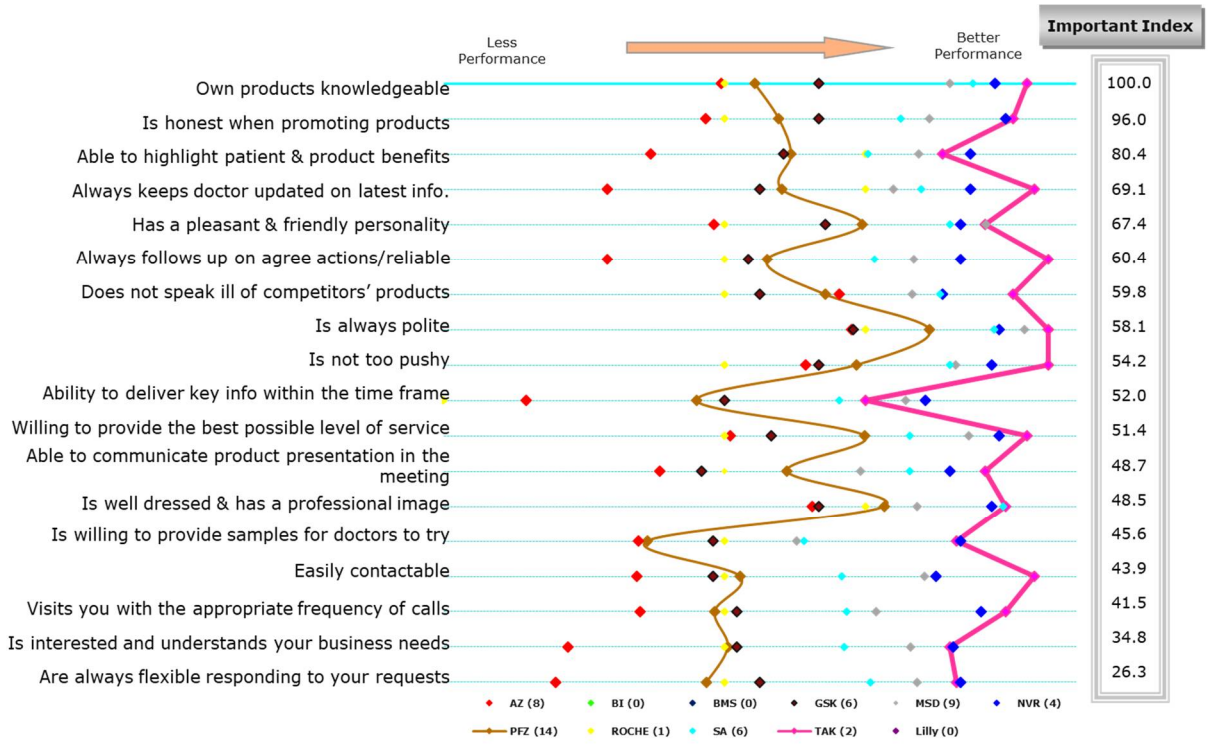
Among GI physicians, MSD medical representatives are mostly preferred across all attributes as shown in Figure 17.

Figure 17: Medical representative performance evaluation, GI Physicians



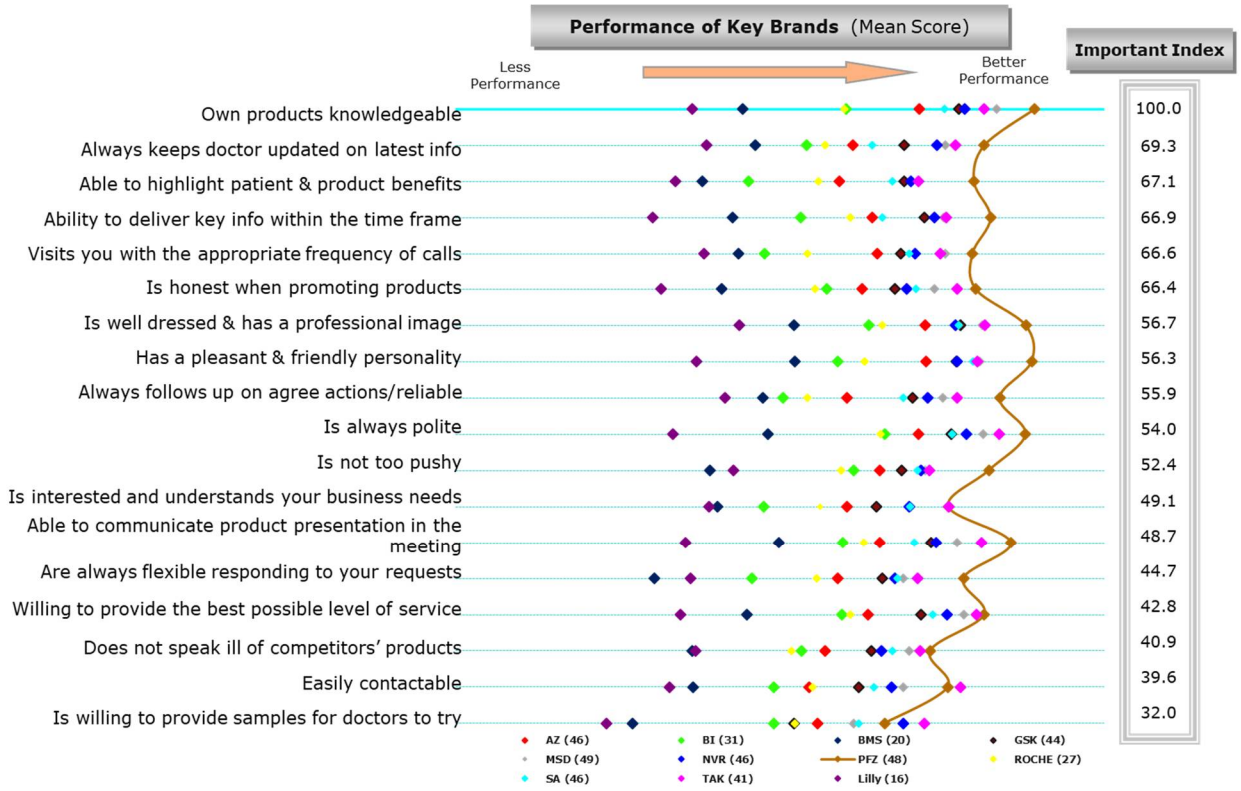
While Takeda medical representatives perform the best among anesthetists, Pfizer medical representatives are significantly less preferred.

Figure 18: Medical representative performance evaluation, Anesthetists



Pfizer medical representatives Thailand team is rated the best performer across almost all related attributes among Internal Medicines, which represent highest proportion of all physicians in Thailand.

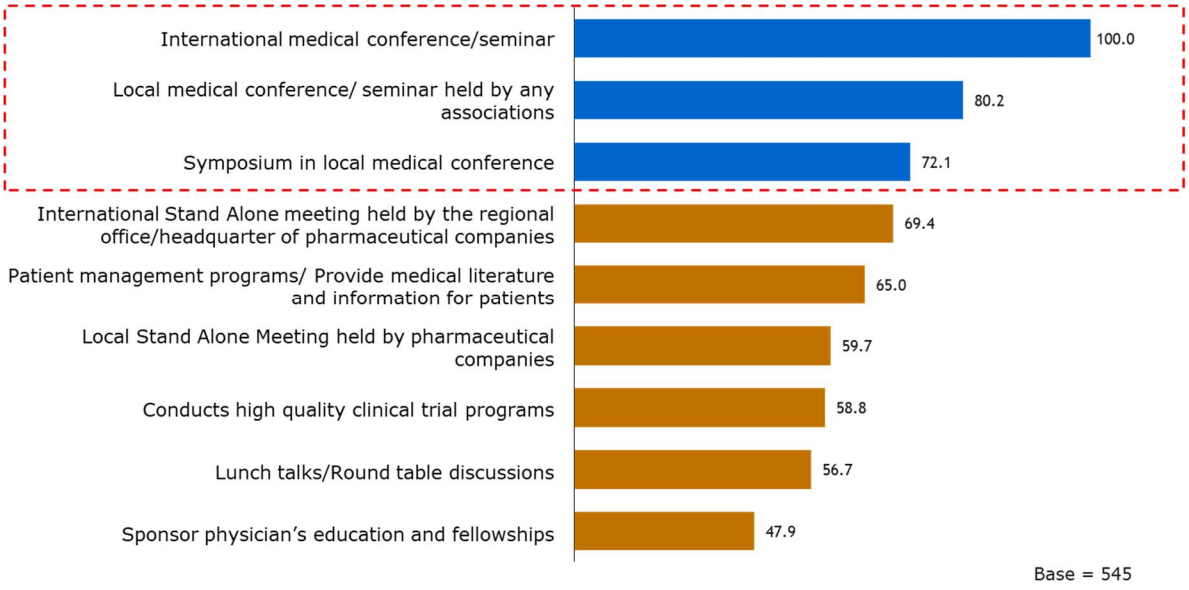
Figure 19: Medical representative performance evaluation, Internal Medicines



5.4 Marketing performance and expectation

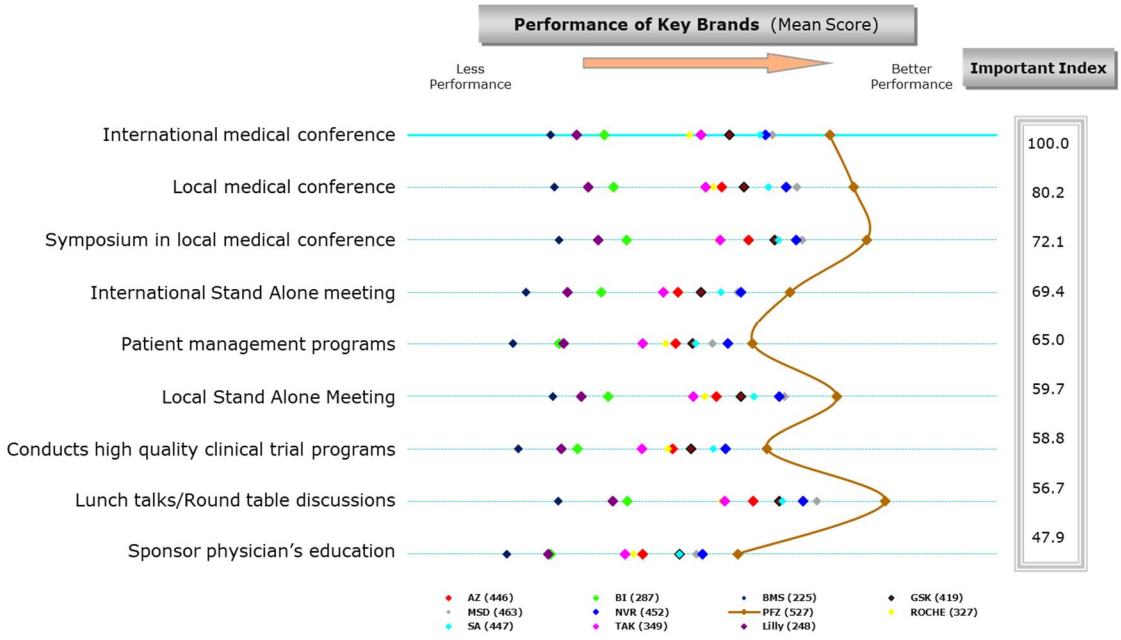
Most Thai physicians expect to have more supports from pharmaceutical companies on international conference/seminar sponsorship, followed by local conference/seminar sponsorship and symposium in local medical conference sponsorship.

Figure 20: Marketing activity importance index



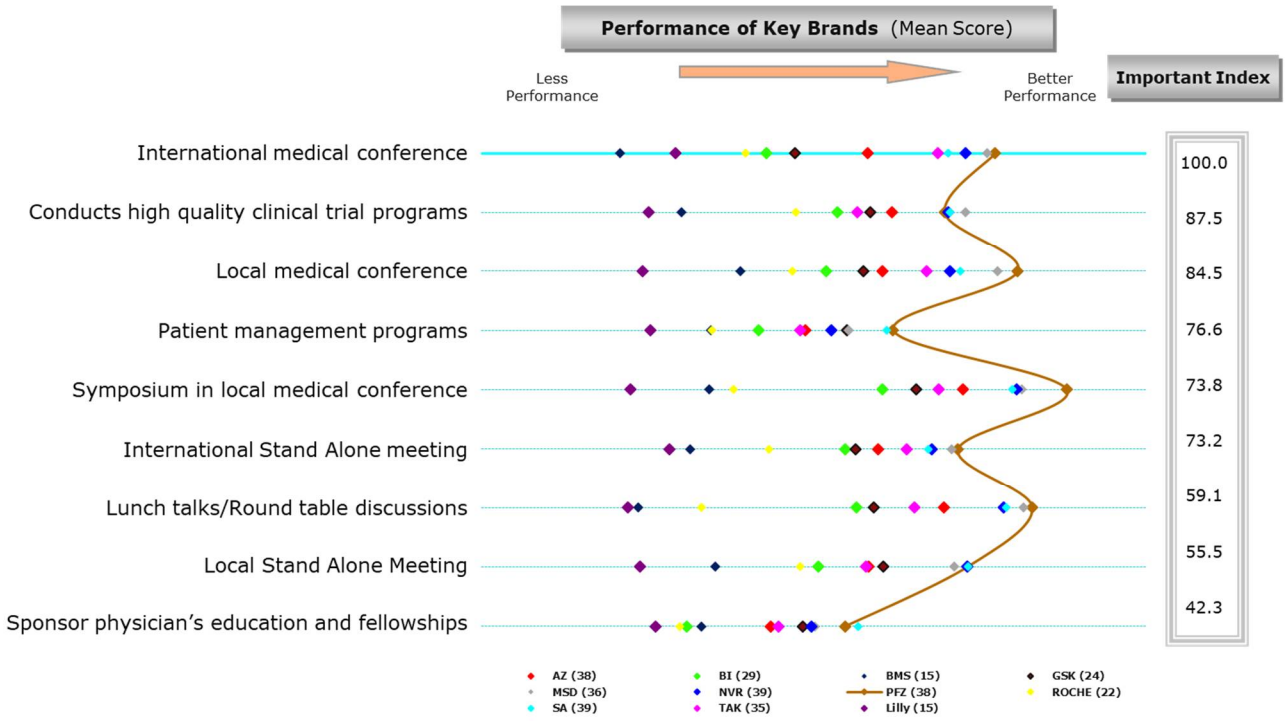
Similar to salesforce performance, Pfizer is also rated is the best pharmaceutical company in Thailand with best marketing offerings supported ad provided to Thai physicians.

Figure 21: Marketing performance evaluation, Total



Consistent findings with salesforce performance evaluation, different pharmaceutical companies tend to focus on their marketing investment by different specialties following to their portfolio focus and strategic branding.

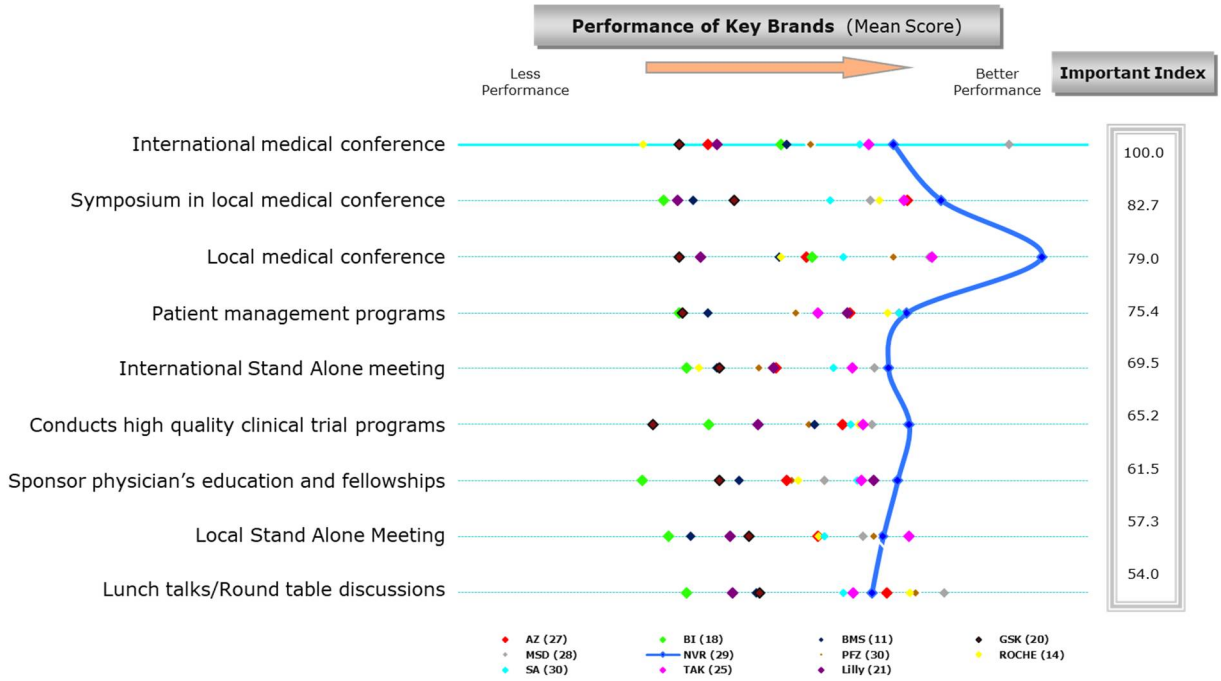
Figure 22: Marketing performance evaluation, Cardiologists



Similar to total picture and salesforce performance data, Pfizer Thailand has clearly focused its sales and marketing focus on cardiologists.

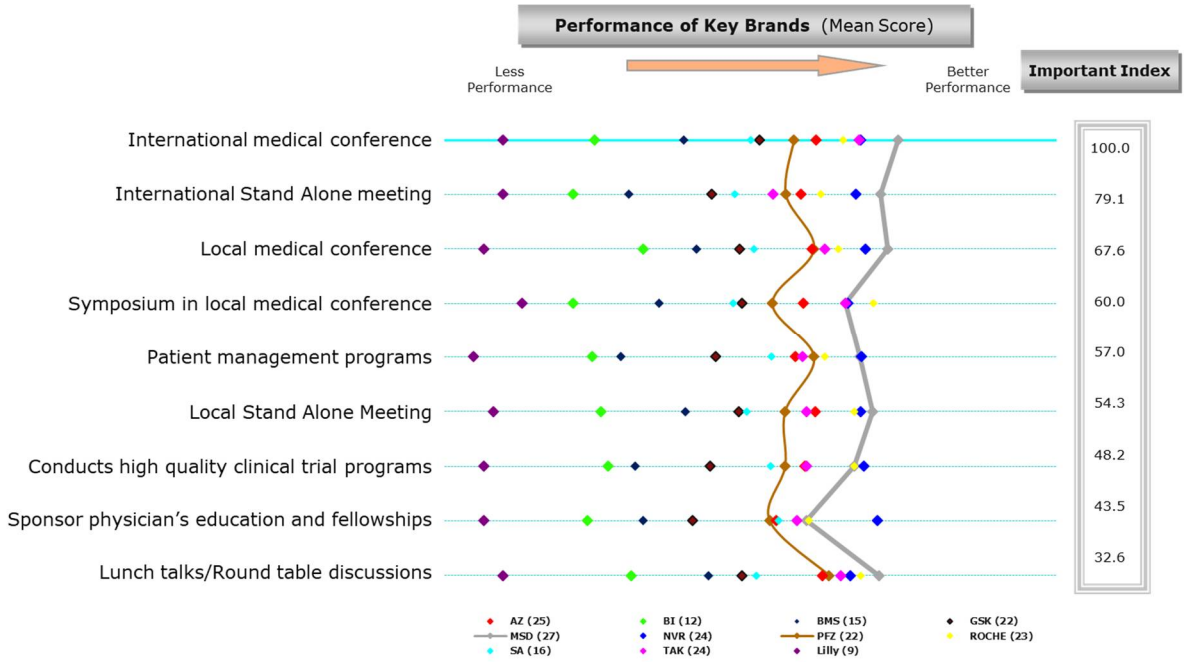
Among endocrinologists, however, Novartis Thailand has been appraised as the best company in terms of marketing sponsorship.

Figure 23: Marketing performance evaluation, Endocrinologists



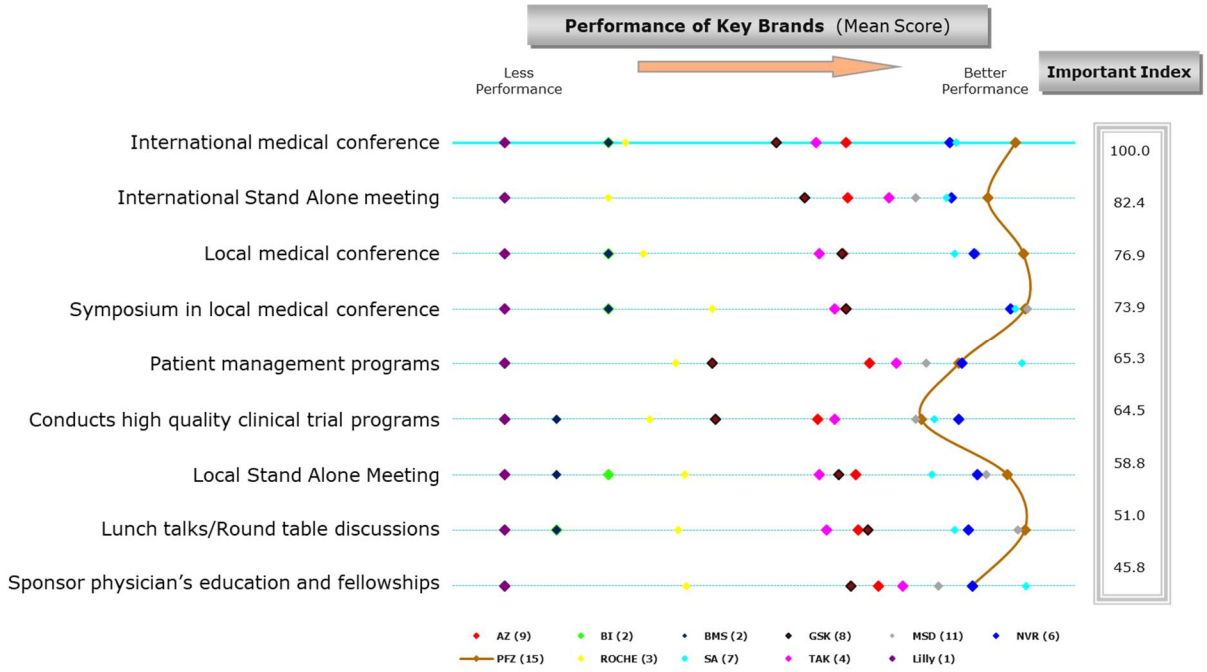
MSD is the best performer in terms of marketing support and sponsorship as rated among GI physicians, while Pfizer is only ranked fourth.

Figure 24: Marketing performance evaluation, GI Physicians



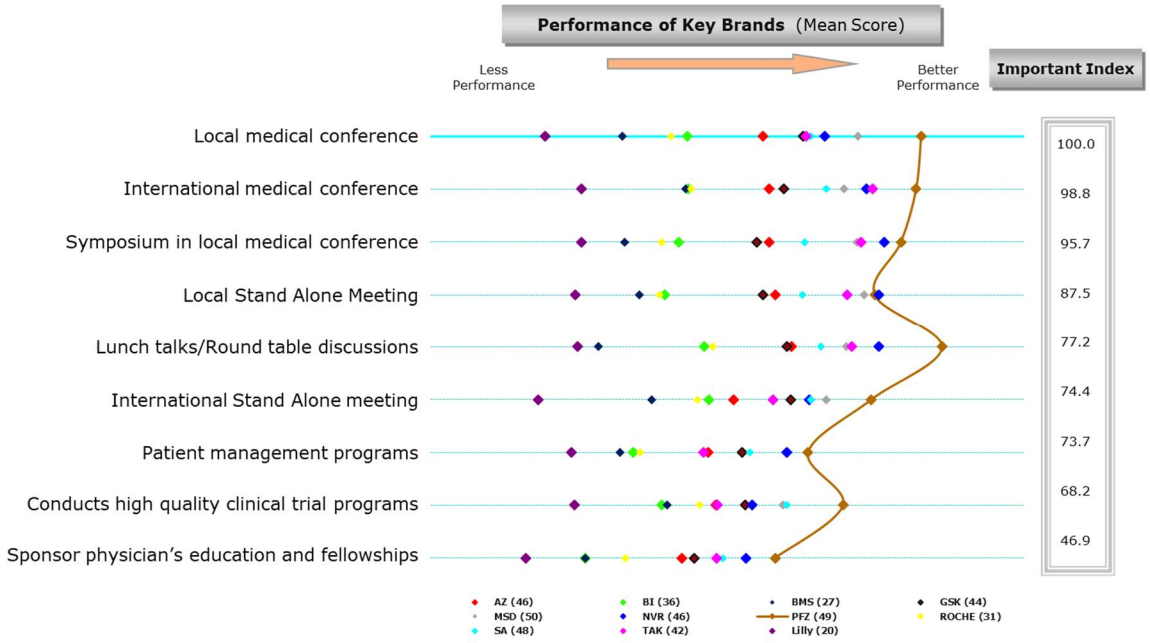
Interestingly, Pfizer medical representatives are not much appreciated among anesthetists in Thailand as shown in Figure 8, but its marketing supports are rated the best among all other companies. This implies significant improvement on salesforce performance should be set as high priority for this specialty.

Figure 25: Marketing performance evaluation, Anesthetists



Again, consistent with how Internal Medicines appreciate medical representatives from Pfizer, they also show their most preferences on marketing activities invested on them from Pfizer.

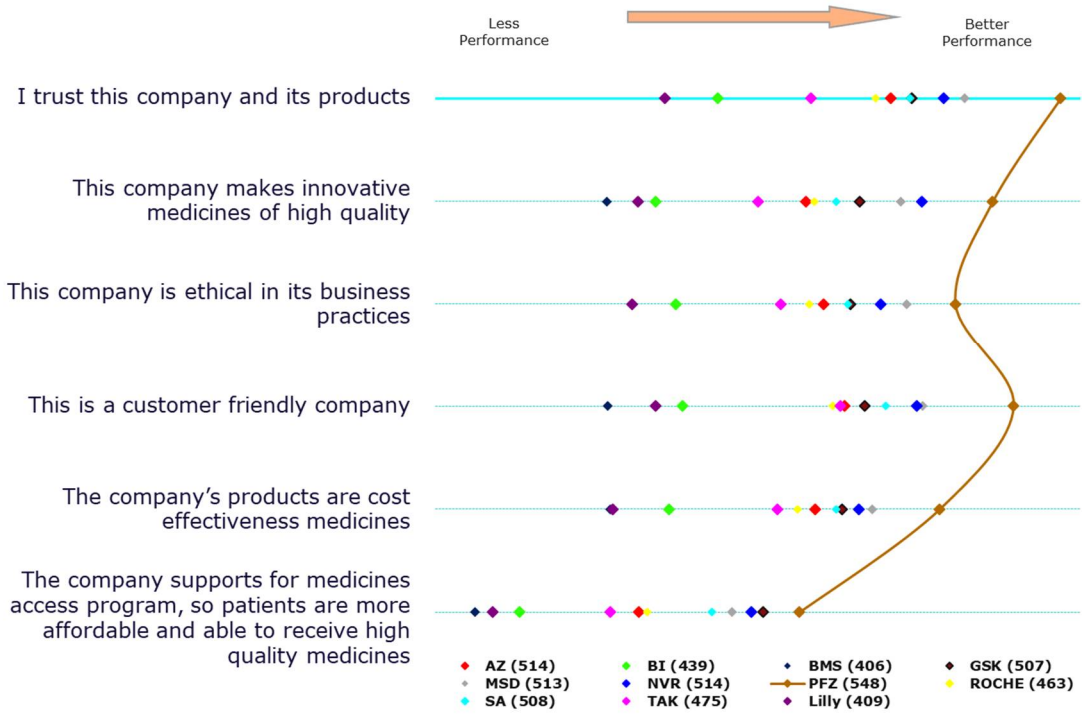
Figure 26: Marketing performance evaluation, Internal Medicines



5.5 Corporate perception

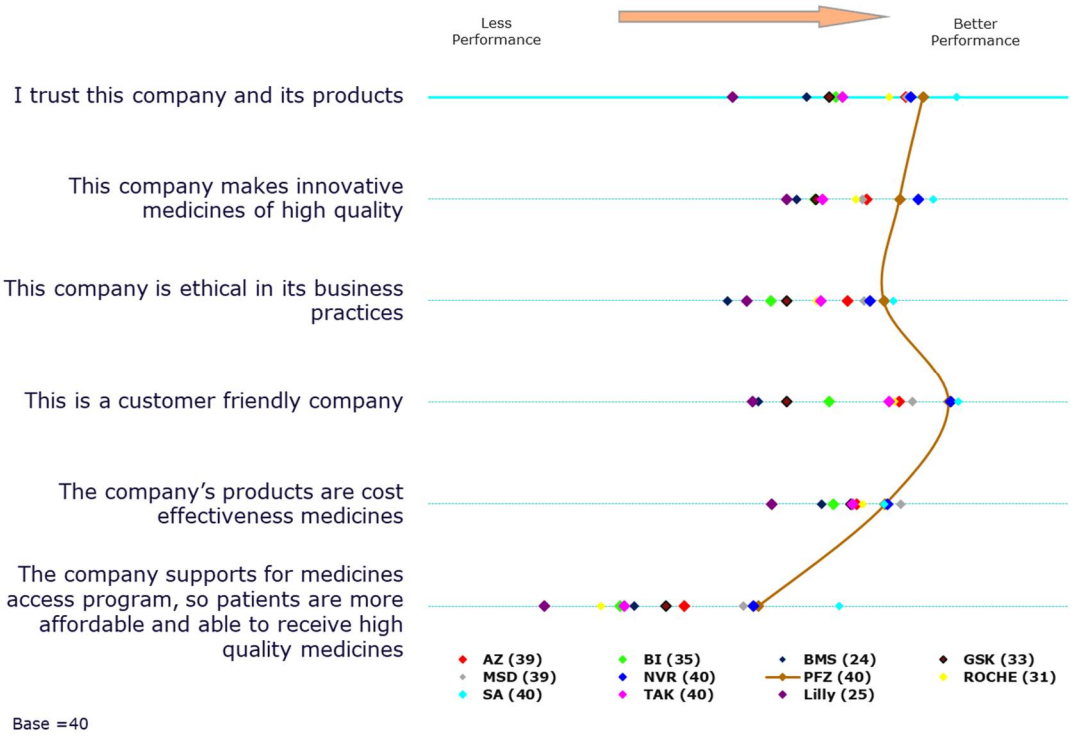
In the survey, a few questions concerning how physicians perceive each of the pharmaceutical companies in Thailand in various aspects were included. Findings review consistent results aligning to how physicians appreciate medical representatives and marketing activities invested by pharmaceutical companies, of which Pfizer clearly leads other players in all corporate related aspects significantly as illustrated in Figure 27.

Figure 27: Corporate perception, Total



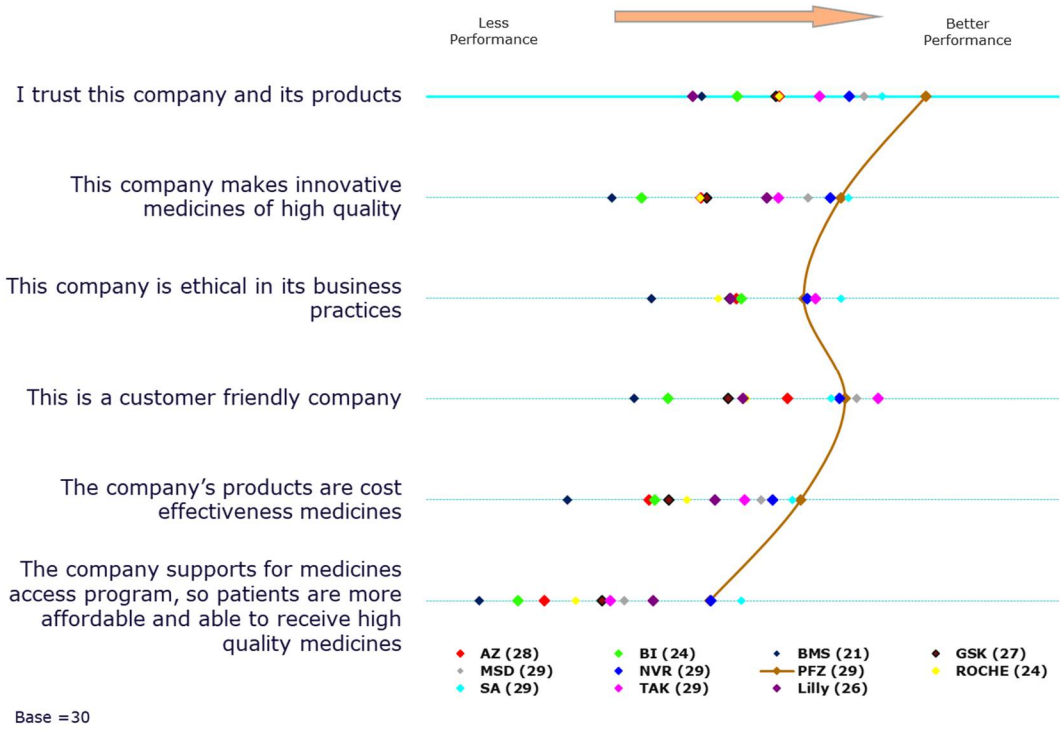
Cardiologists tend to have very positive perceptions over Pfizer the most in many attributes, however Novartis is best perceived in the aspect of innovative and high-quality medicines.

Figure 28: Corporate perception, Cardiologists



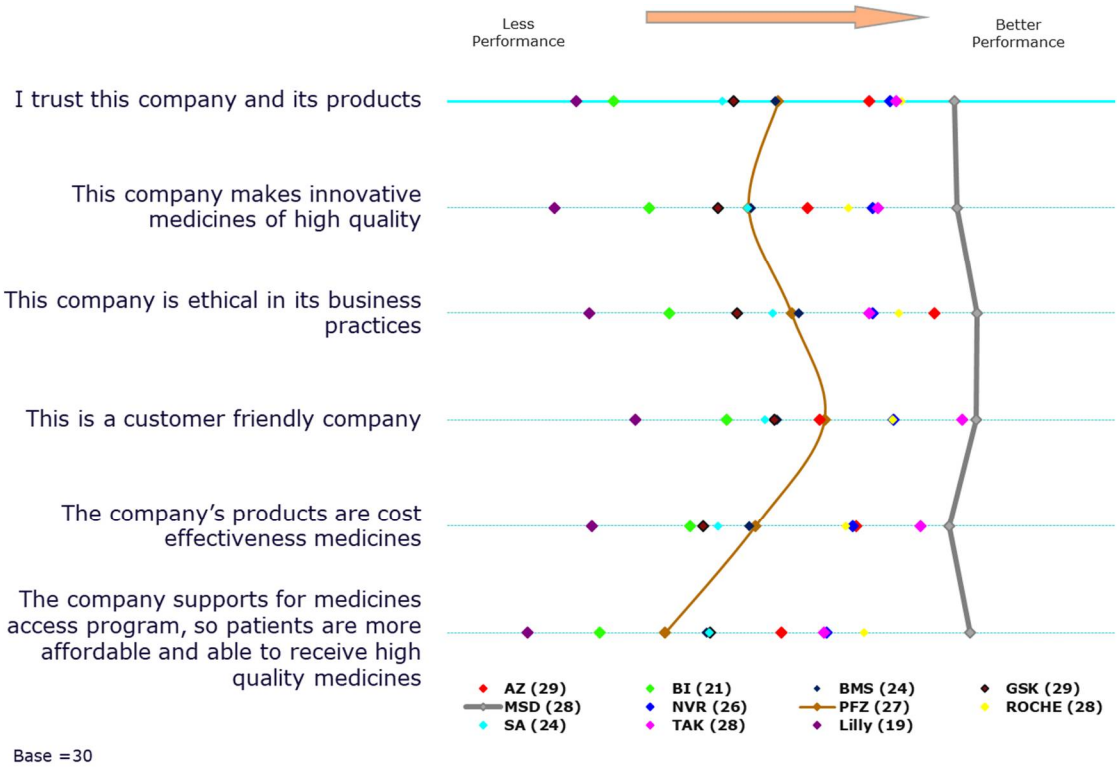
Similar to cardiologists, endocrinologists tend to favor Pfizer the most in terms of good corporate perception, however Takeda is also rated top being ethical in business practice and also perceived as a customer-friendly company.

Figure 29: Corporate perception, Endocrinologists



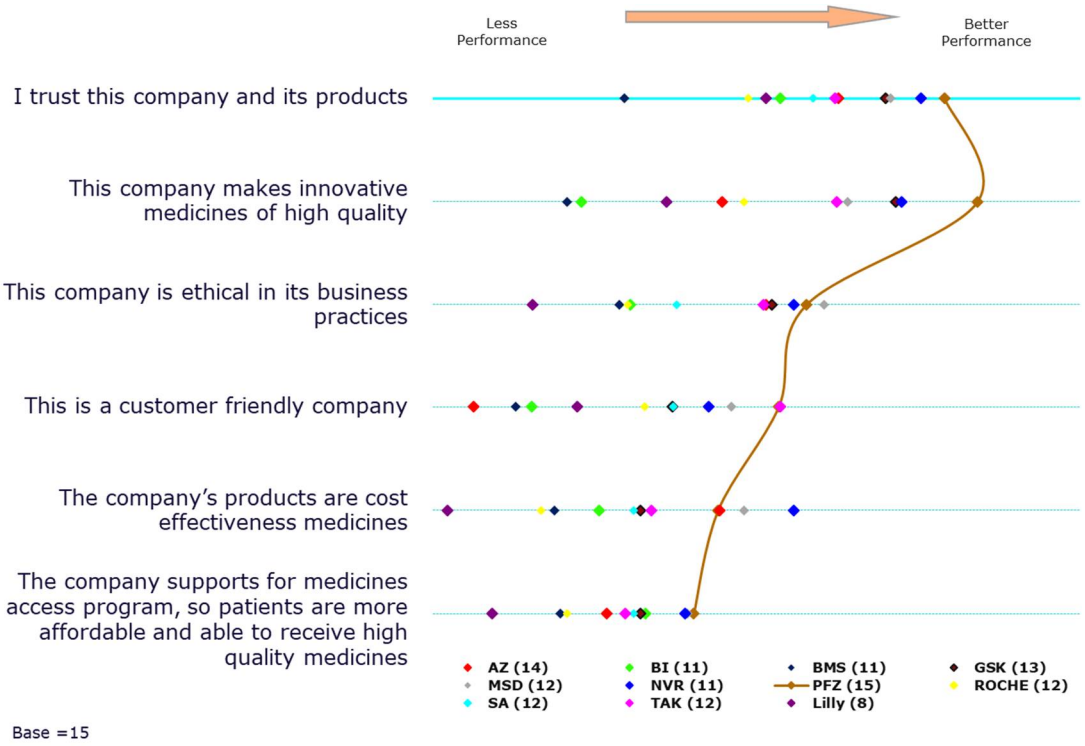
MSD is perceived in highest regards among GI physicians across all corporate image related attributes, while Pfizer is only ranked in the middle.

Figure 30: Corporate perception, GI Physicians



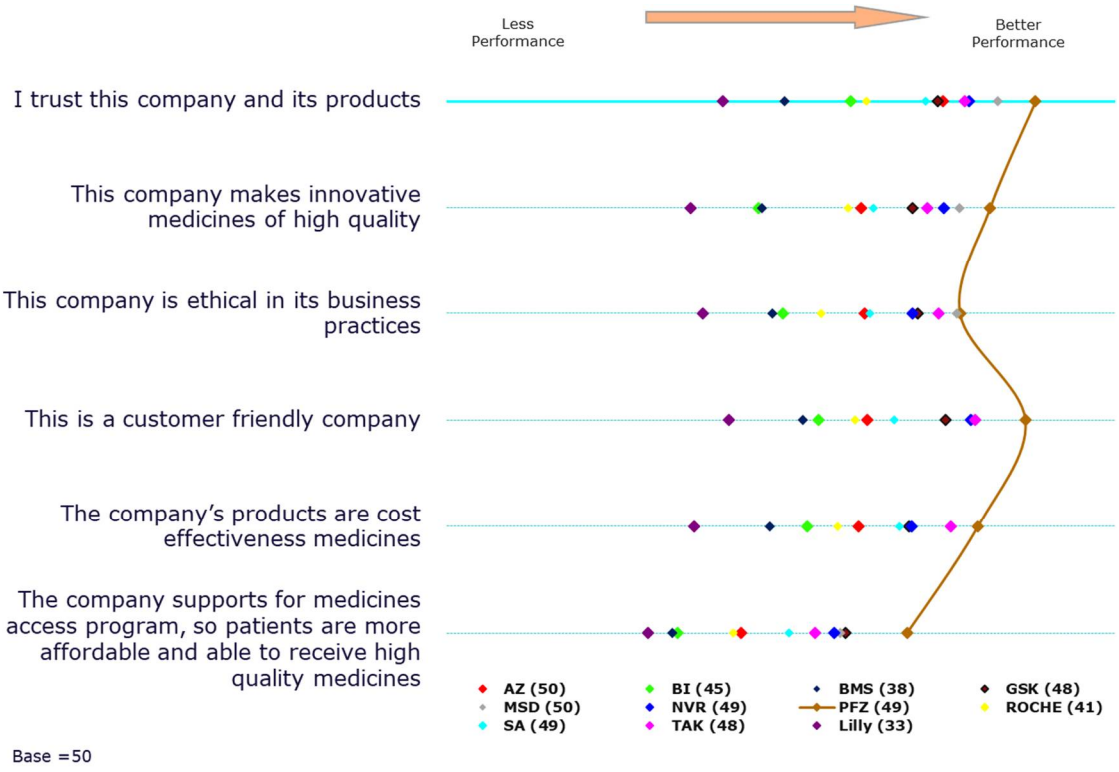
Anesthetists put Pfizer on highest regards when it comes to medical product related aspects, but they feel Takeda is the most customer-friendly company and Novartis is best in terms of cost-effective medical product offering.

Figure 31: Corporate perception, Anesthetists



Internal Medicines clearly perceive Pfizer the leading position when it comes to corporate image in pharmaceutical industry in Thailand.

Figure 32: Corporate perception, Internal Medicines

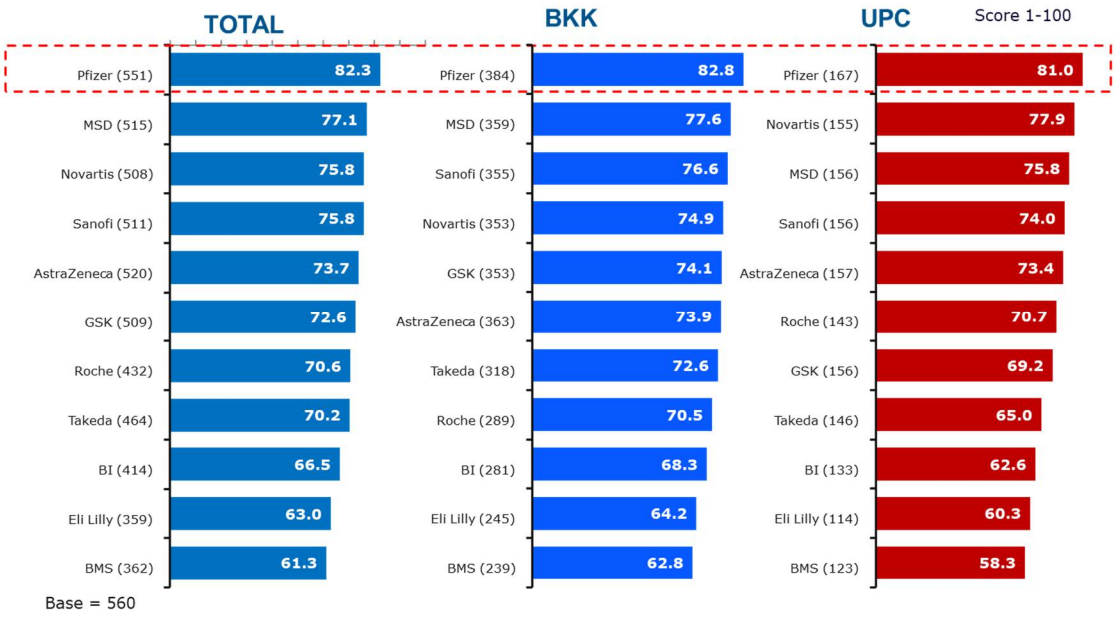


5.6 Willingness-to-prescribe

The primary survey results also unveil another interesting on the level of willingness-to-prescribe any medical products from any pharmaceutical companies, which clearly shows preferences on how Thai physicians favor prescribing certain medical products from certain companies.

Inline with findings from other sections of sales, marketing, and corporate perception in this thesis survey study; Thai physicians clearly state their preferences on prescribing any medical products from Pfizer in their practice. This willingness-to-prescribe data is aligning in both total perspective and geographic.

Figure 33: Willingness-to-prescribe



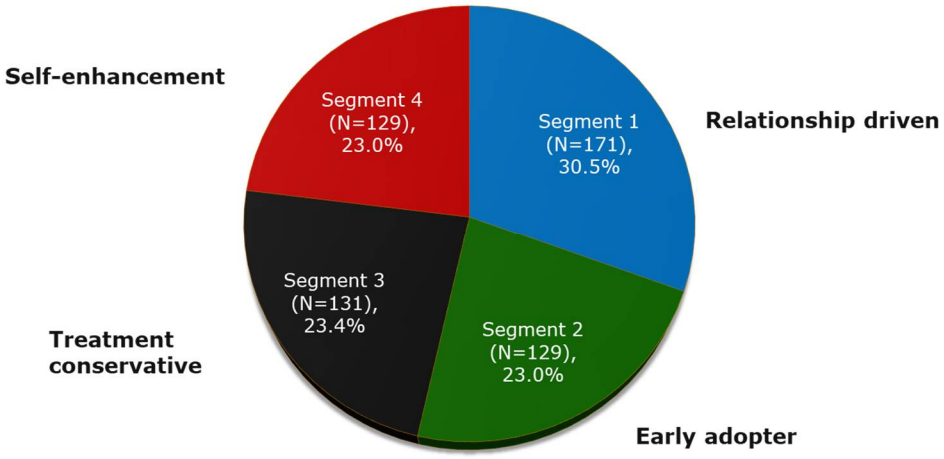
5.7 Advance analysis

Using multi-methods on correlation analysis, regression analysis, as well as factor analysis; we can come up with value-added analysis data as highlighted in the following.

a. Thai physician profile segmentation analysis

Employing factor analysis technique, all participating 560 physicians are classified into 4 segments following their characteristics: relationship driven segment, early adopter segment, treatment conservative segment, and self enhancement segment. The four segments represent almost equal proportion by overall, despite largest segment of relationship driven segment.

Figure 34: Physician segmentation



The descriptions of each physician segment are further defined and elaborated in Figure 35.

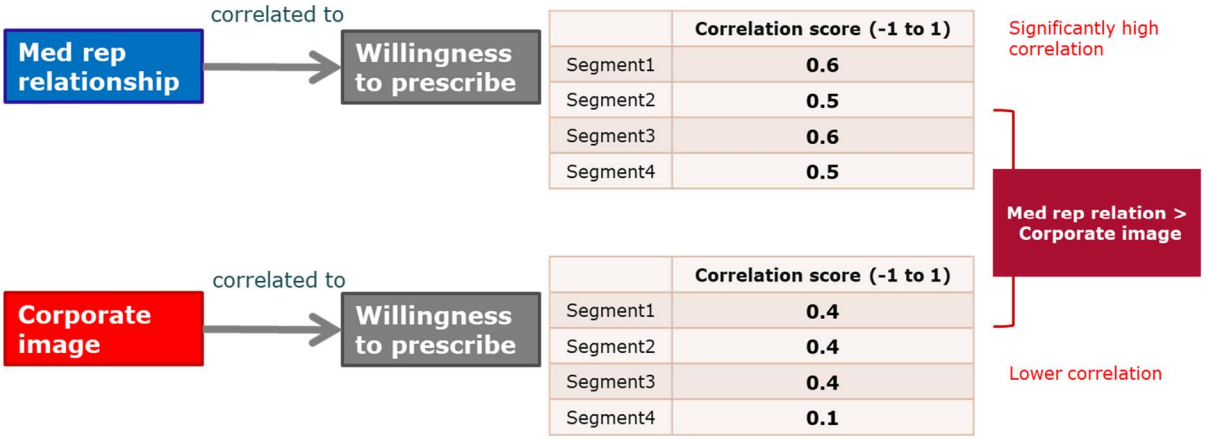
Figure 35: Physician segmentation definition

Segment 1 – Relationship driven (N=171)	Segment 3 – Treatment conservative (N=131)
• Very much value relationship with pharma companies and reps,	• Most conservative segment, do not like to prescribe new drugs
• Care for patient financial situation, practical.	• Concerned with patient cost, consider self a charitable streak
• Like brand name drug and reputable companies	• Don't value pharma and rep relationship very much
	• Do not value name brand

Segment 2 – Early adopter (N=129)	Segment 4 – Self enhancement (N=129)
• Early adopters for new innovative drugs	• Least favorable toward pharma companies and reps
• Not conservative, do not like practical solution	• Prefer doing own research
• Neutral toward pharma companies and reps	• Not likely a people person
• Less care for hospital policies, more trust in own judgment for drug choices	• Average on other dimensions

A deep dive analysis shows the relationship with medical representatives is proven with higher impact on physicians' willingness to prescribe medicines when compare with corporate perception.

Figure 36: Driver analysis by physician segment



b. Salesforce sizing advantage

As discussed earlier, participating physicians have been detailed by medical representatives from Pfizer more than others, which implies Pfizer gain salesforce competitive advantages over other players with bigger size of medical representative headcounts. Statistical analysis reveals "recall" salesforce size of Pfizer is bigger than other competitors.

Figure 37: Salesforce sizing analysis

Company	Impaction of size	Standardized to 100
AZ	3.27	**75**
BI	2.87	**66**
BMS	2.31	**53**
GSK	3.04	**69**
MSD	3.37	**77**
NOVARTIS	2.99	**68**
PFIZER	4.38	100
ROCHE	2.97	**68**
SA	3.20	**73**
TAKEDA	2.98	**68**

Taking aside of salesforce sizing advantage, however, not only gaining competitive advantages on sizing, Pfizer is also proved the best individual med rep performance over others. Individual medical representative performance index (adjusted mean) clearly implies outstanding "per head" Pfizer medical representative performance in average over others, followed by MSD, as illustrated in Figure 38.

Figure 38: Per head individual medical representative performance analysis

Company	Statsig_label	Mean	Adjusted Mean (Standardized to 100)
PFIZER	AZ, MSD, NOVARTIS, SA, TAKEDA, BI, ROCHE, GSK, BMS	1.36	100
MSD	AZ, BI, GSK, BMS	0.71	84
NOVARTIS	AZ, BI, BMS	0.21	71
SA	BI, BMS	-0.02	66
ROCHE	BI	0.28	73
TAKEDA	BI	-0.57	52
GSK	BI	-0.63	50
AZ		-1.45	30
BI		-1.66	25
BMS		-2.60	1

It should be noted, companies listed in column "Statsig label" indicates companies with average individual med reps performance that are significantly worse than the left company in column "Company".

c. True driver analysis

By using multi-variable regression technique, we can also identify “derived” driving factors that are impactful to prescription preferences among participating physicians. This technique is so called true driver analysis that get rid off biases from claimed importance as rated from participating physicians in this thesis survey study.

Interestingly, results confirm industry basic belief that quality of medical representative detailing visits & frequency, as well as international event sponsorship play key drivers to prescription preference among Thai physicians by overall, as shown in Figure 39.

Figure 39: True driver analysis

	Variable (true drivers)	Parameter Estimates
1	Frequency of (non courtesy) visits	0.059
2	Activity - International Stand alone meeting	0.034
3	Number of med rep visit	0.03
4	Activity - Symposium in local medical conference	0.03
5	Med rep attribute - Interest and understand your business need	0.029
6	Med rep attribute - Always follows up on agree actions/reliable	0.028
7	Activity - Local Stand Alone Meeting	0.028
8	Activity - Conducts high quality clinical trial programs	0.027
9	Activity - Local medical conference/ seminar	0.025
10	Med rep attribute - Ability to deliver key info within the time frame	0.024

5.8 Discussion and summary

1. Refer to Hypothesis 1:

The effectiveness of pharmaceutical companies' promotional tools varies regarding influencing the prescription behavior of physicians.

The study results clearly confirm this hypothesis by showing different impact magnitudes of different sales and marketing attributes on prescribing preferences among participating physicians. That is, Thai physicians prefer to be pampered by medical representatives from pharmaceutical companies, the higher in number of medical representatives and visit frequency, the better on how physicians feel and perceive on sponsoring pharmaceutical companies. In addition, out of many marketing activities normally invested by pharmaceutical companies in Thailand, Thai physicians actually prefer international conference sponsorship over other activities. As such, it is important for pharmaceutical companies in Thailand to continue investing on salesforce initiatives, as well as prioritizing to high impactful marketing activities that yield high return on investment (ROI) in the end.

2. Refer to Hypothesis 2:

Different pharmaceutical companies have different performances in terms of sales and marketing initiatives and executions which yields different perceptions and appreciations among physicians.

Findings reveal dominant competitive structure in Thai pharmaceutical market, where Pfizer clearly leads the industry by overall in all key commercial excellence indicators of sales force excellence, marketing excellence, and corporate perception; with certain variations among different specialties.

REFERENCES

1. Bala, R., & Bhardwaj, P. (2010). Detailing vs. Direct-to-Consumer Advertising in the Prescription Pharmaceutical Industry. Management Science, 148-160.
2. Berndt, E. R., Pindyck, R. S., & Azoulay, P. (2003). Consumption Externalities and Diffusion in Pharmaceutical Markets: Antiulcer Drugs. Journal of Industrial Economics, 243-270.
3. Chetley, A. (1995). Problem drugs. Amsterdam: Health Action International.
4. De Laat, E. (2002). How does pharmaceutical marketing influence doctors' prescribing behaviour? Den Haag: Centraal Planbureau.
5. Gonül, F. F., Carter, F., Petrova, E., & Srinivasan, K. (2001). Promotion of Prescription Drugs and its Impact on Physicians' Choice Behavior. Journal of Marketing, 79-90.
6. Hahn, M., Park, S., Krishnamurthi, L., & Zoltners, A. (1994). Analysis of new product diffusion using a four-segment trial-repeat model. Marketing Science, 224-247.
7. Issets, B. J., Schondelmeyer, S. W., Heaton, A. H., Wadd, W. B., Hardie, N. A., & Artz, M. B. (2006). Effects of collaborative drug therapy management on patients' perceptions of care and health-related quality of life. The American Journal of Medicine, 129-142.
8. Kremer, S. T., Bijmolt, T. H., Leeflang, P. S., & Wieringa, J. E. (2008). Generalizations on the effectiveness of pharmaceutical promotional expenditures. International Journal of Research in Marketing, p. 234.
9. Manchanda, P., Phil, M., & Honka, E. (2005). The Effects and Role of Direct-to-Physician Marketing in the Pharmaceutical Industry: An Integrative Review. Yale Journal of Health Policy, Law, and Ethics, 785-822.

10. Nair, H. S., Manchanda, P., & Bhatia, T. (2009). Asymmetric social interactions in physician prescription behavior: The role of opinion leaders. Journal of Marketing Research, 2-38.
11. Narayanan, S., Manchanda, P., & Chintagunta, P. K. (2005). Temporal differences in the role of marketing communication in new product categories. Journal of Marketing Research, 278-290.
12. Osinga, E. C., Leeflang, P. S., & Wieringa, J. E. (2010). Early Marketing Matters: A Time-Varying Parameter Approach to Persistence. Journal of Marketing Research, 173-185.
13. Rosenthal, M., Berndt, E., Donohue, J., Frank, R., & Epstein, A. (2002). Promotion of prescription drugs to consumers. . New England Journal of Medicine, 498-505.
14. Rubin, P. H. (2003). Medical research on pharmaceutical marketing: Is a bias ever just a bias? Atlanta.
15. Rubin, P. H. (2004). Pharmaceutical marketing: medical and industry biases. Journal of Pharmaceutical Finance, Economics & Policy, 1-16.
16. Sheehan, K. B. (2007). Direct-to-Consumer (DTC) Branded Drug Web Sites Risk Presentation and Implications for Public Policy. Journal of Advertising, 123-135.
17. Smith, M. (1991). Pharmaceutical Marketing: Strategy and Cases. Sydney: Pharmaceutical Product Press.
18. Van den Bulte, C., & Lilien, G. L. (2001). Medical Innovation Revisited: Social Contagion versus Marketing Effort. American Journal of Sociology, 1-27.
19. Windmeijer, F., de Laat, E., Douven, R., & Mot, E. (2005). Pharmaceutical promotion and GP prescription behaviour. 5-18.

APPENDICES

Questionnaire

Quantitative survey questionnaire

1. Which of the pharmaceutical company's medical representatives have been visited you in the past 1 month?
2. How often of all representatives from _____ (company in Q1) visits you during the past 1 month?
3. On average how long this representative from _____ (company in Q1) does spent time with you per visit during the past 1 month?
4. From total representatives that you have mentioned, which company's representative visits you most often during the past 1 month? (Single answer)
5. On a scale of 1-100 (where 1 is Poor and 100 is Excellent): How do you rate your relationship with the reps from each of the companies you have recently met.
6. I have a list of visit frequencies that medical representatives usually visit doctor in a month time. For each visit frequency, please rate it by your comfortability to meet any medical representative by using 100 rating scale, where 1 is NOT AT ALL comfort and 100 is VERY comfort. Please note by medical representative visits, we focus on non-courtesy visits only.
7. For each company below, please tell us how willingness to prescribe their drug of relevant therapeutic areas in general? Please rate your willingness by using 100 scale, where 1 is NOT AT ALL willing to prescribe, and 100 is DEFINITELY willing to prescribe.
8. Here is a list of attributes, concerning medical representatives. Would you please rate each of these out of 100 in order of importance, where 1 is low importance and 100 is high

importance in building a good relationship with you, and ultimately to encourage prescribing of his/her products. No two attributes can have the same score.

9. Here is a sheet that comprises some of the attributes you have just assessed on importance and a list of companies. Would you please read the attributes again and then rate your level of agreement with the representatives of each of the companies against each attribute, where 1 is a low level of agreement and 100 is a high level of agreement.
10. Here is a list of different educational commonly organized by pharmaceutical companies. Please rate each of these activities based on the importance of those activities in your opinion. Please use the scale of 1 to 100 where a rating of "1" means not important at all, and "100" means very important. Please note that NO TWO attributes can have the same score.
11. In your experience and opinion, how would you score the level of activity offered by each of these companies? Please use the scale of 1 to 100 where 1 means definitely not satisfied and 100 means definitely satisfied.
12. On a scale of 1-100 (where 1 is "Strongly disagree" and 100 is "Strongly agree"): How would you rate each of the following companies against each of the corresponding pre-defined corporate perception attributes?
13. For each of the following statement (Figure 40), please rate level of your personal agreement by using 5 scale, where 1 is not at all agree, and 5 is very agree.

Figure 40: Physician profiling attributes

Attribute #	Attributes	Rating by level of self agreement				
1	When a new prescription medication comes on the market I am usually one of the first doctor to prescribe it.	1	2	3	4	5
2	I believe in different pharmaceutical companies have different quality standards and so I have my preference on some companies that I prefer to use their drugs in my practice.	1	2	3	4	5
3	I always take into account my hospital financial concerns when I prescribe any medications to my patients	1	2	3	4	5
4	I'm very willing to spend time on supporting medical papers to ensure my patients can reimburse good quality drugs for their treatment	1	2	3	4	5
5	In my practice I often have to go for the most practical treatment option at the time rather than the "best" or "gold standard" treatment	1	2	3	4	5
6	I see pharmaceutical conpanies as partners supporting me in my practice	1	2	3	4	5
7	It can be difficult to keep from being influenced by emotion when dealing with patients	1	2	3	4	5
8	I'm more comfortable to prescribe the drugs that I'm familiar with and have high trust rather than trying new drugs for my patients	1	2	3	4	5
9	Pharmaceutical companies and their medical representatives are one of my main reliable sources of information on medications	1	2	3	4	5
10	I have my favourite pharmaceutical companies to deal with - you could say I'm brand-loyal	1	2	3	4	5
11	My opinion of a pharmaceutical company is largely based on my relationship with the representative	1	2	3	4	5
12	Pharmaceutical companies are there to help me provide better care to my patients	1	2	3	4	5
13	I always participate to any special programs offer cheaper drug access to my patients as sponsored by pharmacetical companies					
14	Making some money is not my primary concern in my career as a medical doctor	1	2	3	4	5
15	I have quite a strong charitable streak in my practice as a medical doctor	1	2	3	4	5
16	I am quite conservative in my approach to practice, so I prefer to stick to the medical guideline	1	2	3	4	5
17	I am very much a people person - its all about relationships with me	1	2	3	4	5
18	I am usually hesitant to prescribe new prescription medicines to my patients until they have been on the market for some time and are proven	1	2	3	4	5
19	Pharmaceutical companies are only a background presence in my professional life as a medical doctor	1	2	3	4	5
20	I want more support from pharmaceutical companies	1	2	3	4	5
21	As a medical doctor, I value pharmaceutical companies with high social responsibility with ethics in doing business, especially those offer special access to cheaper high quality drugs to patients.	1	2	3	4	5
22	To me, medical representatives from pharmaceutical companies play a big role to my drug usage in my practice	1	2	3	4	5
23	I am willing to ignore some hospital policies and prescribe the drugs I believe high quality and best for my patients	1	2	3	4	5