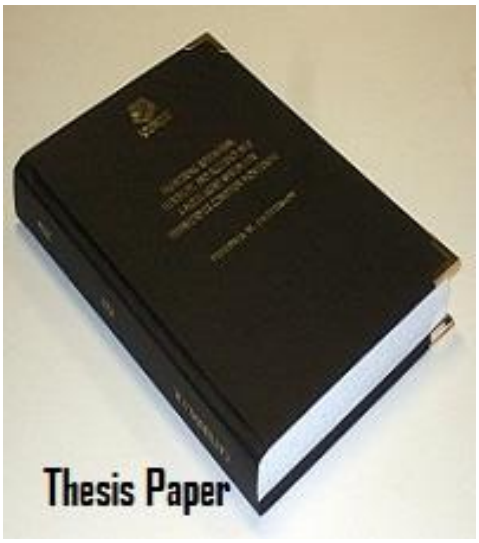
ABC Research Alert

ESSAYS ON PHARMACEUTICAL MARKETING WITH A CASE STUDY COMPANY



A Thesis Presented to the Faculty of

IICSE University …a liberal arts education.

In Partial Fulfillment of the Requirements of the Degree of

Master of Business Administration

By

Kitcha Ing-udomnoogoon

November 2018

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CERTIFICATION OF APPROVAL

ESSAYS ON PHARMACEUTICAL MARKETING WITH A CASE STUDY COMPANY

by

Dr. Marcia R. Pinheiro

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Author

Kitcha Ing-udomnoogoon

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ABSTRACT

The objective of this thesis was to design a marketing strategy plan for a case company in Thailand. Due to confidentiality, the case company is blinded as Company X, who has also sponsored primary research surveys included in the study. The ideal outcome of this thesis was to design a marketing strategy plan to help the case company become a successful pharmaceutical company and strengthen topline business performance over the near future period in 2019-2021. Quantitative research methods were mainly used in this dissertation research. A single case study with two marketing hypotheses were utilized as research techniques. Primary survey pen-and-paper based questionnaires and the interviews were the major information sources of the empirical data for the research, complemented with secondary data sources. The theoretical framework aims to find knowledge for compiling the main elements of the marketing strategy plan in this thesis. A situation analysis and SWOT analysis of the case company were also presented in this thesis. The results of the thesis were tactical marketing plans and marketing strategies for Company X Thailand. Proposed marketing strategy plans were based on the internal and external analyses of the case company.

CHAPTER I

INTRODUCTION TO THE STUDY

The motivation and background of the research and the definition of the research topic are given here. The chapter is concluded by an illustration of the structure of this thesis.

1.1 Motivation

Pharmaceutical marketing subject mainly concerns marketing mix concept of 4Ps (Product, Price, Place, and Promotion) which can be very broad in nature and scope following diversification of available therapeutic areas of medical products. For concrete analysis, this thesis study of pharmaceutical marketing has been synthesized and elaborated using a company case study. The selected case company is Company X Thailand, one of the largest pharmaceutical companies in Thailand with long establishment in the market. Company X, a British research-based pharmaceutical company with global business operations worldwide, has long established in Thailand for decades with its dedicated country headquarter office in Bangkok. The company was ranked 10th by revenue terms in Thailand in 2017, as shown in Table 1.

Table 1: Pharmaceutical company revenue ranking in Thailand, 2017

Revenue ranking	Pharmaceutical company	Revenue (Million Baht)
1	PFIZER	289
2	Merck Sharp & Dohme (MSD)	228
3	GLAXOSMITHKLINE	196
4	NOVARTIS	168
5	SIAM BHEASAJ	160
6	ROCHE	157
7	SANOFI	156
8	BERLIN PHARM	129
9	GPO	123
10	Company X	99

Source: IQVIA Sales Audit Data

During career practice in research and consulting specialized in pharmaceutical industry, the author had managed several project engagements commenced by Company X Thailand on various business and marketing issues. On own observations during the past 10 years, Company X Thailand has been operating with mix performance mainly responsible by two major factors, one was the few major internal reorganizations following global corporate guidelines implemented during the review period, and another was the dynamic changes of the pharmaceutical market itself. The company was once ranked 6th in terms of revenue sales back in 2012, but constantly declining revenue performance down to 6th place in later years as shown in Table 2.

Table 2: Company X Revenue Ranking Performance 2012 - 2017

Pharmaceutical company	Revenue Ranking					
	2012	2013	2014	2015	2016	2017
PFIZER	1	1	1	1	1	1
Merck Sharp & Dohme (MSD)	3	3	2	2	2	2
GLAXOSMITHKLINE	5	5	3	4	4	3
NOVARTIS	4	4	3	2	2	4
SIAM BHEASAJ	8	8	7	7	6	5
ROCHE	7	7	6	6	7	6
SANOFI	9	8	9	8	8	7
BERLIN PHARM	12	11	11	9	9	8
GPO	9	9	9	9	9	9
Company X	**6**	**7**	**8**	**9**	**10**	**10**

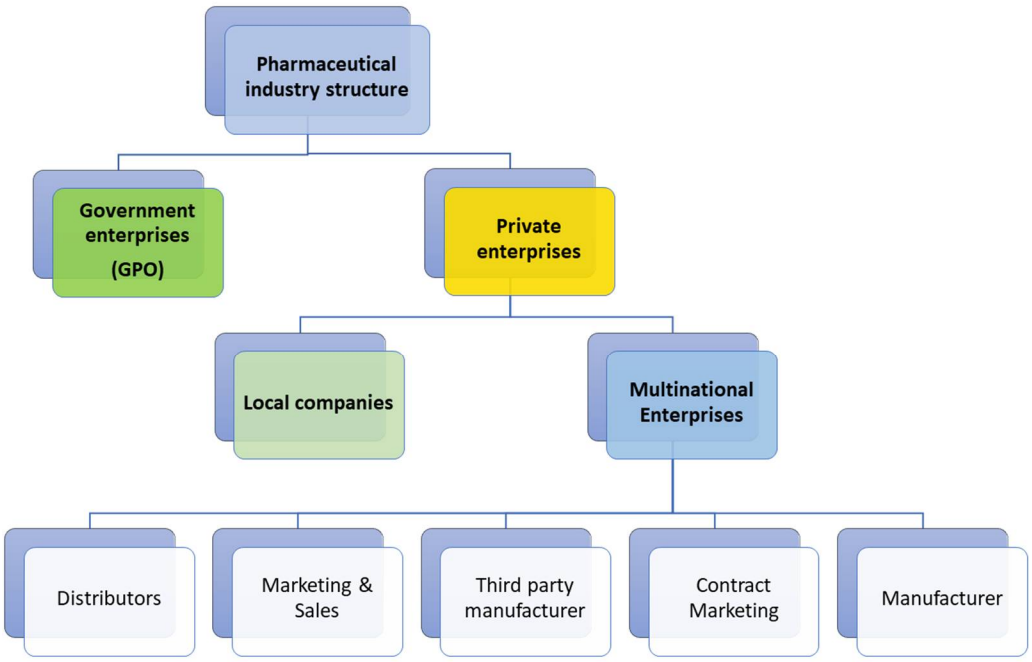
Source: IQVIA Sales Audit Data

Passionately, the author would like to analyze Company X Thailand as a company in different marketing perspectives and then propose the effective marketing strategies to achieve sustainable business growth potential.

1.2 Background

Pharmaceutical market in Thailand has a clear industry structure as illustrated in Figure 1 below:

Figure 1: Thailand Pharmaceutical Industry Structure



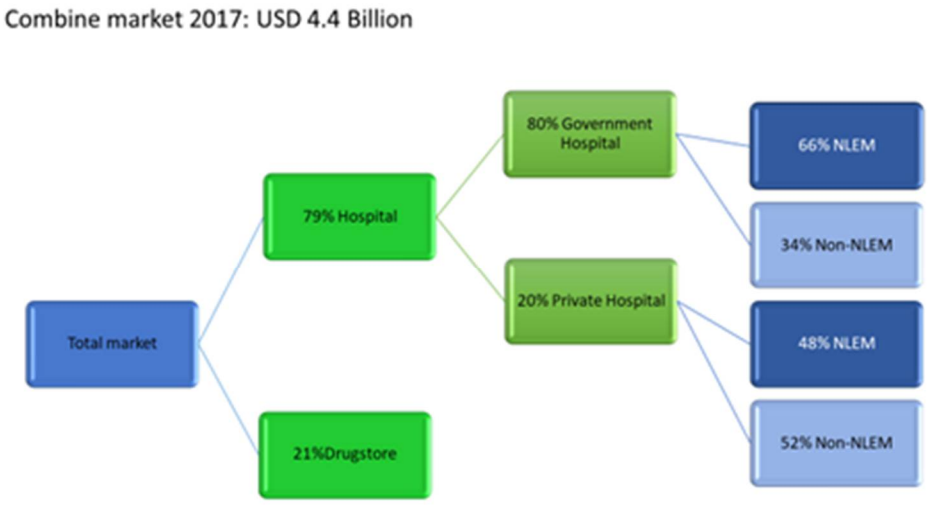
Source: Thailand Board of Investment

In Thailand, there are both public and private entities who manufacture and market medical products. There is only one publicly-owned organization who manufactures and markets generic medical products to all public hospitals throughout the country, so called Government Pharmaceutical Organization (GPO). In addition, there are many private companies, both local and multinational companies, who actively distribute, market and sell drugs to all hospital channel, drugstore channel, and private clinic channel. Unlike other countries such as Myanmar and Vietnam where there are hundreds of small distributors of drugs and medical devices, in Thailand

there are only two major distributors who dominate overall industry with more than 80% market share, DKSH and Zuellig. Most multinational pharmaceutical companies distribute their medical products in Thailand with either of these two distributors, or both.

According to IQVIA Sales Audit Data, Thailand pharmaceutical market was registered at 4.4 billion USD in 2017, which represented 6% increase over 2016. Interestingly, pharmaceutical market in Thailand is largely hospital-based market, of which a significant proportion of total drug sales value is significantly contributed by hospital channel as illustrated in Figure 2.

Figure 2: Thailand Pharmaceutical Market Revenue Structure 2017



Note: NLEM stands for National List of Essential Medicines

Source: IQVIA Sales Audit Data

Pharmaceutical market in Thailand has been growing in consumption during the past 5-year (2012-2017), with volume growth of 11.2% CAGR and value growth of 5.2% CAGR (IQVIA Sales Audit Data). Company X Thailand, however, had under-performed as opposed to total market

performance with only 3.6% CAGR revenue growth during the same period of 2012-2017 (IMS Health Audit Data). The fact that overall market (in volume terms) has increased explained by rising consumption of medical products following better accessibility through national health universal coverage programs, despite higher price pressure exercised by public agencies particularly on original medicines from multinational pharmaceutical companies.

Pharmaceutical market revenue growth was limited during the past 5 years was mainly responsible by cost containment policies exercised by Thai Government to put pressure to private pharmaceutical companies to lower their drug prices for better patient access reasons. The main condition on price pressure policies is because most of original drug sales of multinational pharmaceutical companies is significantly contributed from public reimbursement schemes as shown in Figure 3.

Figure 3: Public Medical Reimbursement Schemes in Thailand

Current
Social Health Protection Schemes

Social health protection schemes have covered all Thai citizen since 2002

Major Schemes	Civil Servant Medical Benefit Scheme (CSMBS)	Social Security Scheme (SSS)	Universal Coverage (UCS)
Introduced in	1960s	1990s	2002
Target beneficiaries	Govt employees & dependents, retirees	Private sector employees:	To whom which not covered by CSMBS nor SHI,
Pop Coverage	7%	13%	80%
Funding	Govt budget	Payroll contribution, Tripartite	Govt budget
Payment to health facilities	Fee-for-service for OP, and DRG for IP	Capitation (use DRG in risk adjusted part)	Capitation + DRG

Note: DRG stands for Diagnosis Related Groups

Source: Health Insurance System Research Office, Thailand

As such, relevant public healthcare agencies (Social Security Office and The Comptroller General's Department) lay out pricing guidelines for multinational pharmaceutical companies to propose reasonable prices of original medical products to qualify for drug reimbursement conditions. The impact has been significant for most multinational pharmaceutical companies who rely on revenue sales in reimbursed hospital channel.

1.3 Statement of The Problem

The impact level from cost containment policies on different pharmaceutical companies can be varied, depending on product portfolios. This is because cost containment policies do have higher impact particularly on ethical drugs in certain therapeutic areas only, such as cardiovascular, orthopedic, analgesics, respiratory, and oncology, etc. In response to price pressure and public cost containment policies, most multinational pharmaceutical companies had lowered prices of many drugs in competing with cheaper generics and enhancing product listing opportunities in the hospitals. While some pharmaceutical companies such as Pfizer, GlaxoSmithKline (GSK), and Sanofi have been partially affected from these cost containment policies because they have a sizable business portfolio of consumer healthcare products that can potentially compensate the declining ethical product portfolio business revenue, Company X who only market expensive original ethical drugs that can be practically substituted by much cheaper generic drug choices

have been directly impacted from national cost containment policies following company's product portfolio as shown in Table 3.

Table 3: Company X's Product Portfolio and Revenue Contribution in Thailand, 2017

Therapeutic area	Drug name	Indications	Estimated Revenue contribution (2017)
Cardiovascular	Product C	Dislipidemia	10%
	Product B	Antiplatelet	10%
	Product F	Diabetes	10%
Respiratory	Product S	Asthma and COPD	25%
	Product P	Pediatric Asthma	5%
Oncology	Product T	Lung cancer	5%
	Product I	Lung cancer	12%
	Product F	Breast cancer	5%
Others			18%
TOTAL			100%

Source: IQVIA Sales Audit Data

Three major therapeutic areas of Company X Thailand, which are cardiovascular, respiratory, and oncology; have been directly affected by cost containment policies, of which total revenue contribution of the three combine portfolios is estimated at 82% of total company revenue. As a result, Company X's revenue performance has been noticeably declining since 2012, with lower company ranking as illustrated in Table 2 above.

1.4 Purpose of the Study

Since healthcare expenditure in Thailand captures a significant proportion of total GDP, estimated at 5.2% in 2017, Thai government aims to lower healthcare expenditure by 0.8% by the end of 2022. With this, it is anticipated more aggressive cost containment policies will be issued in the

coming years, which creates more business pressures to multinational pharmaceutical companies. Refer to the latest conversation with Company X Thailand's General Manager, the company will remain focusing on core business in ethical drug portfolio globally which implies business challenges foreseen in Thailand over the next few years.

Seeing business challenges ahead for Company X Thailand, the purpose of this thesis is to investigate the as-is business portfolio, current marketing practices of pharmaceutical companies through a literature search, case studies and interviews, and to analyze current business conditions of Company X Thailand and formulate effective marketing strategy for the company to improve overall business performance.

CHAPTER II

LITERATURE REVIEW

This chapter provides general overview of the literature related to marketing, promotion, advertising and pricing in pharmaceutical industry.

Generally, in pharmaceutical market, the type of drug determines the way it can be advertised and promoted. Direct-to-consumer advertisement (DTCA) of prescription drugs are allowed in Australia and the USA. However, the majority of countries in Asia, including Thailand, allow the DTCA for only over-the-counter (OTC) drugs, but strictly prohibited for ethical drugs. DTCA includes TV, radio, mass and social media advertisement. Since ethical drugs are highly regulated in most countries in Asia, and so marketers employ different marketing strategies promoting ethical drugs direct-to-physician advertising (DTPA) only, mainly physicians in hospital channel as drug prescribers.

According to ethical codes of conduct defined by Food and Drug Administration (FDA) of most countries in Southeast Asia region, the desirability of specific pharmaceutical sales and marketing activities is a highly debated topic. On average, pharmaceutical companies spend 40% or more of their revenue on sales and marketing initiatives. Most of these sales and marketing activities are directed to physicians (prescribers), which include face-to-face visits, product detailing, emailing, sponsorship on academic symposiums, and post-marketing research and conferences. While opponents criticize these pharmaceutical marketing activities as wasteful and excessive and as potential contributors to the overuse, misuse and wrong prescription of drugs by physicians (Kremer, Bijmolt, Leeflang, & Wieringa, 2008), supporters of pharmaceutical promotions claim that marketing expenditures give innovative pharmaceutical manufacturers a fair chance to recover high R&D expenditures and, moreover, marketing may serve as a communication channel to educate physicians and pharmacists; and expose consumers to information that may improve their

health outcomes and medical options (Kremer, Bijmolt, Leeflang, & Wieringa, 2008). From these two perspectives it can be concluded that in current research a contradictory view exists regarding the influence of pharmaceutical marketing on physicians prescribing and pharmacist dispensing behaviors. Although the pharmaceutical industry has an international nature, prescription pharmaceutical markets have a strong national character. This can be explained by cultural differences between countries that influence demand. In addition, the structure of the pharmaceutical market differs from country to country.

Effects of promotion and advertisement

Hurwitz and Cave (1988) investigated the effect of promotion and price discounts on market share of new entry to the pharmaceutical market. They found that promotion increases market share, however, the short-run effect of price discounts on market share is weak. That means that market share grows up along with the accumulation of advertising stock.

Rosenthal et al. (2003) found that direct-to-physician advertising (DTPA) effect is greater at the class level than at individual product sales. Therefore, spending on DTPA may fail to increase demand for a firm's own drug, but still increase class demand.

Bala and Bhardwaj (2007) distinguished two types of effects of DTPA: informative and persuasive. They found that when firms are homogeneous in terms of their detailing productivity, they use detailing as well as informative DTPA if the market is pretty large. If the market is small, firms rather use detailing and persuasive DTPA. When the companies adopt informative DTPA,

level of detailing goes up. In contrast, level of detailing goes down when the firms use persuasive DTPA.

David and Markowitz (2011) studied the role of advertisement and promotion in the pharmaceutical industry. They developed a model, which predicts the optimal level of advertisement depending on the level of competition (monopoly or oligopoly). Their model confirmed the fact that DTPA of a company increases its own market share while competitors spending on advertisement decrease own market share. They also found that high spending on detailing can lead to adverse drugs events, which increase the probability of regulatory actions against the firm. These results are similar to what found David et al. (2010).

Kalyaranam (2009) investigated the effect of direct-to-physician advertisement (DTPA) on market share in the pharmaceutical industry suggesting that firms make their advertising decisions endogenously. The second purpose of his study was to find empirical evidence for the fact that DTPA leads to brand switching. He used data about sales, price, direct-to-physician advertising and the average cost of consumption per usage for three prescriptions, obtained for 1998 and 1999 years. The major finding is that there is a positive effect of DTPA and detailing on market share of a firm which makes its advertising decision endogenously. Empirical results support the claim of medical insurers and providers that DTPA encourages brand switching (increasing the market share of one firm while decreasing relatively to other firms) rather than increasing the total demand for drugs.

As opposed to Kalyaranam (2009), Iizuka (2004) found that DTPA has the market-expanding effect rather than business-stealing (brand-switching) effect, whereas detailing has business-stealing effect. The results suggest that firms will use DTPA in the markets, which have a high

potential to grow up. At the same time, firms will spend money on DTPA less in the market with high level of competition. He also found that new, high-quality drugs, for under-treated diseases are more frequently advertise.

Pricing in pharmaceutical industry

Prescription drug costs have been a key contributor to the rise of health care expenditures (CNN, 17 Nov 2009). Moreover, drug research and development (R&D) costs continue to rise, making it more difficult for manufacturers to maintain their high levels of profitability without increasing drug prices further. In response to public concerns, the vice president of US PhRMA stated that "All companies make their own independent pricing decisions based on many factors, including patent expirations, the economy, ... and huge research and development costs..." (US PhRMA, 2009). Whether these statements are true or not, it is in the public interest to identify factors that drive prescription drug prices because the rising price of prescription drugs affects all participants in the pharmaceutical supply chain, including manufacturers who set the price, wholesalers and pharmacies who distribute the drugs, private insurers, the government, and

ultimately the patients who pay for the drugs. Furthermore, the demand for these prescription drugs is substantial, 91 percent of seniors and 61 percent of non-seniors rely on prescription drugs on a daily basis (Kaiser Family Foundation, 2009a). As America's population continues to age, it is reasonable to expect that spending on prescription drugs will continue to rise.

CHAPTER III

THEORETICAL FRAMEWORK

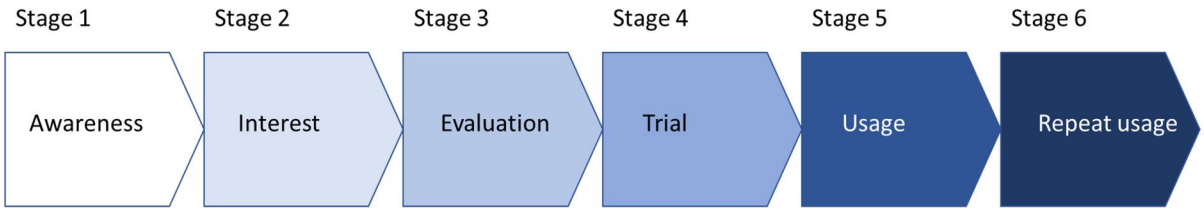
As already explained in the first introduction chapter, the thesis objective is to formulate effective marketing strategy for Company X in Thailand. The theoretical knowledge is presented in this chapter. The main objective is to present general marketing strategy theories that are applicable in highly regulated pharmaceutical industry as framework for further analysis.

3.1 Pharmaceutical Marketing of Ethical Drugs

Pharmaceutical marketing is the business of advertising or otherwise promoting the sale of pharmaceuticals or drugs. Marketing plays a key role influencing or directing activities from the manufacturer to the patient. It is the demand from the consumer that determines which goods will be produced. Any pharmaceutical company that wants to serve its market has to endeavor in direct marketing activities so that the right product is sold in the right quantity in the right place at the right time.

Typically, in ethical drug domain, target customers of pharmaceutical companies are healthcare professionals and not patients, since healthcare professionals play sole decision makers in prescribing or dispensing which drugs to patients for treatment. In this scenario, patients do not have any involvement on product brand selection in buying process, but only healthcare professionals. Healthcare professionals in this thesis study mainly refer to physicians in the role of prescribers, and pharmacists in the role of dispensers. The aim of pharmaceutical marketing is to change from a non-usage of a product to usage or repeated usage. There are different buying stages of healthcare professionals (physicians and pharmacists) in which the pharmaceutical companies have to make their product known, so called drug adoption ladder, as illustrated in Figure 4 below:

Figure 4: Drug Adoption Ladder Diagram



Stage 1: Unawareness to awareness

During this stage the candidate drug is most likely in developing milestone (phase 2 or Phase 3) and it is not yet known at all by the doctors/pharmacists and in which the candidate drug moves from no knowledge towards a situation where the healthcare professionals become aware about it.

Stage 2: Awareness to Interest

This is a movement from a passive stage to an active stage of attention. The healthcare professionals will have their curiosity motivated by the products' innovation, clinical profiles, or mode of action (MoA). The marketing objectives in this stage are to gain their attention through promotion, create interest or a motivation towards the drug, and provide a summary information of the new drug.

Stage 3: Interest to Evaluation

At this stage, the healthcare professionals will consider the effect of the new drug upon their motivations i.e. treatment goals and objectives, current unmet needs of existing drugs, etc. The healthcare professionals will analyze, rationalize, and look for advantages with the new drug. Depending on what the healthcare professionals need, such as improved efficacy, more economy,

the uniqueness of the drug and safety. Marketing at this stage attempts to encourage healthcare professionals to start their study (further information search) of the drug, find the requirements of the healthcare professionals, and segment and target the healthcare professionals according to the requirements of the professional.

Stage 4: Evaluation to Trial

This is the key movement for the evaluation stage in which healthcare professionals still considering the new drug to actually using it. Marketing from the pharmaceutical company at this stage has to identify usage opportunities and suggest the usage when the opportunities occur.

Stage 5: Trial to Usage

When the trial is successful, the healthcare professionals will move to usage in prescribing or dispensing the new drug to patients. The pharmaceutical company at this point has to provide reminders of key elements such as brand, therapy area and the advantages of usage, emphasize the success and the approval of prescribing the product, and remind the prospective subscriber of usage prospects and present proof of other healthcare professionals usage and success.

Stage 6: Usage to Repeat Usage

This is the final objective for marketing of ethical drugs in pharmaceutical industry. When healthcare professionals move from the occasional use to constant use, they move into a stage of automatically selecting the particular prescription drugs. At this stage the company has to maintain the environment that has led to satisfaction and keep a satisfactory image.

3.2 Marketing Mix Strategy in Pharmaceutical Marketing

According to Kotler et al (2007), marketing strategy is the marketing logic by which the business unit hopes to achieve its marketing objectives. It is an endeavor by a corporation to differentiate itself positively from its competitors, using its relative corporate strengths to better satisfy customer needs in a given environmental setting. For an organization, target consumers are at the center of the marketing strategy (Harris, 2003). Changing consumer needs and business environment has necessitated pharmaceutical companies to adopt marketing strategies to survive hence attracting and retaining customers. Product, price, place, promotion. People, process and physical evidence strategies have remained key pillars of any successful pharmaceutical company. Adoption of effective marketing strategies promotes quality service delivery in the pharmaceutical industry.

Marketing mix strategy is a process where specific marketing elements are used to achieve an organization's or individual's objectives and satisfy the target market. This is achieved by using four tools such as Product, distribution, promotion and price. Besides the four Ps, services' marketing comprises more categories such as People, which means any person meeting customers. They are particularly important because, to the customers, their personal presentation creates either a positive or a negative impact to them. Because of this, they must be appropriately trained, well-motivated and the right type of person assigned the duties (Harris, 2003).

Marketing effectiveness is not necessarily revealed by current marketing performance. Good results and growing sales may be due to the organization being in the right place at the right time rather than having effective marketing management. This is frequently the situation during the

entrepreneurial phase of an organization's growth and development (Baron, 2003). The innovator frequently has considerable discretion in the market. At this stage the driving force is entrepreneurship rather than marketing. With acceptance of the product or service in the market and with the rise in competition which normally accompanies the acceptance of a new product or service, performance becomes more marketing-dependent (Peter, 2007). In a competitive environment, especially where customers have learned how to respond to various offerings, the situation changes. Improvements in marketing in the organization might improve results while another organization might have poor results in spite of excellent marketing planning. It depends on how well the organization matches its own resources against those of the competition to attract and hold the loyalty of customers (Peter, 2007).

The marketing effectiveness of the organization in serving customers in the face of existing and potential competition is reflected in the degree to which it exhibits five major attributes of a marketing orientation; demonstrated customer philosophy, integrated marketing orientation, possesses adequate marketing information, adopts a strategic orientation and experiences a high level of operational efficiency. The performance of the organization on these individual attributes may be used to indicate which elements of effective marketing action need most attention. It should be recognized, however, that this evaluation provides general information only but has the merit of obtaining an approximate measure of the orientation of the organization (Baron, 2003).

Product Strategy

Product strategy refers to all the goods and services a company offers to the market. Also, products may comprise physical products, services, information, places, organizations or ideas that can be offered for attention, acquisition or consumption that might satisfy a want or a need. Products are

classified in two categories; tangible and intangible products (Kotler 2005). The product is therefore more than a branded, packaged good offered for sale. Its definition has been widened to include services and benefits and the services that can be achieved from the product. This refers to a core product or service, which can be changed by adding features and options. It consists of multidimensional entities and benefits offered to customers.

Product strategy consists of elements such us packaging, branding labeling and product attributes that are of good quality, style, features and design. Strong brand preference is an added feature to the product. A product which is an object, or a service is produced or manufactured on a large scale with a specific volume of units. A successful new product is the result of careful marketing (Kotler and Keller 2009). A product has its concepts; brand, product line and product mix. A brand is a distinctive product offering created by use of a name, symbol, design, packaging or some combination of these intended to differentiate these from competitors. A product line is a group of brands that are related in terms of the functions and benefits they provide. Product mix strategy is a total set of products marketed by the company (Jobber 2004). In pharmaceutical market, products refer to drugs, vaccines, medical devices, as well as healthcare services. In this thesis study context, products refer mainly to ethical drugs only.

Place Strategy

Place or distribution strategy involves delivering of products or services to the final user. The channel of distribution is very important to be considered depending on the size of the company and the nature of the product (Strauss, 2006). It should also be estimated on whether to sell directly to the consumer or use intermediaries such as wholesalers and retailers. Cost is the most important factor to be considered when deciding on the distribution channel. Proper distribution planning

which means a systematic distribution decision making process is also important for effectiveness and cost reduction (Baron, 2003).

The distribution channel needs to be designed and monitored frequently to withstand changes in the market and to reduce channel problems resulting from inefficiency using features such as transportation and storage in the market place (Chaffey 2002).

In pharmaceutical market, distribution channel usually refers to three major channels which are hospital channel, drugstore channel, and private clinic channel. In hospital channel, there are mainly public hospitals and private hospitals. In drugstore channel, there are mainly modern chain drugstores and independent drugstores.

Promotion Strategy

Promotion strategy is important because the consumers are informed about the new products and their attributes before they develop positive attitudes toward them. For the goods and services in the market, promotion acts as a way to persuade and informing the end users so that they attain the product knowledge and hence like the product. A Satisfied customer will send word-of-mouth to the others thereby increasing the demand of the product. A good promotion involves product, distribution and price components of marketing. (Evans and Berman 1994)

A business total marketing communications program is called the "promotional mix" and consists of a blend of advertising, personal selling, sales promotion, brand management, product placement and public relations tools. It has been established that many companies apply these promotion-mix elements in order to increase sales revenue (Strauss, 2006).

In pharmaceutical ethical drug market, promotional activities are strictly monitored by relevant bodies, mainly Food and Drug Association (FDA). More importantly, promotional activities of ethical drugs direct to patients are strictly prohibited. Pharmaceutical companies can only promote their ethical drugs directly to healthcare professionals, which are physicians, pharmacists, and nurses.

Price Strategy

Price represents the value of a good or service for both the seller and the buyer. In order for it to of importance there has to be a defined price planning which means a systematic decision-making relating to all aspects of pricing by a company involving both tangible and intangible factors, purchase terms, and the non-monetary exchange of goods and services. It is the only element in the marketing mix that produces revenue; the others produce costs. Price balances demand and supply because it makes the buyer and the seller agree on a certain value for goods and services (Peter, 2007).

Price is one of the positioning methods and should be implemented in relation to target market, product mix, services and competition. Price should involve all the cost, otherwise companies will incur losses. Therefore, the management and the managers should understand how to set the price by considering lost margin and lost sales. Also factors such as demand, competition, distribution channels, internal environment and public authorities affect price setting (Woodward, 2004).

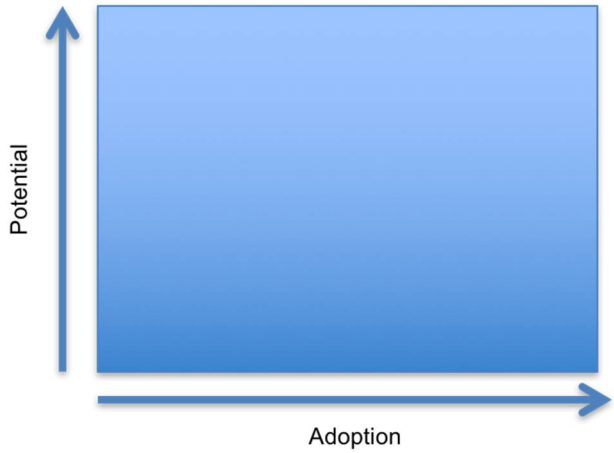
Understanding how to set a price is an important aspect of marketing decision-making because of changes in the competitive market that many believe will act to decrease prices in many countries. Developing a coherent pricing strategy assumes major significance (Jobber 2004).

In pharmaceutical ethical drug market, price strategy becomes vital element in marketing excellence practice especially in those country markets with high price competition from cheaper generic drugs, and price pressure exercised by government agencies. Pharmaceutical companies usually take into considerations of market pricing structure, price sensitivity of physicians, willingness-to-pay of patients, and willingness-to-pay of payers into their drug pricing strategy.

3.3 Customer Profiling (Segmentation and Targeting)

In pharmaceutical industry, profiling refers to the process of analyzing customers base in terms of selected criteria that pharmaceutical companies regard as being relevant to business. As stated earlier, in pharmaceutical market, ethical drugs, customers refer specifically to healthcare professionals which are mainly physicians and pharmacists. Usually, this is a combination of the customers potential to use medical product (usually defined as number of patients they see at medical setting during a period of time) and the extent to which they actually prescribe or dispense the drug brand (usually defined as number of drug prescriptions or dispenses during a period of time). Other considerations might be the extent to which they are advocates of brand or, simply, their accessibility with regards to salesforce. This can be illustrated in Figure 5 below.

Figure 5: Customer profiling matrix

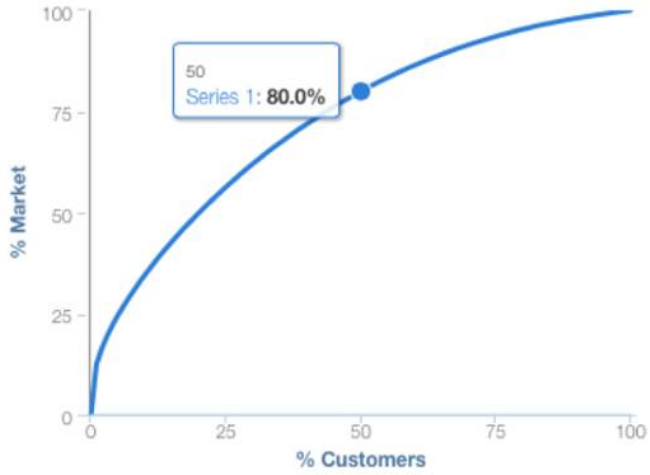


Once a company has identified required criteria, each customer is then evaluated in terms of the chosen parameters, in this case their potential to prescribe product and the extent to which they have adopted the product as their preferred treatment option.

After a company has profiled customers in terms of their potential and product adoption, the next question is how do they know into which segment they will fall? How do they define whether they are A, B or C potential customers? Typically, the technique so called concentration curve is widely used in pharmaceutical industry.

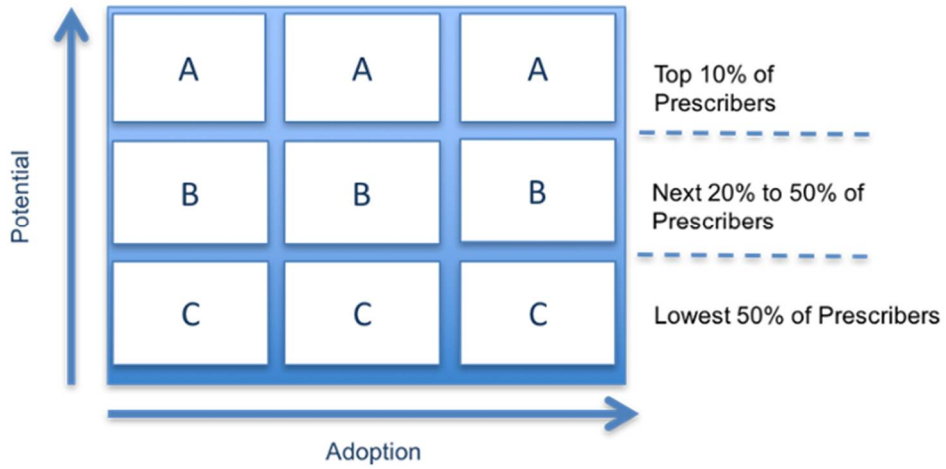
To illustrate concentration curves, in most pharmaceutical markets it is observed by 80:50 split where 50% of the prescribers write 80% of the value of the market. The top 10% of prescribers in a market with an 80:50 concentration will prescribe 34.7% of the market potential whilst the lowest 10% will only prescribe around 2% of the market potential, as illustrated in Figure 6.

Figure 6: Concentration curve



For instance, if setting the second cut-off at 50%, resulting in access to 80% of the market whilst only requiring sufficient resources to see 50% of the customers. The remaining 50% of customers are then untargeted by the sales teams, becoming C-customers and targeted through other, less costly marketing channels.

Figure 7: Example of segmentation and Targeting (S&T) Matrix in pharmaceutical industry



3.4 Salesforce Effectiveness (SFE)

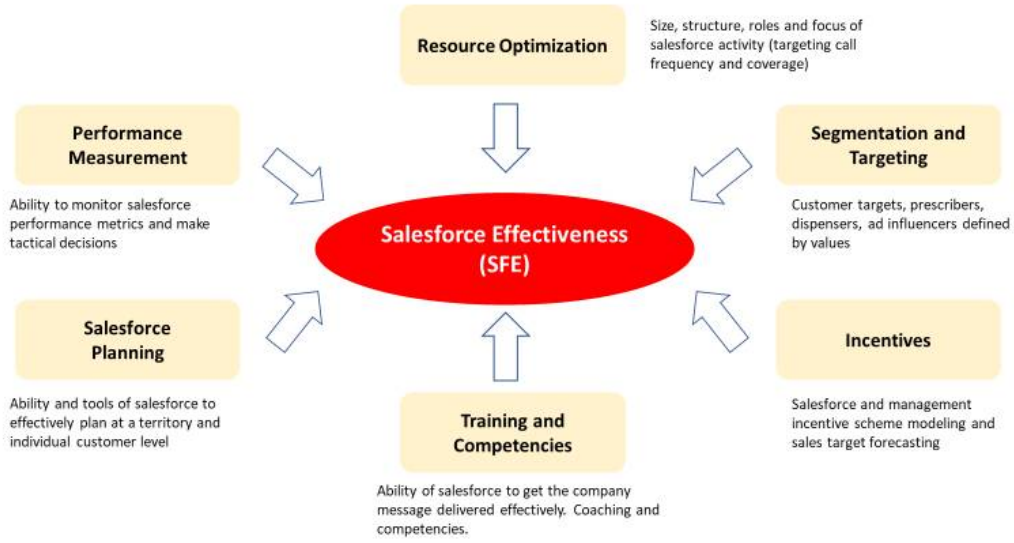
In pharmaceutical industry, salesforce effectiveness is a strategy that enables the sales force to target bulk of its effort towards highly profitable customers (physicians, at most) and limit coverage of less profitable physicians. It involves around sales team strategy, talent management, remuneration and support processes (Doole & Lowe 2007).

SFE is all about keeping a company ahead of shifting market dynamics by rapidly developing and evolving new sales and marketing models around physician access and detailing channels. It's very important to develop physician trust and confidence around all aspects of the pharma business. SFE in pharmaceutical industry is also achieved when cross functional departments compliment during the critical product launch phase. This helps management review on-the-fly performance analysis and keep up compliance with the ever-increasing regulatory changes.

A customer-centric approach focused on how best to deliver value to the physician will guide these efforts. Based on field data, segments and territories, pharmaceutical companies must paint an individual, centralized picture of each physician and then use this information to create appropriate and relevant communications. It is crucial for pharmaceutical companies to make sure that physicians receive the information they need at the right time and in their favored format. This customer-centric approach enhances the role of the sales representatives. They become trusted partners in a two-way dialogue, which increases their influence and improves job satisfaction. All these activities lead to sustainable and valuable relationships with physicians and thereby increase profits and market share for pharmaceutical companies. Improving salesforce effectiveness may seem overwhelming at first; but persistence, continual monitoring, and regular re-assessment are

the key drivers to gain maximum market share growth. The key components of salesforce effectiveness can be illustrated in Figure 8.

Figure 8: Salesforce Effective Framework



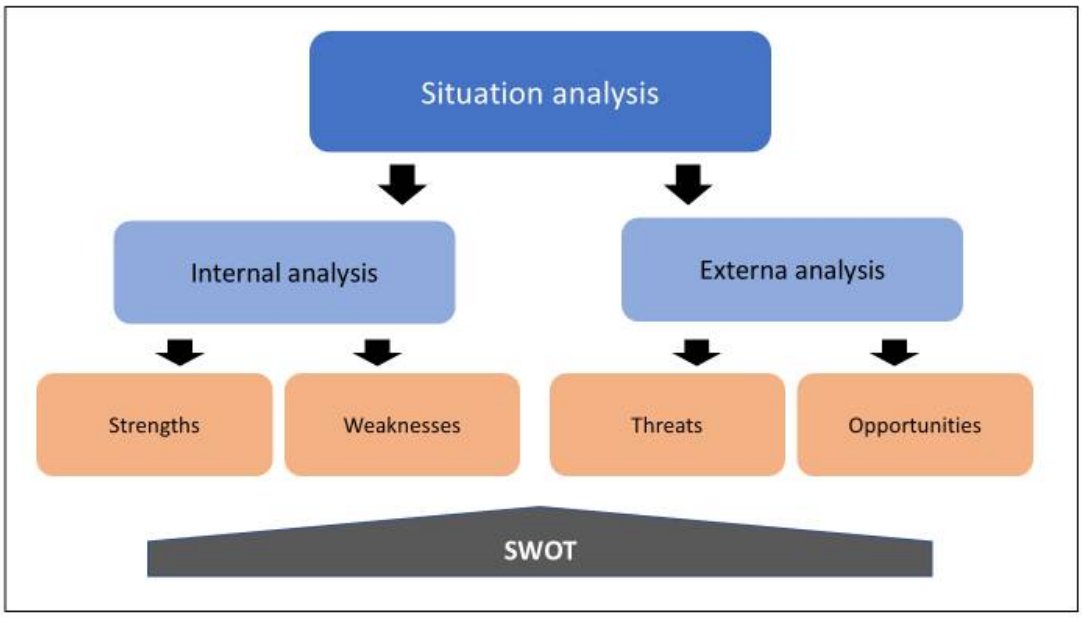
CHAPTER IV

SITUATION ANALYSIS

Situation analysis technique can be used for the case Company X Thailand to analyze the current market conditions and includes assessing market conditions and trend. "Situation analysis is the process by which the company develops a clear understanding of the individual market and then evaluates its significance to the company and for other markets in which the business operates" (Doole & Lowe 2007, 27). A clear market definition, a good match between strengths and the market needs, and also strength competitive should be involved in a good marketing strategy.

SWOT is a technique mainly used for situation analysis.

Figure 9: Situation analysis framework (SWOT: NetMBA, 2002 – 2010)



4.1 Current Situation

Company X's business performance in Thailand has been declining consistently during 2012-2017 with significant drop in market ranking from 6th place in 2012 to 10th in 2017, as already shown in Table 2. Below are a few major facts gathered from own observations working directly on several engagements with Company X Thailand during the past 5 years:

Fact 1: Approximately three-fourth of total company revenue was contributed by primary care portfolio business, of which all being affected negatively by cost containment policies from public agencies, and so showing constant declining revenue performance during the review period.

Product S, a novel drug used for the treatment of adult asthma and chronic obstructive pulmonary disease (COPD), has been launched in the Thai market by Company X for almost 2 decades. Major competitor of Product S is Seretide from GlaxoSmithKline (GSK), which actually leads this market with almost double market revenue than Product S. Nevertheless, Product S's revenue contributes a significant proportion of revenue to Company X Thailand by overall. Recently, Thai Ministry of Public Health (MoPH) announced a new policy to mandate physicians to prescribe cheaper generic inhaler drugs for asthma and COPD treatment to their patients under public reimbursement schemes, unless with special exceptions. As such, Product S has been facing big challenges since then, from both cost containment policy impact, as direct aggressive competition from Seretide/GSK.

Similar situation can be observed for Product P, a drug used for pediatric asthma treatment. Major competitor of Company X's Product P is Flixotide from GSK. Refer to IQVIA sales audit data, sales of Flixotide is tripled to Product P, mainly because GSK has a strong relationship with pediatricians and pediatric pulmonologists from a very strong pediatric vaccine portfolio (Rotarix for rotavirus, Cervarix for cervical cancer, and Synflorix for pneumonia)

Product FA is used for breast cancer treatment. However, Product FA is not preferred by both physicians and patients following its injection form. Most physicians and patients prefer new innovative oral drugs for breast cancer treatment following administrative convenience during the course of treatment. As a result, sales of Product F always failed management's expectations.

The only positive performing drug of Company X Thailand, Product I, the drug is used for lung cancer treatment. Product I is preferred drug choice by both physicians and patients because of its very good safety profile, and also convenient oral form. However, it is expected to see quite a few new drug candidates used for lung cancer treatment will be launched in late 2018 to 2021, and so Company X might not be able to be confident if Product I will continue performing well over the near future period.

Fact 2: During 2012-2017, Company X Thailand had launched only 2 major new products, both in cardiovascular therapeutic class, Product F for diabetic treatment and Product B for Acute Coronary Syndrome (ACS) treatment. Both new products however faced significant market burdens upon launch and they both could not achieve sales target revenue as expected. While Product B has been facing huge competition from cheaper generic drugs used for ACS treatment, Product F has also been facing cross competition from other innovative anti-diabetic drugs launched during the same period (Invokana from Janssen, Jardiance from Boeringer Ingelheim, and Januvia from MSD).

In ACS, Product B from Company X has been performing under management's expectations from a few major reasons. First, marker leader Plavix from Sanofi has performed very well in protecting

its market share from both Product B and cheaper generic clopidogrel. Second, Product B has faced big issues in public reimbursement schemes as it was only allowed for reimbursement as 3rd line drug regimen for ACS patients who have failed previous medical treatment from basic aspirin and clopidogrel and another oral antiplatelets. Even though Company X Thailand has been putting aggressive efforts in lubricating access for Product B, sales return is not as substantial as expected.

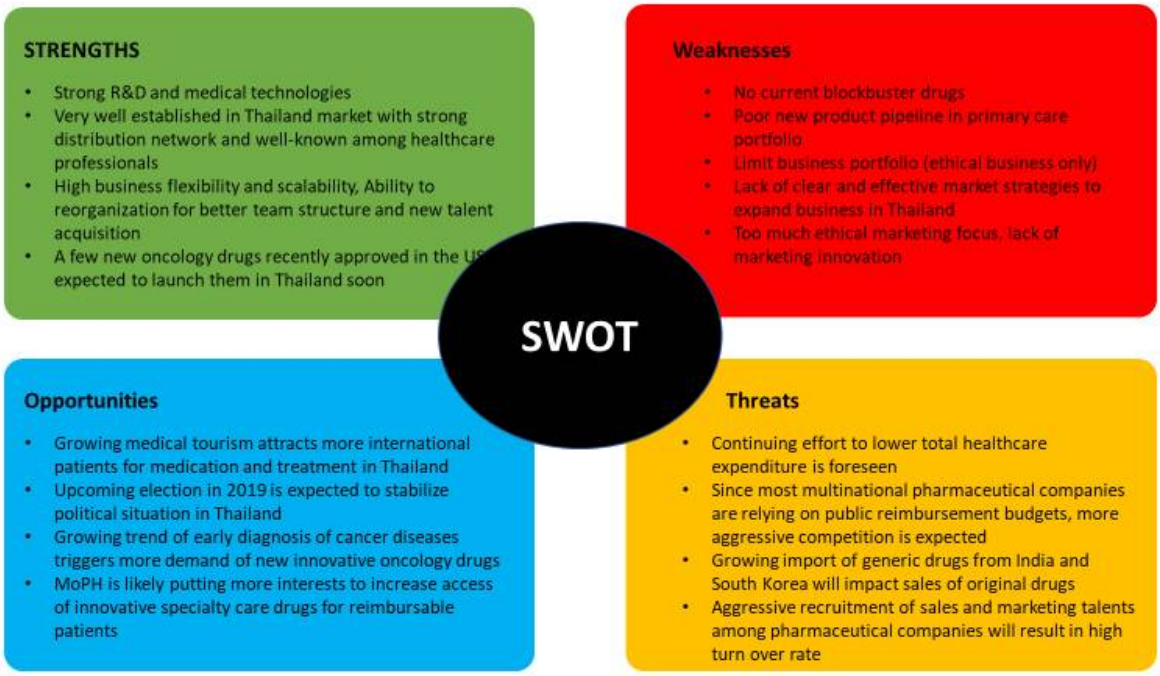
A new novel drug used for diabetic treatment, Product F, was recently launched by Company X Thailand in late 2016. Giving diabetic market is very crowded with many drug classes available for treatment, and so many cheaper generic drugs from local manufacturers mostly preferred as first drug regimen, Product F has been performing quite well with significant incline of revenue gain at first year after launch. However, unfortunately sales of Product F declined noticeably right after US FDA's announcement on possible adverse event of Product F on amputation causing physicians stop prescribing it to patients.

Fact 3: High turnover rate has been observed within Company X Thailand during 2012-2017, especially on key positions of sales representatives, sales supervisors, sales managers, product managers, and top management (country manager). According to my informal discussion with one key internal stakeholder of Company X Thailand, turnover rate of the company was estimated at 48% CAGR during 2012-2017, as opposed to average industry rate of 23%. This clearly implies something went wrong within Company X in Thailand and so the company had experienced very high turnover rate, doubled to average industry par. This high turnover rate did have direct significant impacts to business performance of the company during the review period, since it

caused poor business continuity especially on customer detailing and marketing related activities that potentially lower overall customer relationship scores with physicians.

4.2 SWOT Analysis

Figure 10: Company X Thailand's SWOT Analysis



Strengths of Company X Thailand

Company X is a British research based pharmaceutical company, one of the leading companies in the world has a very strong investment portfolio and invested in several innovative medical

technologies. The company is very scalable and well equipped with medical know-how, financial supports, and all other resources to drive new business strategies for future success.

In Thailand, Company X has established its local office in Bangkok since almost 3 decades ago and become very well-known among Thai healthcare professionals. Should the company wish to expand its business operations in response to growing product portfolio, they have available resources from regional and global headquarters.

In 2018, a few new drug molecules discovered and developed by Company X have been recently approved by US FDA and EU, which are Product T (for late stage lung cancer treatment), Product L (for ovarian cancer treatment), and Product FAS (for severe asthma treatment). Company X Thailand is in the process of filing applications for sales of all these three new drug candidates with Thai FDA, and they are expected to be launched early in 2019. All 3 drug candidates are new hope of Company X Thailand to claim back its 6^{th} ranking position in revenue sales, assuming the right and effective marketing strategies will be executed at prelaunch stage.

Weaknesses of Company X Thailand

Being failed with a few potential drug candidates during 2015-2017, now Company X is selling only established drugs in Thailand with no blockbuster that could help boosting total revenue. Despite the three recently approved new drug agents, new drug pipeline of Company X at global level seems dry and it could take several years for those new candidates to be successfully reviewed and approved for sales and marketing. With this condition, Company X Thailand has only two strategic options to focus, first is to enhance sales revenue of existing established drugs, and second is to make sure successful launch excellence of the 3 new approved drug candidates in early 2019.

One major weakness of Company X Thailand I have noticed during the past several years is that key sales and marketing leads/managers of the company tend to practice traditional sales and marketing practices with no innovation. For example, the level of adoption of latest technology to digital detailing is very limit. In fact, other leading pharmaceutical companies such as Pfizer, GloxoSmithKline, and Sanofi have already adopted and executed extensive digital detailing strategies in their backbone business practice since late 2016 for better efficiencies at lower costs. One major reason of being a laggard in sales and marketing company of Company X Thailand is probably its limit product portfolio in ethical business only, no consumer health portfolio. Needless to say, consumer marketing can be very advanced and innovative in nature, and it is also noticeable that pharmaceutical companies with both ethical and consumer health product portfolio tend to leverage some of applicable consumer health marketing practices for their ethical portfolio marketing strategy. Without innovative marketing thinking, or thinking out of the box type of culture, Company X tends to keep executing traditional marketing tactics which lacks attractiveness in the eye of healthcare professionals.

Opportunities of Company X Thailand

Verbally confirmed by Prime Minister of Thailand, the upcoming national election will be held in February 2019. Unstable political situation in Thailand since 2012 has caused uncertainties in national policy direction which impact several industries, especially pharmaceutical. Many multinational pharmaceutical companies have lowered attractiveness of Thailand from “investing market priority” to “tier-3 country” with low investment priority. During the past few years, most investment priorities go to emerging neighboring countries such as Vietnam and Myanmar. The

confirm of upcoming election with no further delay should give certain confidence for foreign investors to the Thai market again.

Recent announcement of same-sex marriage law will even trigger more tourists to come to Thailand for many purposes, one of which medical tourism. This is considered very important for multinational pharmaceutical companies since this represents a huge out-of-pocket revenue opportunity of those tourists who come to Thailand for both leisure and medication purposes.

Specialty care or difficult-to-treat diseases such as cancer will become good opportunity in Thailand for two major reasons. First, MoPH is more open for cancer patients to reimburse their medical expenses from public payment schemes even for expensive innovative drugs if reason justified. Second, Company X has 3 new approved drugs that can be potentially launched in Thailand market in early 2019 which can be a be cash cow business if doing the right marketing activities.

Threats of Company X Thailand

Even though specialty care portfolio will represent a good growth potential of most pharmaceutical companies with good product pipeline, including Company X Thailand, primary care product portfolio is foreseen a bigger challenge on cost containment efforts from MoPH with underlying rationale that cheaper generic drugs should be used as first drug choices for primary care diseases for effective treatment. Moreover, many multinational pharmaceutical companies with extensive generic drug portfolio are entering into Thailand market stealing market share from both original drugs and local generics pie aggressively. With this, majority of existing primary care product portfolio of Company X Thailand will continue being affected negatively, and since this portfolio

represents major revenue stream of the company, overall topline performance growth of Company X Thailand (and some other multinational pharmaceutical companies) remains biggest challenge.

Another biggest threat foreseen for Company X Thailand is possible high turnover rate in sales and marketing team as a consequence of aggressive recruitment and acquisition of high talents of leading pharmaceutical companies. Interesting to say, pharmaceutical market in Thailand is relationship-based, meaning physicians tend to prefer prescribing drugs from the companies they have good relationship with sales representatives. This implies physicians are not loyal to drugs on clinical profiles, but instead they rely on personal relationship with sales representatives and product marketing managers who detail products and provide marketing supports to them. Vacancies of sales and marketing related positions in the company can potentially affect to lower revenue performance in the short term.

4.3 Marketing Problem Hypotheses

A thorough analysis of as-is business condition of Company X Thailand has revealed quite several current issues that should be monitored and solved, both tactically and strategically. For conciseness, I have defined two major marketing issue hypotheses of Company X Thailand that should be investigated, confirmed, and addressed for immediate business improvement, which are:

Hypothesis 1: Low Performance of Sales and Marketing Detailing Team as a Major Cause of Poor Business Performance Requires Immediate Attention for Investigation and Improvement

Since Thailand pharmaceutical market is highly relationship-based, which implies sales representatives and product marketing managers are very important factors in driving topline business performance for the company. Refer to the fact that Company X Thailand has experienced high turn-over rate during the past 5 years, and so business continuity on sales and marketing strategic implementations has been significantly compromised. A lack of effective sales and marketing detailing activities direct to physicians is believed to be a major cause that was responsible in declining business performance of Company X Thailand during the review period. In order to gain positive business momentum back on track, it is essential to investigate and evaluate performance of detailing and marketing activities of Company X sales representatives by mean of feedback and satisfaction level measured among target physicians, customers of Company X. For this thesis study purpose, Product F (for diabetic treatment) was selected as a target brand on sales and marketing performance evaluation purpose.

Hypothesis 2: Pricing strategy on New Product Launch Excellence will Enhance Topline Performance of Company X Thailand

While external (and uncontrollable) environment factors will likely affect existing product portfolio of Company X Thailand, the hope to grow business topline performance lies on new product launches in 2019, launch excellence strategy. For expensive biological drugs used for special care disease treatment, pricing plays key success factor in all aspects, namely; distribution (drug listing in as many hospitals as possible), product uptake (trial, usage, and repeated usage), and product brand perception (value for money attribute). Since reimbursement by public schemes on new biological drugs is usually strictly monitored by payers, most pharmaceutical companies rely on out-of-pocket payment pool of patients in private hospital channel as major target at launch.

The marketing question is how much the new drug should be priced to ensure maximum product uptake at launch. In this thesis study, I will investigate optimum pricing of the new drug Product T (for lung cancer treatment) that Company X Thailand is planning to launch it early in 2019.

CHAPTER V

METHODOLOGY

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 hypotheses. The discussion includes research methods, the research process, data collection and analysis and limitations of research. Since there are two marketing hypotheses to be explored in this thesis study, I will discuss research methodology for each hypothesis separately.

5.1 Research Method

For both marketing hypotheses, quantitative face-to-face interview method was used following nature of marketing hypotheses that require representative sample size in order to draw concrete research implications and conclusions.

For Hypothesis 1, quantitative interviews were conducted with physicians in face-to-face at own medical settings. Research objectives were clearly defined to primarily identify performance of Product F sales and marketing detailing team at territory level to identify possible areas of improvement. Detail objectives are defined as follow:

- To evaluate impact of all interactions; is to assess performance of Product F sales and marketing detailing team on all key parameters and quantify impact to business in return
- Detailing penetration: measures Product F sales/marketing representative visit recall/ visit frequency
- Product F sales and marketing representative qualifications: detailing professionalism performance evaluation
- Product F product key message recall

Sampling

Refer to study objective to identify individual territory performance at granular territory level, sampling strategy needs to be executed accordingly as illustrated in Figure 11.

Figure 11: Hypothesis 1 Sampling Plan

Supervisor code	Reps Code	Class A	Class B
TH_DMBA	TH_DMB01	3	3
	TH_DMB02	3	3
	TH_DMB03	3	3
	TH_DMB04	3	3
	TH_DMB05	3	3
	TH_DMB06	3	3
	TH_DMB07	3	3
	TH_DMB08	3	3
	TH_DMB09	3	3
TH_DMBB	TH_DMB10	3	3
	TH_DMB11	3	3
	TH_DMB12	3	3
	TH_DMB13	3	3
	TH_DMB14	3	3
	TH_DMB15	3	3
	TH_DMB16	3	3
	TH_DMB17	3	3
	TH_DMB18	3	3
TH_DMBC	TH_DMB19	3	3
	TH_DMB20	3	3
	TH_DMB21	3	3
	TH_DMB22	3	3
	TH_DMB23	3	3
TH_DMBC	TH_DMB24	3	3
	TH_DMB25	3	3
	TH_DMB26	3	3
	TH_DMB27	3	3
	TH_DMB28	3	3
TH_DMUA	TH_DMU01	3	3
	TH_DMU02	3	3
	TH_DMU03	3	3
	TH_DMU04	3	3
	TH_DMU05	3	3
	TH_DMU06	3	3
	TH_DMU07	3	3
	TH_DMU08	3	3
TH_DMUB	TH_DMU09	3	3
	TH_DMU10	3	3
	TH_DMU11	3	3
	TH_DMU12	3	3
	TH_DMU13	3	3
	TH_DMU14	3	3
	TH_DMU15	3	3
	TH_DMU16	3	3
	TH_DMU17	3	3
TOTAL		135	135

There are 45 territories as classified by Product F sales and marketing team. Each territory (with pre-coded) was sampling by 6 target respondents, 3 high potential physicians (A customers) and 3 lower potential physicians (B customers). A total of 270 target physicians were interviewed for this research study, which represents 21% of total target universe. With this sampling plan, results can be analyzed at different levels; namely by total, by supervisor code, by geography (Bangkok vs Upcountry), by customer potential (A & B), and by individual territory.

Recruitment of target physicians was based on target list of physicians (customers) provided by Company X Thailand, a sponsor of this thesis study, following non-disclosure agreement.

For Hypothesis 2, quantitative interviews were conducted with cancer patients in face-to-face at respondent's preferred location, pre-appointment basis. Major research objective was to identify optimum price point of Product T, the price point that is theoretically mostly accepted and willing to pay by target patients for their cancer medical treatment.

Sampling

A minimum sampling of 30 non-small cell lung cancer patients were recruited and interviewed for this research study. Recruitment was based on two methods:

- Patient referral by physicians, and
- Snowballing

5.2 Data Collection and Analysis

For Hypothesis 1, data collection was based on pre-recruitment arrangement with face-to-face interviews conducted at respondent's own medical setting. Field data collection was conducted in September 2018.

Recruitment inclusion criteria:

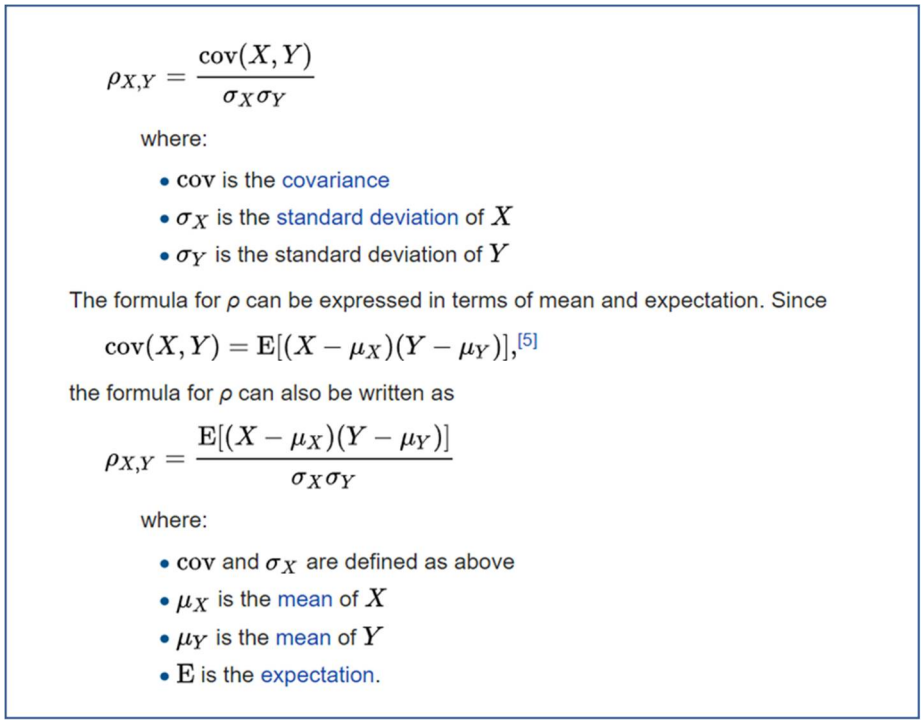
- Recruitment was based on target list of physicians provided by Company X Thailand only

- Recruitment was based on potential classification A (high potential, high adoption) and B (high potential, low adoption) following definitions of Company X Thailand

Data analysis methods used are:

- Basic data tabulation using SPSS software (95% of all data analysis)
- Correlation analysis (5% of all data analysis). In this Hypothesis 2, Pearson correlation technique was used. Pearson's correlation coefficient when applied to a population is commonly represented by the Greek letter ρ (rho) and may be referred to as the population correlation coefficient or the population Pearson correlation coefficient. The formula for ρ is shown in Figure 12:

Figure 12: Pearson Correlation Formula



$$\rho_{X,Y} = \frac{\operatorname{cov}(X,Y)}{\sigma_X \sigma_Y}$$

where:

- cov is the covariance
- σ_X is the standard deviation of X
- σ_Y is the standard deviation of Y

The formula for ρ can be expressed in terms of mean and expectation. Since

$$\operatorname{cov}(X,Y) = \mathrm{E}[(X-\mu_X)(Y-\mu_Y)],$$[5]

the formula for ρ can also be written as

$$\rho_{X,Y} = \frac{\mathrm{E}[(X-\mu_X)(Y-\mu_Y)]}{\sigma_X \sigma_Y}$$

where:

- cov and σ_X are defined as above
- μ_X is the mean of X
- μ_Y is the mean of Y
- E is the expectation.

For Hypothesis 2, data collection was based on pre-recruitment arrangement by physician referral and snowballing, with face-to-face interviews conducted at respondent's preferred location. Field data collection was conducted in September 2018.

Recruitment criteria, qualified respondents must be either:

- Lung cancer patients currently undergoing relevant treatment (any line of treatment), or
- Lung cancer patients who have recently completed their treatment
- Possess household income, or eligible income, or sources of financial support of 80,000 Thai Baht per month and above
- Respondent age must be above 30 years old, to be able to provide genuine feedback on this study survey
- Agreed and willing to participate in this research study (consent form must be signed off prior to participate in this study survey)

Data analysis methods used in this hypothesis are combination of different techniques used to draw willing-to-pay of patients as explained below:

- Visual analog scale (VAS): VAS is a psychometric response scale which can be used in questionnaires. It is a measurement instrument for subjective characteristics or attitudes that cannot be directly measured. When responding to a VAS item, respondents specify their level of agreement to a statement by indicating a position along a continuous line between two end-points. In this study, respondents will be asked to own evaluate current health status/condition using VAS scale. The sample question is "How do you rate your

level of discomfort of your/your patient's current health condition using 10 rating scale where 1 is no discomfort and 10 is very high discomfort"

- Time trade-off (TTO): TTO is a tool used in health economics to help determine the quality of life of a patient or group. The individual will be presented with a set of directions such as:
    - Imagine that you are told that you have 10 years left to live. In connection with this you are also told that you can choose to live these 10 years in your current health state or that you can choose to give up some life years to live for a shorter period in full health. Indicate with a cross on the line the number of years in full health that you think is of equal value to 10 years in your current health state
- Bidding game: In bidding game, respondent is provided with blinded drug profile (coded as Product X), then asked to bid for this Product X at different price points till rejection. For each screening method in turn, the subject was offered an initial bid, and asked whether this was an amount she/he would be willing to pay. If the subject accepted the test at this bid, the interviewer then offered a higher value, and again sought approval from the subject. When a specific bid was rejected, a lower value was offered, and acceptance was then sought. Example scenario: Ovarian cancer patients who has metastasis disease with many complications (fatigue, bone pain, etc). If you have offered for the medication which can reduce your complications and improve the survival as around 2-3 years. Base on this proposed price (per month/courses)? Will you accept or reject the treatment?
- Discrete Choice Modeling (DCM): With DCM method, Respondent is provided with 15 different scenarios of Product A and B, then asked for Product preference in each scenario,

till complete all 15 scenarios. In economics, discrete choice models, or qualitative choice models, describe, explain, and predict choices between two or more discrete alternatives, such as entering or not entering the labor market, or choosing between modes of transport. Such choices contrast with standard consumption models in which the quantity of each good consumed is assumed to be a continuous variable. On the other hand, discrete choice analysis examines situations in which the potential outcomes are discrete, such that the optimum is not characterized by standard first-order conditions. Thus, instead of examining "how much" as in problems with continuous choice variables, discrete choice analysis examines "which one." However, discrete choice analysis can also be used to examine the chosen quantity when only a few distinct quantities must be chosen from, such as the number of vehicles a household chooses to own, and the number of minutes of telecommunications service a customer decides to purchase. Techniques such as logistic regression and probit regression can be used for empirical analysis of discrete choice. Discrete choice models theoretically or empirically model choices made by people among a finite set of alternatives. The techniques are used in all social sciences, health economics, medical research, marketing research, transport research, and in a constellation of other disciplines. Marketing researchers use discrete choice models to study consumer demand and to predict competitive business responses, enabling choice modelers to solve a range of business problems, such as pricing, product development, and demand estimation problems.

In this hypothesis 2 analysis, logistic regression method was used to run DCM analysis on willingness-to-pay, mathematical formula is described below:

Probability (A over B) = Exponential (B0+B1X1+B2X2+...+BnXn)

Where A is Scenario A and B is Scenario B

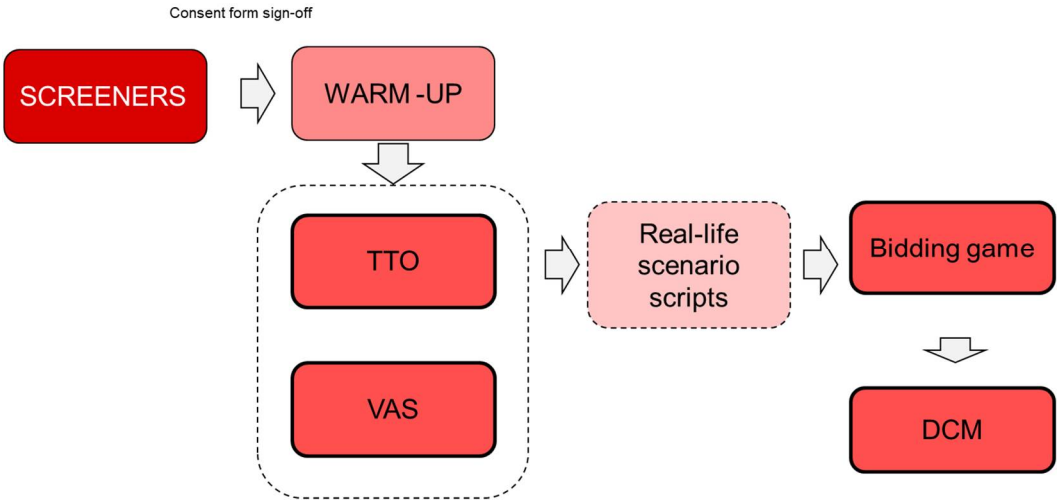
Ln odd(A/B) = B0+B1X1+B2X2+…BnXn

Ln [Probability of choosing A (P) / Probability of not choosing A (1-P)] = LnOdd (A/B)

Ln (P/1-P) = B0+B1X1+B2X2+…BnXn

Interview flow of Hypothesis 2 study is summarized in figure 13.

Figure 13: Hypothesis 2 Interview Flow



5.3 Limitations of Research

For Hypothesis 1, interviews were sponsored by Company X Thailand. Study interview questions were added on top of current market research study commissioned by Company X to one market research agency. The length of main questionnaire was estimated 30 minutes, and the additional study survey questions took 10 more minutes to complete. Target physicians were

required to complete main project questionnaire before proceeding add-on study survey questionnaire, and so fatigue respondents that result in compromise quality of survey responses is seen as possible limitation of this study survey.

In addition, in diabetic therapeutic area, there are many drug brands available in the market which potentially cause difficulties for respondents to recall and provide concise feedbacks to some survey questions accordingly.

For Hypothesis 2, the main limitation of the survey study was difficulty in patient recruitment following low prevalence of ovarian cancer disease in Thailand. Moreover, most ovarian cancer patients were firstly diagnosed at late stage (stage 3 or stage 4), which implies their compromised health conditions and so ability to provide concise responses to some survey questions.

Sampling design of Hypothesis 2 is also considered as limitation of this study survey, since only 30 samples were recruited for interviews following recruitment challenges. Statistically, 30 samples are minimum sampling requirement to run most statistical models, including discrete choice modeling.

CHAPTER VI

RESULTS

In this chapter, results of both Hypothesis 1 and Hypothesis 2 will be discussed in detail, separately.

6.1 Hypothesis 1 Survey Results

Research survey results reveal interesting outcomes that confirm problem hypothesis, there is high performance variation of different product detailing territories following pre-defined indicators.

6.1.1 Sales and marketing representative visit recall

In terms of detailing visit recall, mix performance outcomes were observed as shown in Figure 14 and Figure 15.

Figure 14: Sales and marketing representative visit recall, Bangkok

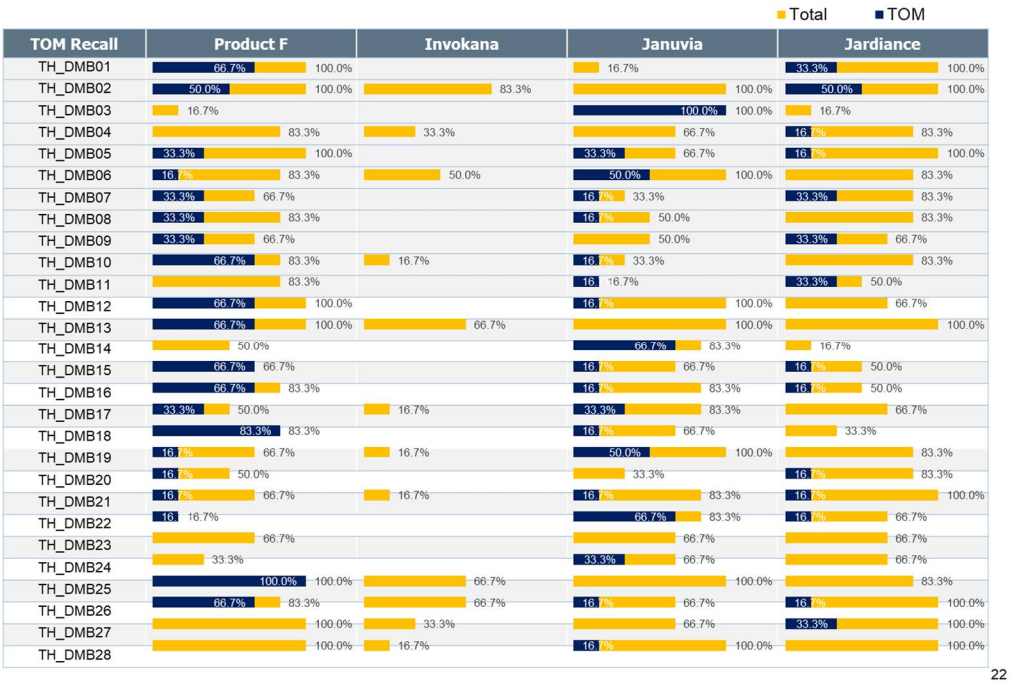
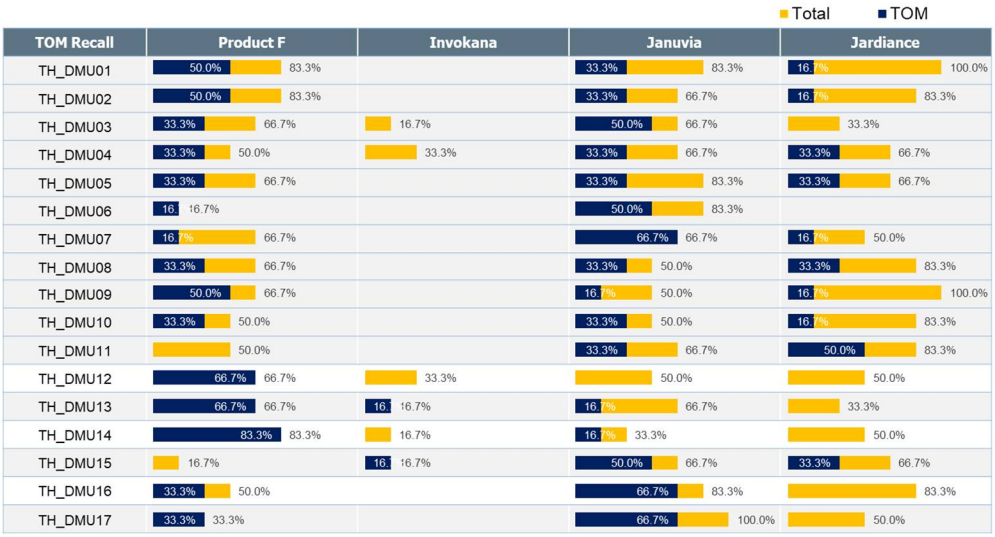


Figure 15: Sales and marketing representative visit recall, Upcountry



TOM Recall	Product F		Invokana		Januvia		Jardiance	
TH_DMU01	50.0%	83.3%			33.3%	83.3%	16.7%	100.0%
TH_DMU02	50.0%	83.3%			33.3%	66.7%	16.7%	83.3%
TH_DMU03	33.3%	66.7%	16.7%		50.0%	66.7%		33.3%
TH_DMU04	33.3%	50.0%	33.3%		33.3%	66.7%	33.3%	66.7%
TH_DMU05	33.3%	66.7%			33.3%	83.3%	33.3%	66.7%
TH_DMU06	16.7%	16.7%			50.0%	83.3%		
TH_DMU07	16.7%	66.7%			66.7%	66.7%	16.7%	50.0%
TH_DMU08	33.3%	66.7%			33.3%	50.0%	33.3%	83.3%
TH_DMU09	50.0%	66.7%			16.7%	50.0%	16.7%	100.0%
TH_DMU10	33.3%	50.0%			33.3%	50.0%	16.7%	83.3%
TH_DMU11		50.0%			33.3%	66.7%	50.0%	83.3%
TH_DMU12	66.7%	66.7%	33.3%			50.0%		50.0%
TH_DMU13	66.7%	66.7%	16.7%	16.7%	16.7%	66.7%		33.3%
TH_DMU14	83.3%	83.3%	16.7%		16.7%	33.3%		50.0%
TH_DMU15		16.7%	16.7%	16.7%	50.0%	66.7%	33.3%	66.7%
TH_DMU16	33.3%	50.0%			66.7%	83.3%		83.3%
TH_DMU17	33.3%	33.3%			66.7%	100.0%		50.0%

Note 1: % of respondents

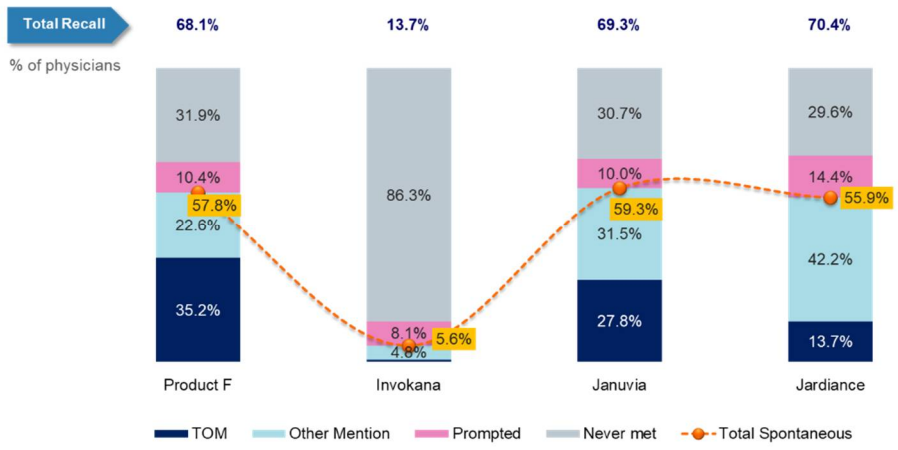
Note 2: TOM stands for Top of Mind (recall) which is the first name mentioned spontaneously by respondents. TOM represents a popular performance indicator used by marketers in pharmaceutical industry, the higher TOM, the better brand preference. Each physician was asked to recall recent sales and marketing representative detailing visit of different companies, spontaneous mentions and then follow by prompted if not spontaneously mentioned.

Each territory is uniquely coded and is responsible by one dedicated sales and marketing representative. Each respondent (target physician) was asked to recall recent product detailing visit of sales and marketing representative of different company products, in this case 3 major competitors were used as benchmarking; Invokana from Janssen, Januvia from MSD, and Jardiance from Boehringer Ingelheim. Results suggest the following:

- Many sales and market representatives of Product F had performed very well in terms of visit recall rates (100%) during the review period. However, those territories were also mainly challenged by aggressive competitors with similar visit recall rates, mainly Januvia/MSD, and Jardiance/Boehringer Ingelheim.
- There were many sales and market representatives of Product F who had performed lower than expected, with total visit recall rates than 100%. Following Company X's corporate guidelines, Product F sales and market representatives are required to visit A class physicians 4 times per month, and 2 times per month for B class physicians.
- In some territories, visit recall rates of Product F sales and market representatives were extremely low. After thorough investigation with Company X's national sales managers, most of those territories with low visit recall rates were vacant areas during survey period.

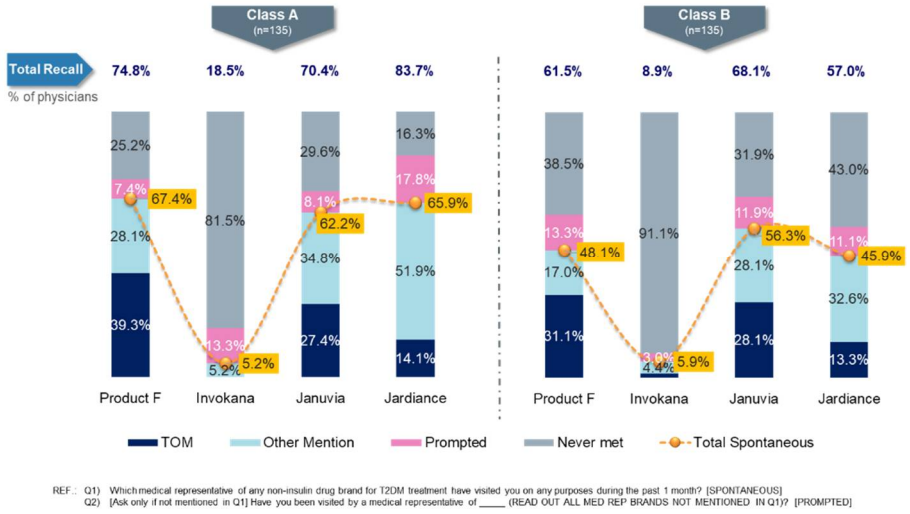
In Total, despite to the fact that all physicians recruited for this survey were from target customer list provided by Company X Thailand, visit recall performance of Product F sales and marketing representatives were inferior to competitors as shown in Figure 16.

Figure 16: Sales and marketing representative visit recall, Total



Interestingly, Product F sales and marketing representatives had performed inferior to Jardiance/Boehringer Ingelheim even among own Class A customers as illustrated in Figure 17. This clearly confirms immediate attention required to improve effectiveness of Product F sales and marketing detailing team in Thailand.

Figure 17: Sales and marketing representative visit recall by Customer Classification

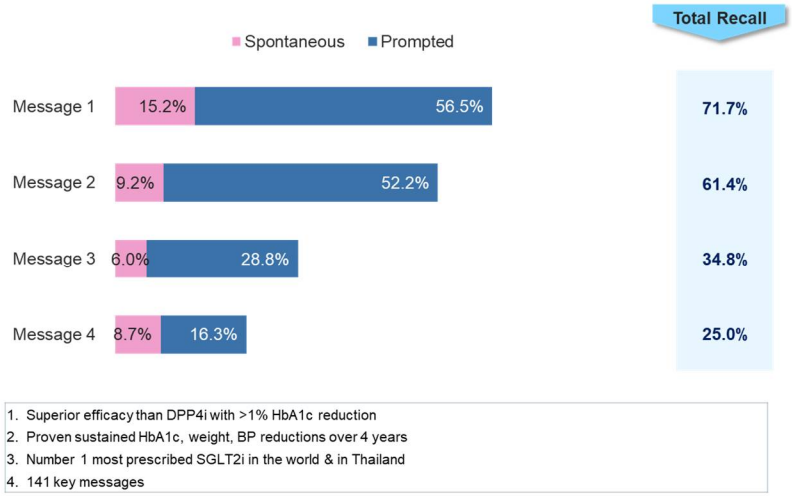


REF.: Q1) Which medical representative of any non-insulin drug brand for T2DM treatment have visited you on any purposes during the past 1 month? [SPONTANEOUS]
Q2) [Ask only if not mentioned in Q1] Have you been visited by a medical representative of ____ (READ OUT ALL MED REP BRANDS NOT MENTIONED IN Q1)? [PROMPTED]

6.1.2 Product F product key message recall

Major marketing agenda of physician detailing activities is to ensure established key product message recall among target physicians for strong product brand positioning. Recall rate of Product F key product message recall was only moderate as shown in Figure 18.

Figure 18: Product F product key message recall



Note 1: % of respondents

Note 2: Each respondent was asked to recall each of every product key message recently detailed by Product F sales and marketing representative, spontaneously then prompted.

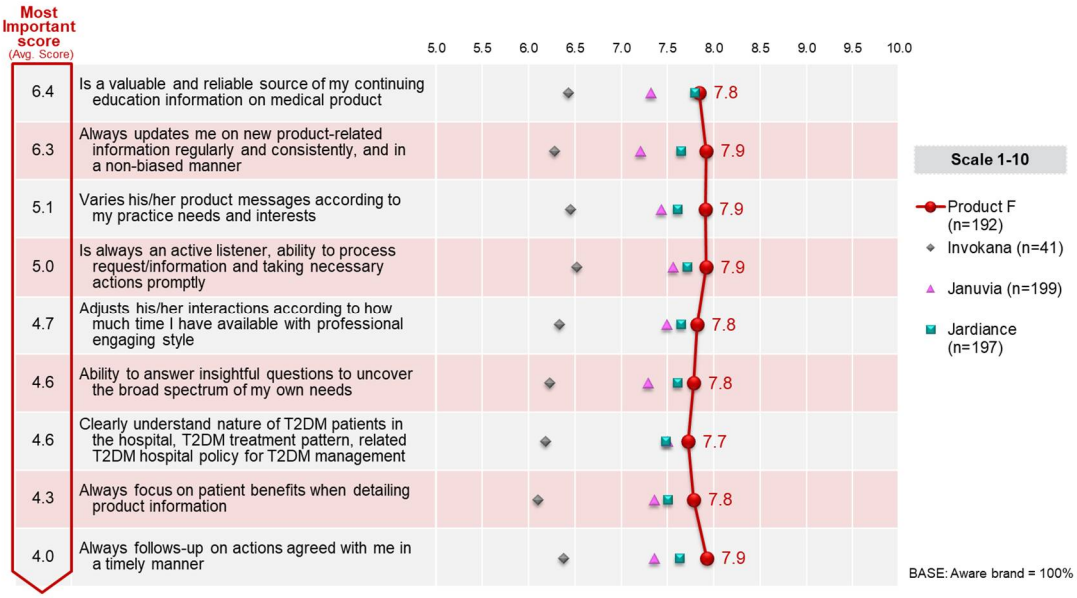
As suggested in Figure 18, spontaneous recall rates of all Product F key messages were low across all 4 messages. Only two Product F key messages were recalled more than half of all respondents, other two key messages were recalled by only small number of respondents. This product key message recall data implies very poor detailing performance of Product F sales and marketing representatives by overall, ignoring to put more efforts in brand positioning strategy.

6.1.3 Product F sales and marketing representative performance evaluation

Another key performance indicator (KPI) included in this survey study was to evaluate performance of Product F sales and marketing representatives as opposed to competitors' sales

and marketing representatives against pre-defined quality attributes, as shown in Figure 19. List of sales and marketing representative quality attributes were sorted following importance rating as perceived by respondents.

Figure 19: Product F sales and marketing representative performance evaluation, Total

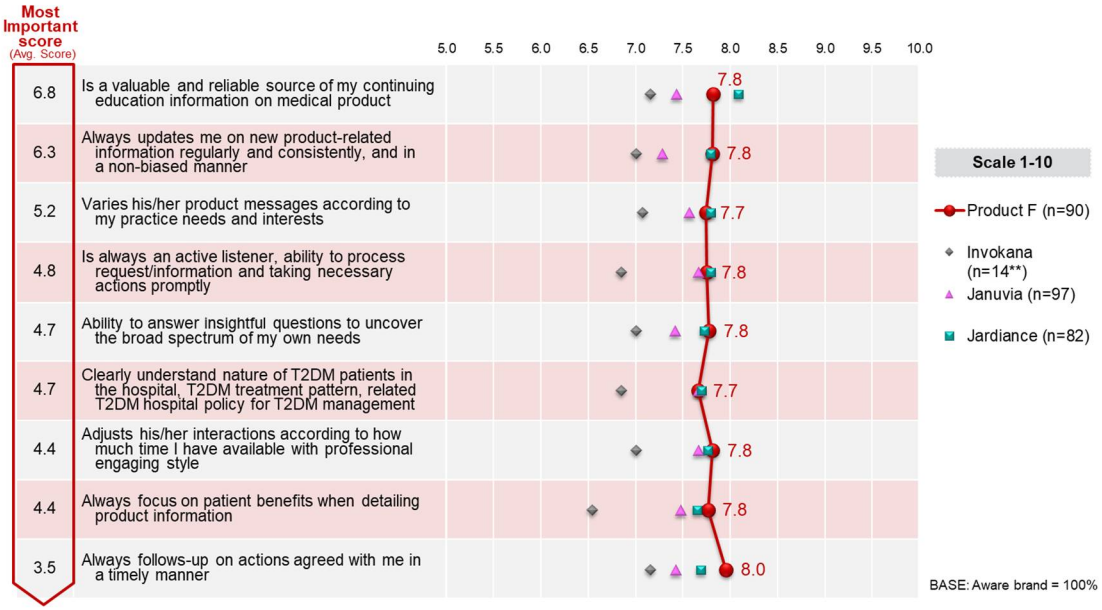


Note 1: 10-rating scale was used for performance evaluation purpose, where 1 is very poor performance and 10 is very high performance.

Despite inferior performance of visit recall and product key message recall indicators analyzed earlier, Product F sales and marketing representatives had performed outstandingly in terms of performance quality with highest rating scores across all pre-defined attributes in total. When analyzing data into sub segments, however, different performances can be clearly observed between Class A and Class B customer segments as illustrated in Figure 20 and Figure 21.

Figure 20: Product F sales and marketing representative performance evaluation, Class A

Figure 21: Product F sales and marketing representative performance evaluation, Class B



Product F sales and marketing representatives had performed outstandingly among high potential Class A respondents only but being challenged very closely by Jardiance/Boehringer Ingelheim's among Class B respondents. This data implies two factual assumptions:

1. Product F sales and marketing representatives had selectively put more efforts in detailing and marketing related activities targeting among Class A physicians but ignore to improve sales and marketing services for Class B physicians.
2. Even though such practice as implied in point 1 above is less desirable, it also confirms accurate customer segmentation and targeting (S&T) strategy of Product F product franchise.

Nevertheless, ultimate marketing agenda for sales and marketing team is to ensure all key target customers are well covered and detailed, with satisfactory impressions that results in higher Product F prescriptions in return. This implication mandates investigation of the whole customer database, re-design of segmentation and targeting exercise to revamp customer classification for effective marketing detailing.

6.1.4 Product F marketing investment performance evaluation

Similar to Product F sales and marketing representative performance evaluation outcomes, its marketing investment performance data shows similar results in shown in Figure 22, Figure 23, and Figure 24. List of marketing activities were sorted following importance rating as perceived by respondents.

Figure 22: Product F marketing investment performance evaluation, Total

Note 1: 10-rating scale was used for performance evaluation purpose, where 1 is very poor performance and 10 is very high performance.

In total, target respondents rated highest satisfaction scores to all marketing activities provided by Product F/Company X in comparison to other competitors.

Figure 23: Product F marketing investment performance evaluation, Class A

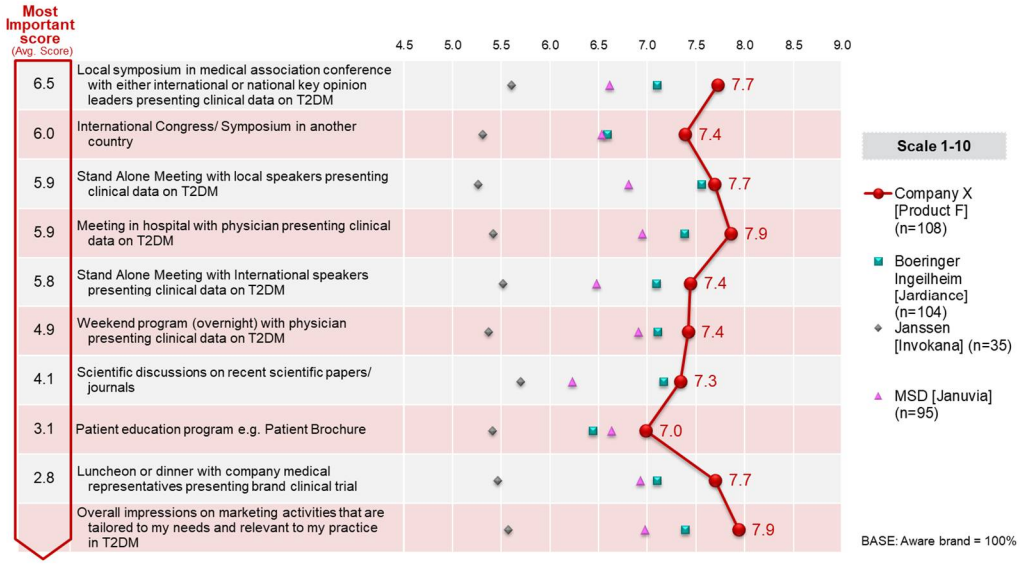
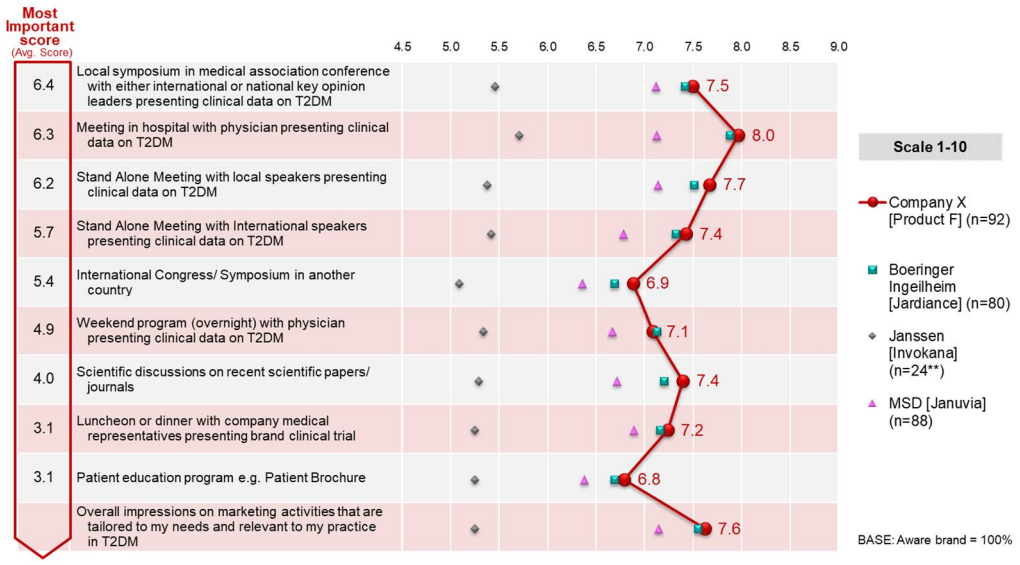


Figure 24: Product F marketing investment performance evaluation, Class B

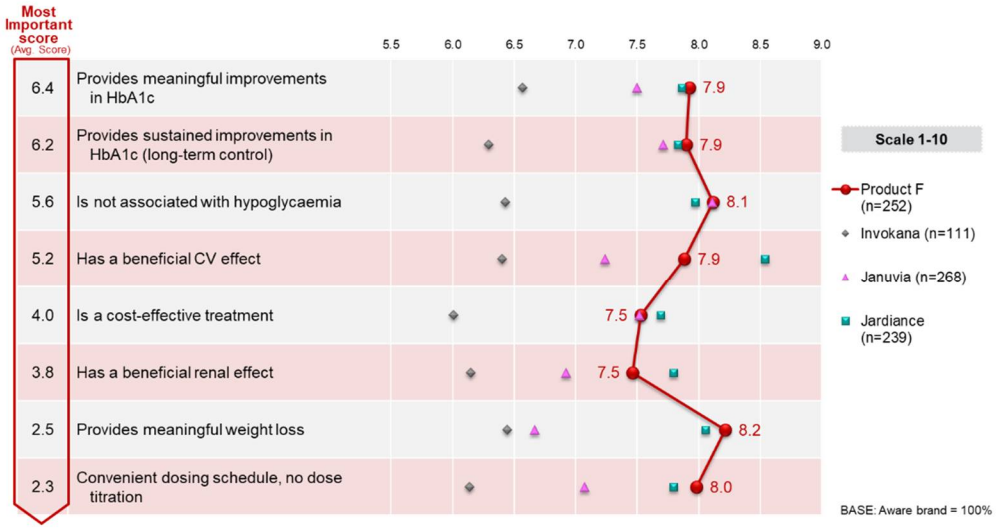


Class A respondents had shown noticeably higher appreciations on marketing activities offered by Product F/Company X over other competitor; however, the gap is not clear among Class B respondents. Refer to concept of segmentation and targeting, survey results of both sales and marketing representative performance evaluation and marketing activity performance evaluation reaffirms that Product F marketing team had effectively (but selectively) allocated internal effectiveness resources following potential of target customers.

6.1.5 Product F product brand performance evaluation

After all efforts of relationship establishment through salesforce effectiveness and marketing initiatives on product detailing strategy, the ultimate KPI of brand perception was used to evaluate as final output during the review period, results as shown in Figure 25. List of oral anti-diabetic product attributes were sorted following importance rating as perceived by respondents.

Figure 25: Product F product brand performance evaluation, Total



Note 1: 10-rating scale was used for performance evaluation purpose, where 1 is very poor performance and 10 is very high performance.

Impressively, in total Product F was rated the best for the top 3 most important attributes related to efficacy profiles (HbA1C improvement and low risk of hypoglycemia), despite very small gap with Jardiance from Boehringer Ingelheim. Moreover, Product F was perceived noticeably inferior to Jardiance/Boehringer Ingelheim on key product attributes of beneficial CV benefits, cost effective treatment choice, and beneficial renal effect. In conclusion, Product F gains high momentum on key important product attributes that perceived important among physicians on their prescribing preference, but Jardiance/Boehringer Ingelheim also perceived the best in add-on clinical benefits.

A breakdown analysis into subsegments by customer potential classification, consistent brand perceptions of the two respondent groups were observed as shown in Figure 26 and Figure 27.

Figure 26: Product F product brand performance evaluation, Class A

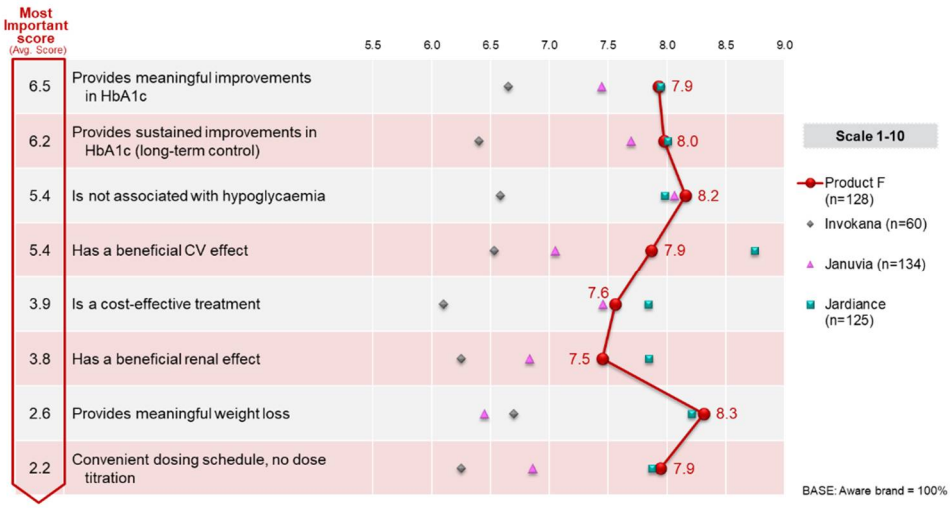
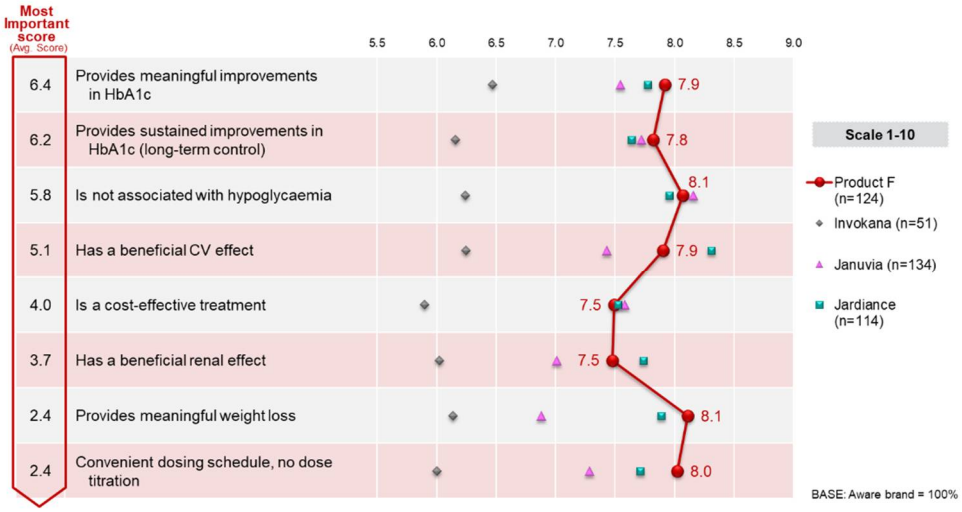


Figure 27: Product F product brand performance evaluation, Class B



6.1.6 Customer profile data validation

Typically, potential and adoption data of individual customer was collected and input into the company database by sales and marketing representatives, and so accuracy can be questionable. From informal discussions with many national sales managers of many multinational pharmaceutical companies in Thailand, only moderate confidence comments on quality and accuracy of internal customer segmentation and target database were received. For validation purpose, two questions on potential (patient caseload) and adoption (product prescription) were added into this study survey. The raw data obtained from survey interviews were used to validate with Company X's own databased, validation results are shown in Figure 28 and Figure 29.

Figure 28: Customer potential data validation

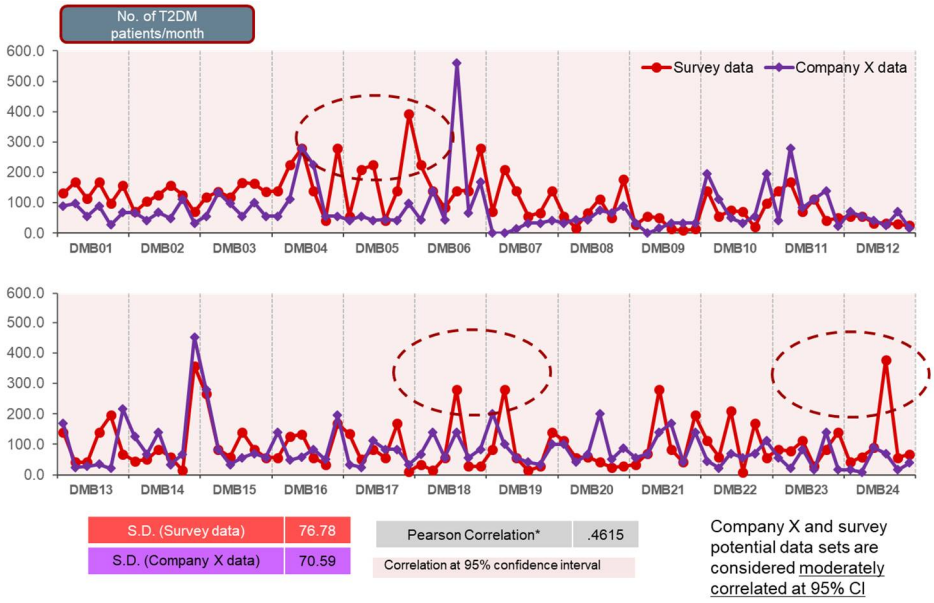
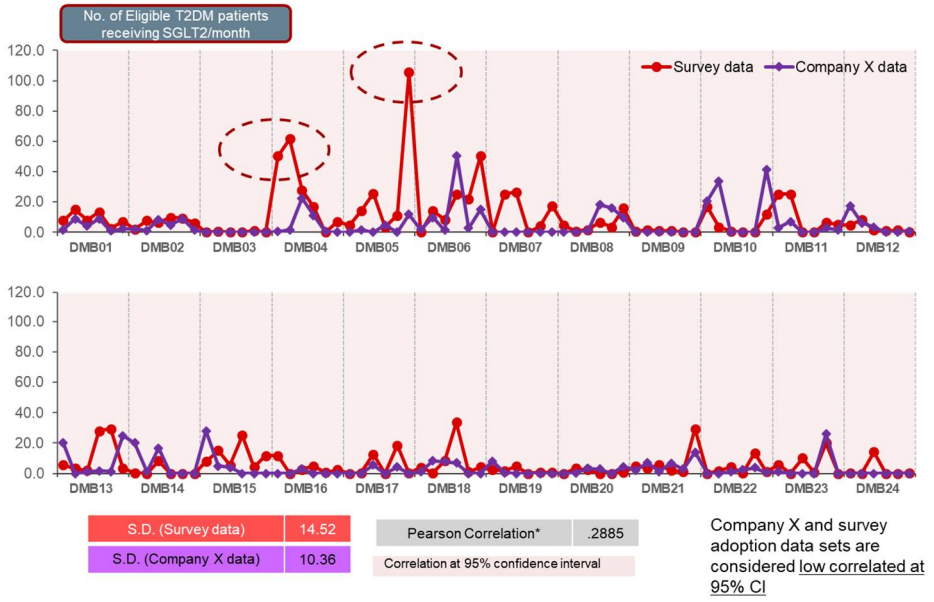


Figure 29: Customer adoption data validation



Validation exercise reveals that:

- Acceptable correlation on customer potential data from survey data and Company X data is confirmed from Pearson correlation technique.
- However, weak correlation on customer adoption data from survey data and Company X data was calculated with Pearson coefficient of only 0.29.

With weak correlation of the sets of data by overall, it is recommended that the whole Product F customer segmentation and targeting (S&T) database should be revisited and updated for accuracy improvement.

6.1.7 Product F sales and marketing representative total performance scoring

To make concrete conclusions, a combine performance scoring model was created as illustrated in Table 4.

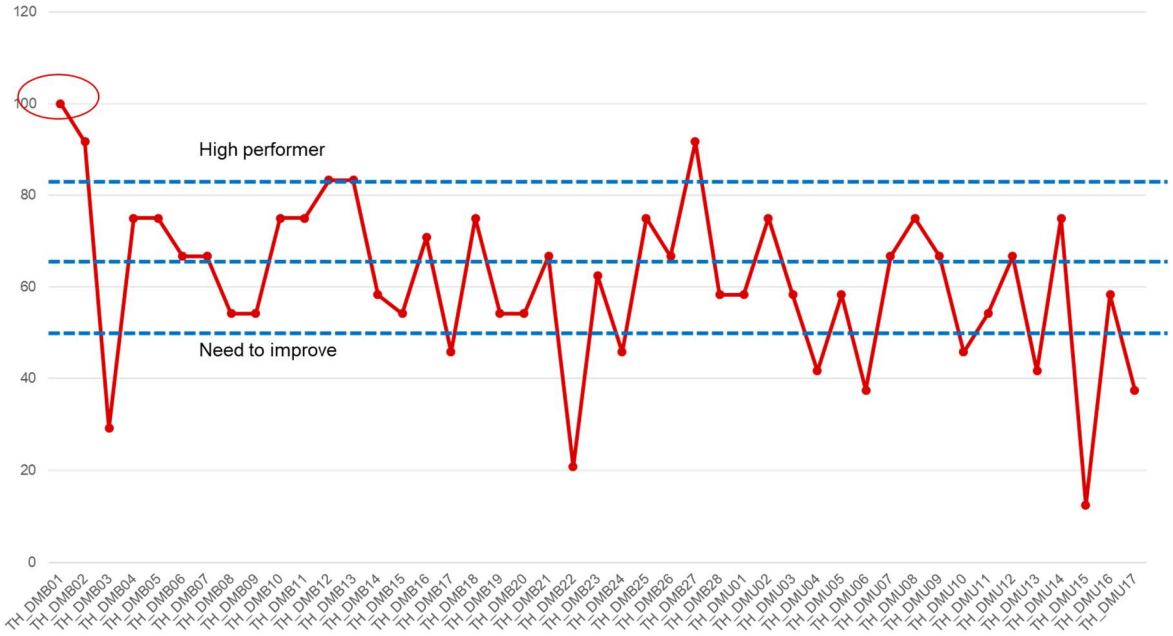
Table 4: Overall territory performance scoring calculation model

KPIs		Score	Note
Total Visit recall	6	60	Visit recall should be the most important reps performance parameter so accounts for the highest weight - 60
	5	50	
	4	40	
	3	30	
	2	20	
	1	10	
	0	0	
Total Key message recall	80%-100%	30	Usually 4+ key messages/ brand, so if recall all messages then get full 30 score
	50% - 79%	20	
	25% - 49%	10	
	1% - 24%	5	
	0%	0	
Rep performance evaluation	1st rank	30	Ranking calculated by total score of all reps attributes as opposed to other competitive brand reps
	2nd rank	20	
	3rd rank	10	
	4th rank and lower	0	
Total score/territory area		120	Total maximum score = 120 for each reps territory.

Even though there were many performance indicators measured in the study survey, only three key indicators were selected for the calculation of total performance score. The three indicators were believed to be direct and controllable performance driven indicators that reflect true performance of Product F sales and marketing representatives. Visit recall indicator represents the most important quantity performance indicator for this survey study, and so it was weighted highest at 60 points. Other two quality performance indicators, key message recall and representative performance evaluation, were weighted by 30 points each. In total, a 120 total points per Product F sales and marketing representative could be calculated, 50% equally weighted by each quantity and quality performance aspects.

Following performance scoring calculation model illustrated in Table 1, scores of all 45 Product F sales and marketing representatives were calculated and charted as in Figure 30.

Figure 30: Product F sales and marketing representative performance scoring results



From Figure 30, performance of all 45 Product F sales and marketing representatives can be calculated and plotted on a single line-chart, and re-segment by performance scoring system into high performers, moderate performers, and poor performers who need immediate improvements. Only one Product F sales and marketing representative coded TH_DMB01 was regarded as exceptional performer with full 120 performance score achievement. In overall, performance of all 45 Product F sales and marketing representatives were highly scattered, which shows no consistency in performance standardization in this Product F product franchise business of Company X Thailand.

6.2 Hypothesis 2 Survey Results

Without limitation on medical expense reimbursement by public schemes but only focusing on out-of-pocket payment patient segment in private hospital channel, effective pricing strategy can be determined using a combination of pricing related techniques to draw a single optimum price point of Product T for launch.

6.2.1 Visual Analog Scale (VAS) results

Almost half of respondents indicated low satisfaction on current health condition, whereas other half are moderately/somewhat satisfied with current health condition. Only 2 respondents seemed to clearly show their satisfaction of current health status. This implies participating respondents in this study research were mostly low to only moderate in satisfaction on current health condition, as summarized in Figure 31.

Figure 31: VAS results

- Mean Score (Standard Deviation) = 0.58 (0.26)
- Median Score (Min-Max) = 0.75 (0-1)
- Mode Score = 0.75
- Frequency table

VAS Score range	N (%)
• 0.00-0.25	7 (23.3%)
• 0.26-0.50	6 (20%)
• 0.51-0.75	15 (50%)
• 0.76-1.00	2 (6.7%)

Note: Standard deviation (SD) indicates the level of the distribution of the data set. Usually SD should be less than x1.5 of mean score to ensure the data set has low data distribution, and MEAN score is a good representative of that data set.

6.2.2 Time trade-off (TTO) results

Approximately half of respondents indicate their willingness to trade only 1.5 years for healthy 3.5 years to live, while other 40% of respondents are willing to trade 3 or more years (more than half of their total years to live) for remaining healthy living condition. TTO results are summarized in Figure 32.

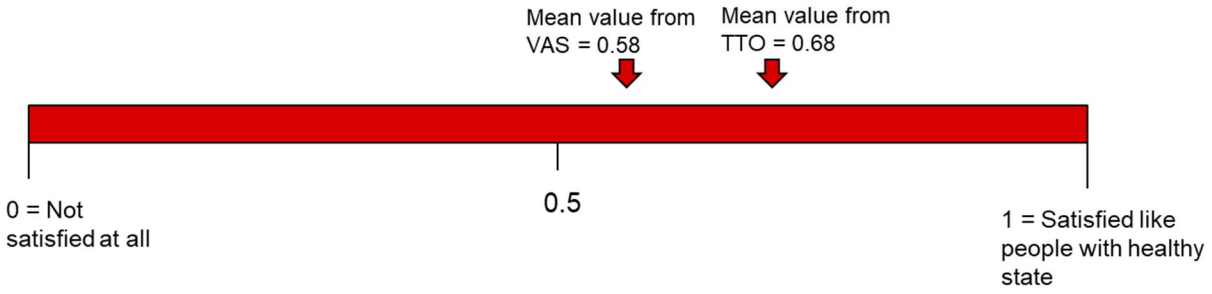
Figure 32: TTO results

- Mean Score (Standard Deviation) = 0.68 (0.32)
- Median Score (Min-Max) = 0.9 (0.1-1.0)
- Mode Score = 1
- Frequency table

TTO Utilities Score range	N (%)
• 0.00-0.25	4 (13.3%)
• 0.26-0.50	8 (26.6%)
• 0.51-0.75	2 (6.7%)
• 0.76-1.00	16 (53.3%)

Both VAS and TTO suggest that participating respondents are only moderately satisfied with current health state, which also implies their moderate satisfaction on current medication outcomes s illustrated in Figure 33.

Figure 33: Utilities (VAS and TTO) conclusion



6.2.3 Willingness-to-pay assessment tool: Open Question results

In this method, respondents will be asked for maximum amount that they are willing to pay for the healthy living condition (medical cost/Month), excluding other cost. Without being prompted with blinded Product T product profile (coded as Product X) script, respondents gave only approximately. 40,000 THB/month for medication cost spontaneously. This is because they could not visualize benefits that they could gain from claimed medical treatment as opposed to the cost they have to pay. Result summary of open question technique is shown in Figure 34.

Figure 34: Open question result summary

- **Mean Score (Standard Deviation) = 39,766.67 THB/Month (39,285.6)**
- Median Score (Min-Max) = 25,000 THB/Month (5,000-200,000)
- Mode Score = 20,000 THB/Month
- Frequency table

WTP range	N (%)
• 5,000 -15,000 THB/Month	8 (26.7%)
• 15,001 – 30,000 THB/Month	9 (30%)
• 30,001 – 60,000 THB/Month	9 (30%)
• > 60,000 THB/Month	4 (13.3%)

6.2.4 Willingness-to-pay assessment tool: Bidding Game results

With bidding game method, respondents were exposed with blinded Product T profile (Product X) with clear clinical benefits and quality of life (QoL) outcomes. Respondents gave significant

higher willingness-to-pay for Product T of 92,500 THB/month, a significantly higher than result from traditional open question method. Bidding Game results are shown in Figure 35.

Figure 35: Bidding Game result summary

- In this method, prices at the end of their bids will be considered as their WTPs.
- **Mean Score (Standard Deviation) = 92,500 THB/Months (80,961.36)**
- Median Score (Min-Max) = 50,000 THB/Months (10,000-300,000)
- Mode Score = 50,000 THB/Months
- Frequency table

WTP range	N (%)
• 10,000 - 50,000 THB/Months	17 (56.7%)
• 50,001 – 100,000 THB/Months	4 (13.3%)
• 100,001 – 200,000 THB/Months	6 (20%)
• > 200,000 THB/Months	3 (10%)

6.2.5 Willingness-to-pay assessment tool: Discrete Choice Model (DCM)

In this assessment tool, respondents will need to choose between Drug Profile A and B in each scenario which have different attribute/levels for a total of 15 different scenarios. In total, number of scenarios obtained from 30 respondents: 15 x 30 = 450 scenarios.

Prediction factors obtained from discrete choice model experiment are summarized in Figure 36.

Figure 36: Prediction factors obtained from discrete choice model

Attribute (Unit)	Coefficient	Standard Error	P-Value	Odd ratio (95% CI)	Interpretation (Odd ratio)
1. Additional Cost (Thousand THB)	- 0.010	0.002	< 0.001*	0.99 (0.98-0.99)*	Additional cost for the drug will decrease the probability of drug selection.
2. Benefit on delay progression time (Months)	0.339	0.057	< 0.001*	1.40 (1.26-1.57)*	If the drug have benefit in delay progression time, it will increase the probability of drug selection.
3. Benefit on increase response rate (Percentage)	0.031	0.010	0.002*	1.03 (1.01-1.05)*	If the drug have benefit in increase response rate, it will increase the probability of drug selection.
4. Level of toxicity (Severe-As reference value) • Moderate level • Mild level	 1.023 2.080	 0.791 0.794	 0.196 0.009*	 2.78 (0.59-13.11) 8.00 (1.69-37.99)*	Compared with the drug with severe toxicity, Drug with mild level of toxicity will have increasing probability of drug selection.
5. Administration route (Intravenous – As reference value) • Oral route	 0.457	 0.281	 0.104	 2.37 (0.91-2.74)	Compared with the drug with IV administration, Drug with oral administration will have increasing probability of drug selection.(p not significant)

Factors that affect the decision of choosing treatment include: Benefit on PFS, Benefit on response rate, Mild level of toxicity and Cost (Inverse relationship)

At probability of 0.90, estimated optimum willingness-to-pay (WTP) is calculated at 134,765 THB/month, with lower-bound and upper-bound of 129,226.26-140,062.79. 0.90 probability is believed the best optimum point taking product selection probability and WTP optimum price point into consideration, as shown in Figure 37.

Figure 37: Willingness-to-pay, DCM estimations

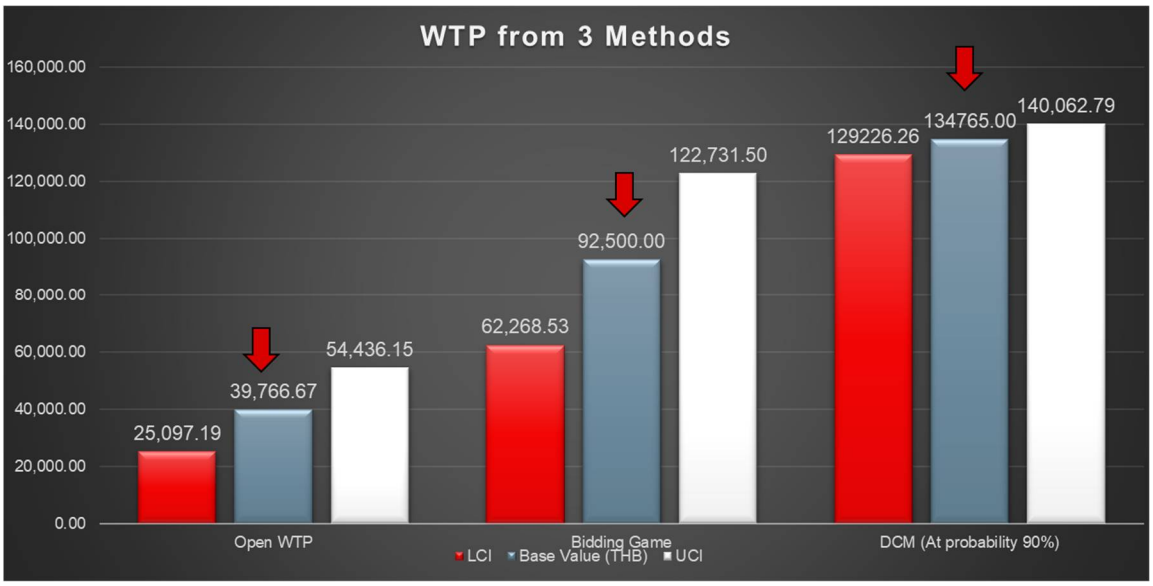
Probability of choosing Option A	Estimated WTP (THB/Month)	Lower CI and Upper CI
0.97	10,131.76	- 8,137.52 – 25,658.22
0.95	61,944.89	51,165.35- 71,747.66
0.90	**134,765.00**	**129,226.26-140,062.79**
0.85	179,850.17	175,974.70-183,620.68
0.80	213,794.56	210,719.99-216,811.99

6.2.6 Conclusions on optimum price of Product T

Based on current medical treatment, NSCLC willingness-to-pay is referred to Open Question which is in range of 25,097 – 54,438 THB/month, optimum WTP is 39,767 THB/month

Stepping up approach with specific product information and functional attributes provided to respondents, optimum WTP of Product T is suggested at 134,765 THB/month. Launch price window is in between 129,226 – 140,063 THB/month as summarized in Figure 38.

Figure 38: WTP conclusions



Note: Figures presented in Thai Baht/month

Theoretically, Product T should gain a good launch momentum in out-of-pocket market segment (self-pay in private channel) if launching at priced in between 129,226 – 140,063 THB/month, optimally at 134,765 THB/month.

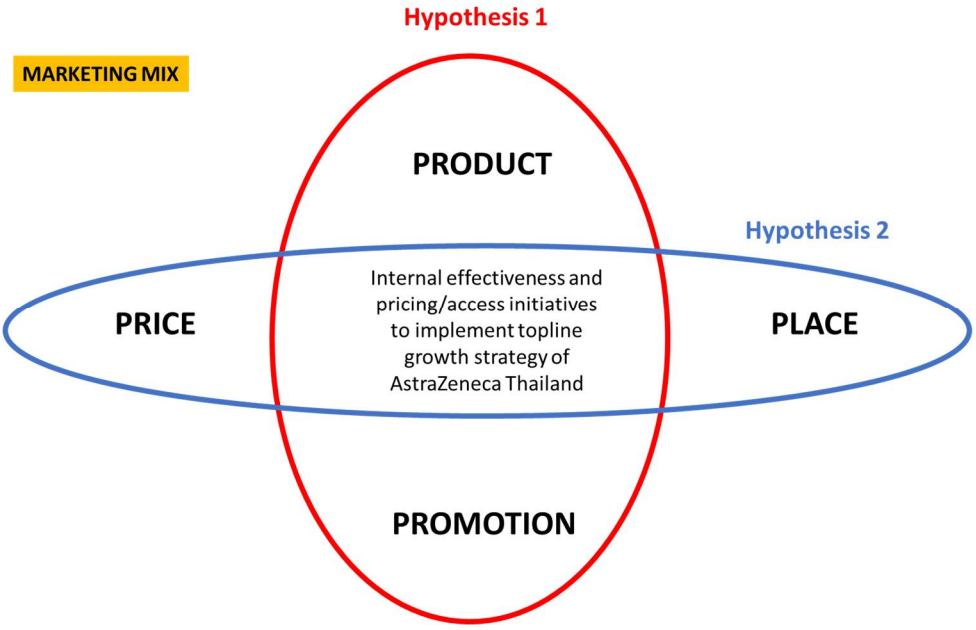
CHAPTER VII

DISCUSSION AND SUMMARY

The objective of this thesis is to design a marketing strategy plan for Company X Thailand in the pharmaceutical ethical market. This chapter will justify both research hypotheses that were earlier introduced in chapter IV.

Strategic marketing recommendations obtained from research studies of both Hypothesis 1 and Hypothesis 2 are perfectly complementing each other in terms of topline business performance improvement, as illustrated in Figure 39.

Figure 39: Strategic marketing recommendations from thesis study



While Hypothesis 1 focuses mainly on promotional activities (PROMOTOIN) and branding/positioning (PRODUCT), Hypothesis 2 aims to formulate pricing strategy (PRICE) for new product launch. In Thai pharmaceutical industry, since price is treated as main criterion in drug listing by most hospitals (both public and private), pricing plays direct impact on drug listing and access, and so distribution (PLACE) of Marketing Mix.

7.1 Findings and Conclusions of Hypothesis 1

Key findings from research survey are summarized as follow:

- Detailing visit coverage of Product F sales and marketing representatives was lower than competitors, despite all recruited respondents were from Company X own target customer list. A high variation of detailing visit coverage measured by mean of visit recall among target respondents was observed, a mix of those with 100% coverage, and some others with lower coverage. This implies that fact that some Product F sales and marketing representatives had selectively focused on detailing activities with some physicians in own territory only. From further investigation with Product F national sales manager, the issue was responsible from three major underlying factors which were:
    - Ineffective territory alignment of Product F team, meaning that number of territories should be redefined following number of eligible customers scattering throughout the country, as well aligning and defining each territory following proximity area and number of target hospitals and qualified physicians. Suggested solution is that Product F team should re-design overall territory alignment strategy for Product F product franchise by re-auditing lists of target hospitals and physicians at national level, calculate optimum full-time equivalents (FTEs) for each sales and marketing representative to come up with proper umber of territories at national level.
    - Corporate guideline on mandated number of potential class A and class B physicians in each territory should be revisited. Currently, Company X puts strong guidelines for each Product F sales and marketing representative to identify at least

20 class A physicians and 30 class B physicians in respective territory. Such guideline can potentially create issues for representatives who cannot identify qualified physicians in own territory and so they had to include some physicians who actually fall short on potential qualifications. The result, Product F sales and marketing representatives selectively detailed on those potential physicians and ignore the rest. It is recommended to relax this guideline, following territory alignment re-design execution. Performance measure can be relied on standard practice of sales target achievement, but sales target should be determined based on total potential revenue in each territory using secondary market audit data as references.

- High turn-over rate within Product F sales and marketing team caused vacant territory areas and so poor business continuity. Actually, almost all pharmaceutical companies in Thailand have experienced high turn-over rate issues during the past few years. The 2 effective solutions are proposed to minimize impact of high turn-over rate in this industry, first is to promote mirror detailing territories, meaning two Product F sales and marketing representatives can help detailing to target physicians in two responsible territories. This way, if one sales and marketing representative resigns, another can still cover target physicians in the vacant area to ensure business continuity. Second possible solution is to promote seasonal territory rotation within same geography, such as Bangkok and Upcountry. With this territory rotation, active Product F sales and marketing representatives can still cover physicians in temporary vacant areas until new candidates recruited.

- Very poor key message recall was observed. This is considered as serious issue of Company X Product F business franchise since most sales and marketing representatives focus on tactical sales target achievement using sales-relationship methods in buying drug prescriptions from target physicians. This put Product F business at risk since sales of Product F was resulted from personal relationship between Product F sales and marketing representatives and physicians, and not from clinical values and benefits of Product F product itself. Without established "product brand values" of Product F, sales of the product could be uncertain following turn-over rate within the period of time. Key product message and benefit detailing ensures that sales and marketing representatives put efforts to establish long-term values and benefits to Product F brand itself, which can last for long. It is recommended for Product F business franchise lead to take a few strategic actions to improve this:
    - Tactically design product key messages for easy recall. It is important to design product key messages such that they are short and concise and so easy to remember, and the number of product key messages should be 2-3 messages per business cycle only.
    - Product key messages should be designed as taglines only and supplemented with product clinical support papers during detailing activities.
- Lower detailing performance is clearly observed among class B physicians, which should not be the case since class B physicians actually represent those with high potential but still lower adoption of Product F. With this segmentation definition, actually class B physicians can be labelled as "ACQUIRE" group of customers who will contribute to Product F

business growth. It is evidently that most Product F sales and marketing representatives execute detailing activities within their comfort zone, focusing on physicians who already have good relationship and ignore those who are more difficult to approach and strengthen business partnership with. It is recommended to put attractive incentive schemes for Product F sales and marketing representatives who can successfully achieve satisfactory detailing outcomes for both class A and class B physicians, following pre-define corporate expectations.

- Total individual performance scoring data clearly implies high variation of different Product F sales and marketing representatives, which also suggests immediate actions needed on a few aspects:
    - Review recruitment plans and processes of sales and marketing representatives. Most pharmaceutical companies rely only on two things in recruitment process, academic qualifications and past experiences. However, for sales and marketing functions, the right attitude are considered very important factor for this job role.
    - Design proper training and development programs to support under-performing sales and marketing representatives. Attractive incentive packages should be offered to stimulate the whole development process following fast-pace industry nature.
    - Dedicated mentors should be provided to sales and marketing representatives team, on a 1-on-1 basis.

- Performance evaluation should be executed on quarterly basis. Evaluation inputs should be obtained from different sources, including customers (physicians), peers, managers, as well as supporting team members.
- A contingency plan should be prepared in case some under-performing sales and marketing representatives cannot be developed up to the speed as expected by the corporate. Job rotation can be one possible solution, or territory re-assignment might work better in some cases.

A formal interview discussion with senior management team members of Company X reveals that research study outcomes of Product F is actually believed to be applicable to all other product franchises following long established corporate culture of Company X in Thailand. This clearly implies that management realizes all business franchises within Company X Thailand share similar sales and marketing issues. According to Company X's General Manager, sales and marketing function are defined as internal commercial effectiveness of the company and so it is directly responsible to business topline performance of the firm. The company wishes to roll out similar survey study conducted for Product F to all other strategic product franchises for formal sales and marketing performance evaluation (apart from sales target achievement), to effectively put process in identifying area of sales and marketing weaknesses across all business franchises for near future strategic improvements.

7.2 Findings and Conclusions of Hypothesis 2

A pricing research study approach sponsored by Company X Thailand has revealed an optimum launch price of Product T in Thailand in early 2019. The immediate benefit of identifying effective pricing scheme of Product T through scientific research methodology was that Oncology business franchise lead had used research outcomes to successfully defend and negotiate launch price of Product T in Thailand, down from 420,000 THB/month to 150,000 THB/month following recommended optimum price from study survey. Even though it is still too early to draw conclusion on success of this recommended launch price of Product T in actual due to future launch schedule, this is considered very important strategic pricing since Product T sales will be relying solely on out-of-pocket pay market segment, not reimbursement segment, and so pricing that is well matched to expectations and wiliness-to-pay of eligible cancer patients should ensure successful launch excellence strategy in 2019.

In practice, effective pricing strategy will be successful along with effective detailing strategic actions executed by sales and marketing team who front target customers, physicians. A two-prong strategic execution of both Hypothesis 1 and Hypothesis 2 is strongly believed to improve topline business performance of Company X Thailand over 2019-2021.

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APPENDICES

A. Hypothesis 1 Questionnaire

Q1. Which medical representative of any non-insulin drug brand for T2DM treatment have visited you on any purposes during the past 1 month? [SPONTANEOUS]

Interviewer: Please record 1st mention into "Top of mind (TOM)", and the following spontaneous mentions into "Other mentions"

Q2. [Ask only if not mentioned in Q1] Have you been visited by a medical representative of _____ (READ OUT ALL MED REP BRANDS NOT MENTIONED IN Q1)? [PROMPTED]

Figure 40: Representative visit recall card used for Q1 and Q2

Medical representative	Q1		Q2	
	TOM	Other Mentions	Prompted	Never met
Product F	1	1	1	1
Invokana	2	2	2	2
Januvia	3	3	3	3
Jardiance	4	4	4	4
OTHERS, specify _____	5	5		
OTHERS, specify _____	6	6		
OTHERS, specify _____	7	7		

Q3. [Ask all med reps mentioned in Q1 or Q2] You mentioned that you have been visited with _____ (READ OUT ALL MED REP BRANDS MENTIONED IN Q1 OR Q2) in the past 1 month, please tell me important things/key messages of relevant non-insulin drug brand you recall from those recent visits during the past 1 month. [SPONATENEOUS]

Q4. During the past 1 month that you have met with medical representative from _____ (READ OUT ALL MED REP BRANDS MENTIONED IN Q1 OR Q2), do you recall if this medical representative has actually detailed you about _____ (Ask all key messages not mentioned in Q3)? [PROMPTED]

Figure 41: Key message recall card used for Q3 and Q4

Drug Name	Key messages	Q3	Q4
		SPONTANEOUS	PROMPTED
Product F	1. Superior efficacy than DPP4i with **>1% HbA1c reduction**	1	1
	2. Proven sustained HbA1c, weight, BP reductions **over 4 years**	2	2
	3. **Number 1 most prescribed SGLT2i** in the world & in Thailand	3	3
	4. **141** key messages	4	4
	Other (please specify) :	99	
Invokana	1. Help **reduce HbA1c levels by a greater amount than Sitagliptin**	1	1
	2. Help more patients to **reach the ADA's recommended** HbA1c goal of less than 7%	2	2
	3. Help contribute to **weight loss in patients while Sitagliptin did not**	3	3
	Other (please specify) :	99	
Januvia	1. Strong **HbA1c reduction** when added to metformin	1	1
	2. **No Hypoglycaemia**	2	2
	3. **No weight gain**	3	3
	4. The **number 1 prescribed,** branded, oral T2D medication	4	4
	Other (please specify) :	99	
Jardiance	**1. HbA1c reduction of >1%**	1	1
	2. **Superior HbA1c reduction vs SU**	2	2
	3. Additional benefit of **weight loss**	3	3
	4. The only T2DM treatment with **CV death reduction**	4	4
	Other (please specify) :	99	

Q5. [REPS ATTRIBUTE IMPORTANCE RANKING] Here is the list of attributes related to medical representatives that most doctors perceive importance in product detailing professionalism. I would like you to rank each of these attributes by mean of IMPORTANCE based on your personal preference, where 1 is the most important attribute, and so on.

Q6. [REPS PERFORMANCE RATING] Here is the same list of medical representative attributes you have ranked them by importance earlier. I would like you to evaluate some non-insulin product representatives on each of these attributes by mean of your personal impressions. Please use a 10-point scale where 10 = EXTREMELY GOOD and 1 = EXTREMELY POOR performance. Again, there is no right or wrong answer. It is your opinion that we want.

Figure 42: Sales and marketing representative performance evaluation card used for Q5 and Q6

Q5: IMP RANKING	Non-insulin reps attributes	Q6: Non-insulin reps performance rating (1-10)			
		Product F	Invokana	Januvia	Jardiance
	1.Varies his/her product messages according to my practice needs and interests				
	2.Adjusts his/her interactions according to how much time I have available with professional engaging style				
	3.Is a valuable and reliable source of my continuing education information on medical product				
	4. Is always an active listener, ability to process request/information and taking necessary actions promptly; including ability to answer my product related questions effectively				
	5. Always updates me on new product-related information regularly and consistently, and in a non-biased manner				
	6.Clearly understand nature of T2DM patients in the hospital, T2DM treatment pattern, related T2DM hospital policy for T2DM management				
	7.Always follows-up on actions agreed with me in a timely manner				
	8.Ability to answer insightful questions to uncover the broad spectrum of my own needs				
	9.Always focus on patient benefits when detailing product information				

Q7. [MARKETING ACTIVITY IMPORTANCE RANKING Here is a list of different sales and marketing activities commonly organized by pharmaceutical companies. Please rank each of

these sales and marketing activities based on the importance that affect your drug prescription preference where 1 is the most important and so on.

Q8. [MARKETING PERFORMANCE RATING] Here is the same list of marketing activities you have ranked them by importance earlier. I would like you to evaluate each of pharmaceutical companies promoting/marketing non-insulin products for T2DM treatment against each of these activities by mean of your personal impressions. Please use a 10-point scale where 10 = EXTREMELY GOOD and 1 = EXTREMELY POOR performance. Again, there is no right or wrong answer. It is your opinion that we want.

Figure 43: Marketing performance evaluation card used for Q7 and Q8

Q7: IMP RANKING	Marketing activities	Q8: Marketing performance rating (1-10)			
		Company X (Product F)	Boeringer Ingeilheim (Jardiance)	Janssen (Invokana)	MSD (Januvia)
	1.Meeting in hospital with physician presenting clinical data on T2DM				
	2.Stand Alone Meeting with local speakers presenting clinical data on T2DM				
	3.Stand Alone Meeting with International speakers presenting clinical data on T2DM				
	4.Weekend program (overnight) with physician presenting clinical data on T2DM				
	5.Local symposium in medical association conference with either international or national key opinion leaders presenting clinical data on T2DM				
	6.International Congress/ Symposium in another country				
	7.Scientific discussions on recent scientific papers/ journals				
	8.Patient education program e.g. Patient Brochure				
	9.Luncheon or dinner with company medical representatives presenting brand clinical trial				
	10.Overall impressions on marketing activities that are tailored to my needs and relevant to my practice in T2DM				

Q9. [PRODUCT ATTRIBUTE IMPORTANCE RANKING] Here is the list of common functional attributes related to non-insulin drugs used for T2DM treatment that most doctors perceive important in their T2DM treatment practice. I would like you to rank each of these attributes by mean of IMPORTANCE based on your personal opinion on T2DM treatment, where 1 is the most important attribute, and so on

Q10. [BRAND PERFORMANCE RATING] Still using the same list of non-insulin drug related functional attributes that doctors used to consider when deciding which drug to prescribe, I would like you to evaluate some non-insulin drug brands against each of these factors, in terms of how well each brand performs on each factor based on your own opinion by using a 10-point scale where 10 = EXTREMELY GOOD and 1 = EXTREMELY POOR performance. Again, there is no right or wrong answer. It is your opinion that we want.

Figure 44: Brand performance evaluation card used for Q9 and Q10

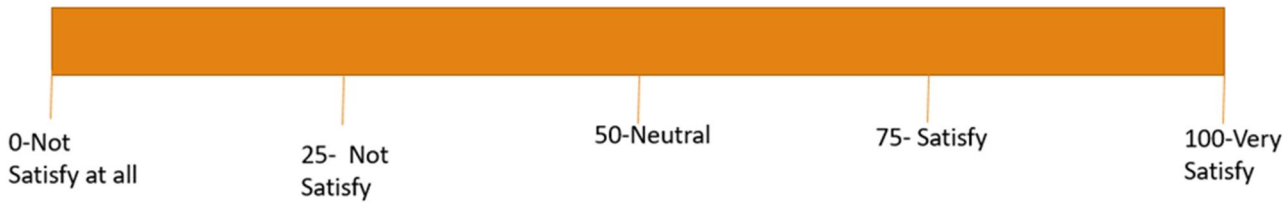
Q9: IMP RANKING	Non-insulin drug attributes	Q10: Non-insulin drug performance rating (1-10)			
		Product X	Invokana	Januvia	Jardiance
	1.Provides sustained improvements in HbA1c (long-term control)				
	2.Provides meaningful improvements in HbA1c				
	3.Is not associated with hypoglycaemia				
	4.Has a beneficial CV effect				
	5.Is a cost-effective treatment				
	6.Provides meaningful weight loss				
	7.Has a beneficial renal effect				
	8.Convenient dosing schedule, no dose titration				

B. Hypothesis 2 Questionnaire

[VISUAL ANALOG SCALE – VAS]

Q1) Given the value from 0 to 100; based on your current health state, please indicate your level of preference to your health (Tick X on the bar)?

Figure 45: VAS Self Completion Sheet



[Time Trade-Off – TTO]

Q2) Base on your current health state, what if doctor tell you that you will have the prognosis around 5 years left to live, and you have the alternative option which can make you to live with full health state (not suffered with pain, not need any caregiving, living normally with good quality of life) but needed to trade with some years of your living time, would you:

A. Trade around 2.5 years. Which will make you live around 2.5 years with the healthy living condition. (Accept -> B or Reject -> F)

   STEP UP

B. Trade around 3 years. Which will make you live around 2 years with the healthy living condition. (Accept or Reject)

C. Trade around 3.5 years. Which will make you live around 1.5 years with the healthy living condition. (Accept or Reject)

D. Trade around 4 years. Which will make you live around 1 years with the healthy living condition. (Accept or Reject)

E. Trade around 4.5 years. Which will make you live around 0.5 years with the healthy living condition. (Accept or Reject)

STEP DOWN

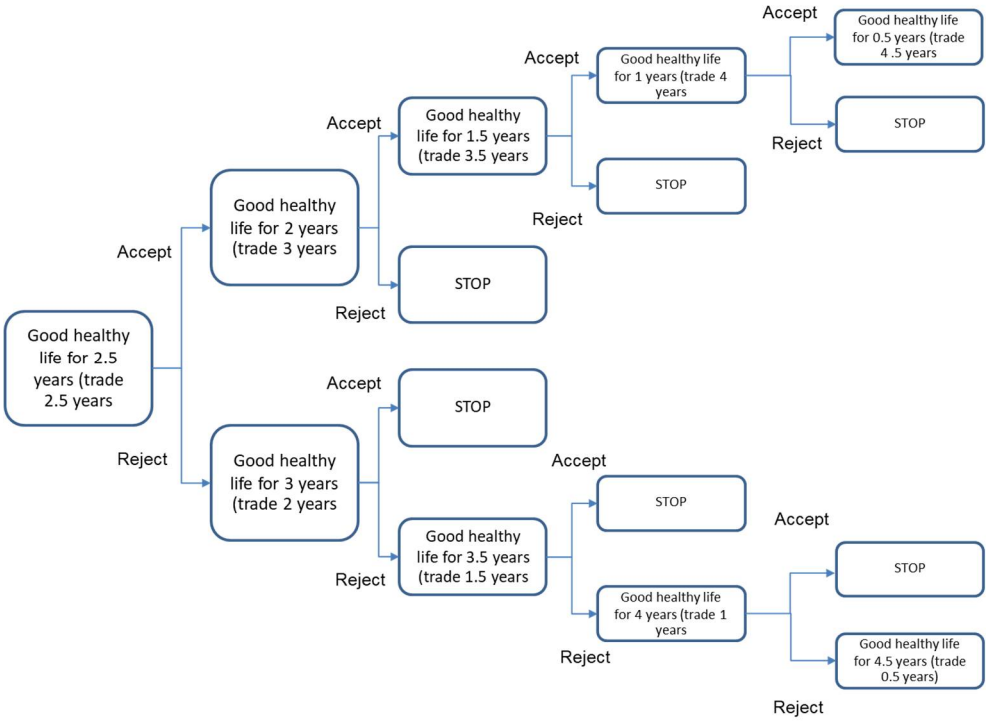
F. Trade around 2 years. Which will make you live around 3 years with the healthy living condition. (Accept or Reject)

G. Trade around 1.5 years. Which will make you live around 3.5 years with the healthy living condition. (Accept or Reject)

H. Trade around 1 year. Which will make you live around 4 years with the healthy living condition. (Accept or Reject)

I. Trade around 0.5 year. Which will make you live around 4.5 years with the healthy living condition. (Accept or Reject)

Figure 46: TTO Self Completion Sheet



[OPEN WTP QUESTION]

Q3) Based on your current health state, if we can help you to obtain healthy living condition, what's your maximum amount willing to pay for this medicine only per month? Please think about maximum spending you would be willing to pay on medicines for NSCLC treatment only and excludes other costs such as hospital administration, consultation fees, lab tests, etc. Please be as much realistic in your answer, taking into considerations current cost of medication and treatment results obtained.

[BIDDING GAME]

Q4) In this section, let's play a game. You need to imagine yourself into our purposed scenario, which is the following:

Purposed Scenario

In this scenario, you are assumed an non-small cell lung cancer (NSCLC) patient who now have metastasis disease and failed with every line of previous therapy, now you have suffered with many complications (including severe fatigue and severe bone pain). The doctor state that you will be living at around 6 months. If you have offered for the medication (in this survey, we called it PRODUCT A) which can reduce your complications and improve the progression-free duration around 1 year. Base on this proposed price of this medicine used for NSCLC treatment per month, will you accept or reject this medical treatment?

Rule of the Bidding game

The subject was offered an initial bid and asked whether this was an amount she/he would be willing to pay. If the subject accepted the test at this bid, the interviewer then offered a higher value, and again sought approval from the subject. When a specific bid was rejected, a lower value was offered, and acceptance was then sought (Range of bidding 50,000- 250,000).

Starting point will be randomly to minimize the chance of starting point bias.

Algorithm 1: Start at 100,000 THB per months

Algorithm 2: Start at 150,000 THB per months

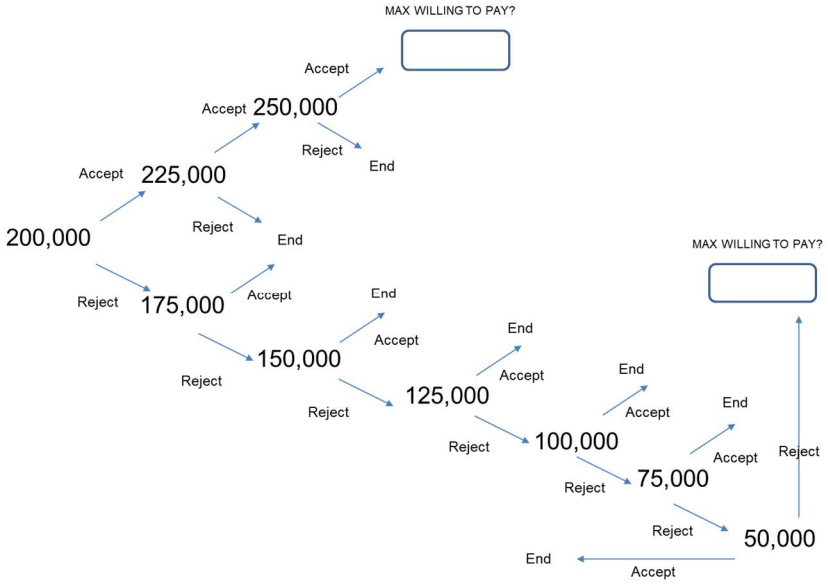
Algorithm 3: Start at 200,000 THB per months

First, we will start with the starting point that come from randomization process (Example, 150,000 in algorithm 2). Base on the purposed scenario above, if the medicine for NSCLC treatment is priced around 150,000 THB per month? Will you accept or reject the medication.? If Accept, we will ask the question again but with the higher bid (If the medication has the price around 175,000 THB per month? Will you accept or reject the medication), If reject, we will ask the question again but with lower bid (If the medication has the price around 125,000 THB per month? Will you accept or reject the medication)

Willingness to pay of the patients will be defined at the endpoint when patient change their decision of accept/reject the bid.

- If respondent still accepts the highest bid of 250,000 Baht/month medical cost of treatment, ask: How much maximum cost of this medicine used for NSCLC treatment are you willing to pay for?
- If respondent still rejects the lowest bid of 50,000 Baht/month medical cost of treatment, ask: How much maximum cost of this medicine used for NSCLC treatment are you willing to pay for?

Figure 47: Bidding Game Self Completion Sheet, Sample



[DISCRETE CHOICE MODEL]

Q5) This is another game to play. This game will help us to explore the factors which affect your decision and the willingness to pay on medical cost of NSCLC treatment.

In this game, you need to imagine yourself into our number of purposed scenarios, which is the following:

Purposed Scenario

You are an NSCLC patient who now has metastasis disease and failed with every line of previous therapy, now you have suffered with many complications (including severe fatigue and severe bone pain). The doctor state that you will be living at around 3 months if left untreated. If you have offered for the number of choices of different medication which have different attributes. Please select one choice of the medication from each of this scenario that you prefer.

Interviewer: Hand in DCM Scenario 1 to respondent, and REPEAT TO ALL SCENARIOS IN ORDER UNTIL COMPLETION.

Figure 48: DCM Scenario Card, Sample

DCM Scenario X

Scenario 1		
Attribute	Medicine A	Medicine B
PRICE	300,000 THB / month	100,000 THB / month
EFFICACY	Disease progression free for 10 months which is more than 2-drug combination of chemotherapy therapy which offers 4.4 months progression free only	Disease progression free for 6 months which is more than 2-drug combination of chemotherapy therapy which offers 4.4 months progression free only
EFFICACY	This drug offers 70% responses rate, which is more than traditional 2-drug combination of chemotherapy which offers only 31% response rate	This drug offers 41% responses rate, which is more than traditional 2-drug combination of chemotherapy which offers only 31% response rate
SIDE EFFECT	Mild constipation, diarrhea, nausea & vomiting, and fatigue. 1% infection which is less than chemotherapy. No hair loss.	Moderate constipation, diarrhea, nausea & vomiting, and fatigue. 5% infection which is less than chemotherapy. No hair loss.
CONVENIENCE AND ADMINISTRATION	Oral drug, once daily, convenient, can be self administrated at home with or without food.	Injection drug, must be administrated at the hospital.

I prefer Medicine _____