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A Demand Strategy Fram ework for the Philippine Ophthalmology Market: A Mixed-Methods Study

By
Castro, Gerardo M., Ph.D[1], Dimaculangan, Esmeraldo D., Jr. Ph.D[2].

[1]University of Santo Tomas Espana, Manila, Philippines
[2]University of Santo Tomas Espana, Manila, Philippines

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Abstract

This study examines the factors influencing the prescribing decisions of Filipino ophthalmologists decisions using a mixed methods approach that combines conjoint analysis and phenomenology. 318 respondents participated in the conjoint analysis, and 7 took part in key informant interviews. Path-worth analysis was the statistical treatment utilized for conjoint analysis. Respondents favored generic medications with a strong corporate image and products with purite/polyquad preservatives. Regular interactions with medical representatives, emphasizing personal relationships, were also valued, while patients' economic status had minimal impact on prescribing decisions. This study uniquely explored the factors behind Filipino ophthalmologists' prescribing behaviors. It introduces the "preservative" characteristic of ophthalmic drugs, marking a potentially first-of-its-kind investigation in the Philippines and worldwide.

Keywords: *Ophthalmology, mixed-methods conjoint, phenomenology, path-worth analysis, purite, polyquad*

INTRODUCTION

The Philippine pharmaceutical industry is important to the country's economy because it makes essential healthcare products and services. By 2024, this industry is expected to reach Php 216 billion, growing at an average of 11% annually. The Philippine ophthalmic drug market, which focuses on eye-related medications, is projected to be worth Php 4.2 billion in 2024. This market is expected to grow at a rate of 6.8% each year until 2030. Ophthalmic drugs treat different ocular diseases such as glaucoma, dry eye syndrome, blepharitis, conjunctivitis, and fungal keratitis. Glaucoma and dry eye syndrome are long-term conditions that need continuous treatment. Cataracts, which affect the eye's lens, are the most common refractive disorder. Currently, cataracts have no cure except for the treatment that involves phacoemulsification surgery. Several factors are boosting the global ophthalmic market. These include an aging population, more cases of eye disorders like glaucoma, cataracts, and macular degeneration, and increased investment in research and development by pharmaceutical companies. The pharmaceutical industry includes local and foreign companies that produce and distribute various products, including prescription and over-the-counter drugs, diagnostics, medical devices, and healthcare supplies. The industry has two main parts: the ethical segment and the proprietary segment. The ethical segment includes prescription drugs marketed directly to doctors through mail, medical journals, and personal sales by representatives. The proprietary segment includes medications advertised to the general public and can be bought over the counter. Foreign pharmaceutical companies often build brands and advertise, while local companies usually concentrate on distribution and pricing (Singh Chowhan et al., 2024).

The pharmaceutical industry is growing because more people need healthcare. The Food and Drug Administration (FDA) ensures that medicines are safe and work well. Companies in our country make different medicines for people here and around the world. Sometimes, companies also bring in special medicines from other places. Doctors decide which medicines their patients should take. Their choices are very important because that's how pharmaceutical companies profit from prescription drugs. The way companies advertise their products can really affect how much they grow. The local pharmaceutical industry has some challenges. They face competition from cheaper generic drugs and must deal with

*Corresponding Author: **Castro, Gerardo M., Ph.D.**

complex rules. To help people get affordable medicines, laws were created in 1988 and 2008 so that more Filipinos could buy quality medicines at lower prices. This study looked at what influences Filipino eye doctors when they decide on prescriptions. It explored these questions: (1) What unclear things affect their choices? (2) What are the most important reasons for their choices? (3) Why isn't there a clear plan for eye medicine that can help the pharmaceutical industry? These questions are important in the business of selling medicines. Many things affect what doctors prescribe, making it hard to know what matters most. In this industry, doctors are the main focus, while patients are the ones who take the medicines. That's why companies try hard to get doctors to choose their products, hoping to sell more and succeed in the market.

The pharmaceutical industry spends a lot of money on advertising, but it is unclear how to influence doctors' choices in prescribing medicine. Understanding how to change what doctors usually prescribe is very important. Many studies look at what affects doctors' decisions, but most focus on other countries and doctors with different specialties. There isn't much research about Filipino eye doctors, which makes this study special. This study examined what Filipino eye doctors think is important when prescribing medicine. It aims to find out something new that hasn't been studied before. There haven't been many recent studies about what affects doctors' prescribing decisions. This research will help fill that gap. Overall, this study wants to make it easier to understand how Filipino eye doctors decide what medicine to prescribe thereby helping the pharmaceutical industry in the Philippines.

Influencing Factors of Physicians' Prescriptions

Many factors affect how doctors prescribe medications. Key issues include the cost of drugs, the reputation of the company that makes the drugs, and the essential drug list in the country (Soremekun & Omitiran, 2014). Additionally, doctors can influence each other, especially senior physicians and consultants. Promotions from drug companies and drug costs also play a role (Arafat and Halder, 2014, as cited in Soremekun & Omitiran, 2014). In Iran, prescriptions depend on several aspects, such as the payment method, the characteristics of patients, the qualities of the drugs, and marketing investments (Sharifnia et al., 2018). For example, in the United Kingdom, the pharmaceutical industry spends about £200 million on promotion, which averages to £2,500 per doctor (Goyal & Pareek, 2013). Other studies highlight factors like continuing medical education (CME), sponsorships for conferences (Parmar et al., 2014), detailing by medical representatives (Khan et al., 2016), the frequency of their visits (Workneh et al., 2016), and the patients' economic situations (Mahmoud, 2016). Furthermore, factors like doctors' personal qualities, treatment costs, pharmaceutical practices, and patient preferences also matter (Davari et al., 2018). The main factors driving doctors' prescriptions are product, promotion, price, and distribution (Stros et al., 2015, as cited in Ali Murshid & Muhaidin, 2017). Research shows that the most important influences on prescribing habits include strategies for medical representatives, advertising, free drug samples, and the information provided to doctors. Less significant factors are pricing policies, branding, product features, distribution methods, and packaging. The least important factor is whether drugs are available in distribution channels. This study reviews the factors affecting doctors' prescriptions discussed in previous research. According to a recent study by Hailu et al. (2021), many factors influence how doctors prescribe drugs. These include sponsorships for CME, the frequency and quality of information provided by medical representatives, printed materials like brochures and monographs, visits to drug manufacturing plants, country of origin, company reputation, drug quality, clinical studies supporting the drugs, drug innovation, accessibility, inclusion in hospital formularies, and the outreach of local representatives. Other important factors are drug price, effectiveness of treatment, transparency about prices, and the price-quality ratio. These strategies have a strong impact on how doctors decide what to prescribe. We will begin the literature review by defining a physician's prescription.

A physician's prescription is defined as the changes in quantity or quality of prescriptions made by physicians (Brax et al., 2017; Parodi Lopez & Wallerstedt, 2019). This includes the reconciliation of drug treatment and assessment of the benefits/risks for all drugs, as required by national regulations (Parodi Lopez & Wallerstedt, 2019). A prescription is a healthcare program, a plan, and written instruction for a patient to buy the medicine and to take medications (Biswas et al, 2016; Hossain et al., 2013; Koley et al., 2013).

METHOD AND MATERIALS

This study looks at what influences Filipino eye doctors when they write prescriptions. First, we talked to some eye doctors to find out what they think about when they give medicine. Next, we asked 318 eye doctors to fill out a survey to gather more information. Then, we spoke with seven eye doctors again to learn more about their answers. By mixing these different pieces of information, we want to better understand how eye doctors make their decisions about prescriptions. Therefore, the mixed-methods design attains this purpose better than adapting either the quantitative or qualitative method alone (Creswell, 2014). Specifically, this research used Conjoint Analysis for the quantitative technique and phenomenology through key informant interviews for the qualitative approach. Hence, this study has three phases. Phase I was an interview with select Filipino ophthalmologists which identified the factors that Filipino Ophthalmologists consider when prescribing an ophthalmic drug. Phase II, a quantitative technique, was used via conjoint survey, and Path-worth was used as the statistical tool. Phase III dealt with a qualitative method through phenomenology design. Phase III seeks to draw an explanation of the quantitative results by interviewing select ophthalmologists about their

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clinical experience with the ophthalmic drugs they prescribe. Qualitative analysis helps explain the qualitative results in detail (Creswell, 2014; Hammarberg et al., 2016). The explanatory sequential mixed-methods design is a way to combine numbers and people's thoughts to find solutions. It looks at how people feel and think about problems in their lives. This helps us understand why they act a certain way. Figure 1 shows how the research is set up.

Figure 1 shows how the study was organized into different parts. In the first part, we talked to 20 eye doctors from the Philippines to learn what they think about choosing products to prescribe. We used this information to make a tool for the next part. In the second part, 31 options were generated via fractional orthogonal design based on what the doctors shared. These doctors ranked these options based on what they prefer. In the last part, we spoke with seven more experts to hear their thoughts about their experiences. This helped us understand why doctors make their choices. We grouped the reasons they gave into three main areas: things about the company, like drug quality, free samples, price, and education for doctors (CME), corporate image, and drug preservatives.

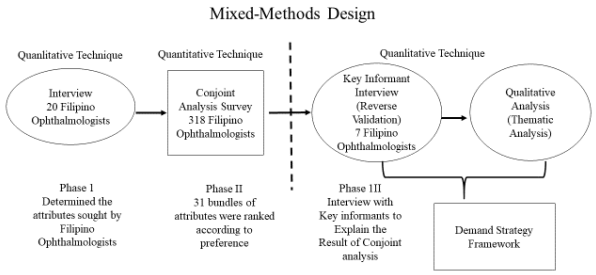

Fig. 1: Explanatory Sequential Mixed-Methods Design

The MR variables include frequency of calls, detailing, and relationship with the physician. The patient factor consists of the patient's economic condition. The patient's economic condition and drug price are two related factors. With the mixed-methods design, a demand strategy framework was developed. This study uses two ways to collect information: numbers and interviews. One method is called conjoint analysis, which helps us understand what product features people care about most. It's used in areas like market research and healthcare to improve services by learning what people like. The other method used is called phenomenology. This means trying to find out the deeper meaning of people's experiences by listening closely to them, focused on why Filipino eye doctors prescribe certain medicines. To learn more, Filipino eye doctors were engaged in in-depth interviews. These interviews helped gather important information from people who know a lot about their field. Asking broad questions allows them share their thoughts and experiences easily.

Subjects and Study Site

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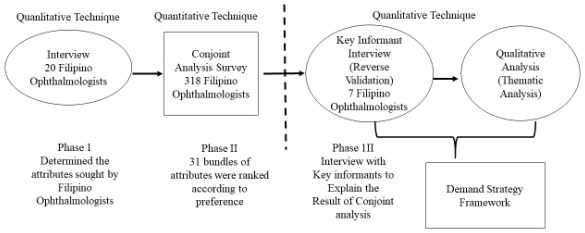
Mixed-Methods Design



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Subjects and Study Site

This study looks at how eye doctors in the Philippines prescribe medicine. Doctors were chosen based on certain rules: they must be Filipino, member of the Philippine Academy of Ophthalmology, and work in different areas of the country. To find the number of eye doctors for our study, we got information from the Philippine Academy of Ophthalmology (PAO). There are 1,373 in the Philippines according to the membership profile of the PAO. Sample sizes in studies that use conjoint analysis can differ widely. For example, a study on health-seeking preferences among elderly Filipinos included 304 respondents (de Guzman et al., 2014). Other studies reported smaller sample sizes, with 189 respondents (Arora, 2006), and 426 respondents (Ong et al., 2010). Hair et al. (2014) state that a sample size of 200 is generally acceptable for each group surveyed in a conjoint analysis. However, even a sample of 50 respondents can give a basic overview of preferences and show their key

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differences. To determine the sample size of ophthalmologists for this study, the following formula was used:
The sample size n and margin of error E are given by

$$X = Z(c/100)2r(100-r)$$

$$N = \frac{Nx}{(N-1)E^2 + x}$$

$$E = \sqrt{\frac{(N - n)x}{n(N-1)}}$$

where N is the population size, r is the response fraction, and Z(c/100) is the critical value for the confidence level c. Given the total population of ophthalmologists according to membership of the Philippine Academy of Ophthalmology of 1,373 as of 2019, the sample size for this study is 301 (Table 2), with a 5% margin of error and 95% confidence interval. The margin of error is commonly at 5%, which refers to the amount of sampling error that can be tolerated. The sample size of this study is 301, which is way above the acceptable sample size for conjoint analysis, as suggested by Hair et al. (2014), and is within the range of samples or respondents in the literature. The breakdown of the number of respondents by region is determined via the proportionate stratified method. Proportionate stratified sampling is a type of stratified sampling that considers the size of sample strata to be proportionate to the population of that strata. In proportionate stratified sampling, therefore, the probability of the sample selected from the stratum is proportionate to the size of the stratum in the population. Performing proportionate stratified sampling, the breakdown of samples from each stratum is shown in Table 2 for members of the Philippine Academy of Ophthalmology. The Philippines has a varied geography, and the survey instruments were distributed based on a list of doctors from a pharmaceutical company specializing in eye care. This list includes the names of doctors and their practice locations, organized by regions defined by the company. This standard practice makes it easier to find and locate doctors. The list is confidential and is only shared with the company's field representatives for targeted outreach. The company's regions include the Greater Manila Area the National Capital Region (Metro Manila), Central Luzon, North Luzon, Visayas, and Mindanao, where the survey was conducted. To make identifying the doctors easier, the firm grouped their locations. The list from the Philippine Academy of Ophthalmology does not reveal the names of its members to protect their privacy.

This study collected data using a survey distributed and collected onsite, with help from former colleagues who still work in the industry. The survey distribution occurred during the field force's clinic visits. We initially planned to distribute 750 survey instruments, but 250 were not given out, leaving 500 distributed copies. Out of those, 434 (87%) were returned filled out. Of these completed surveys, 318 (73%) were valid, while 116 (27%) were invalid due to double ranking of attribute combinations. For the qualitative technique, there are no strict rules about the right number of respondents. Opinions differ, but the principle of informational redundancy (Vasileiou et al., 2018) was used in this study. This means that recruitment of respondents continued until saturation is attained, that is when no new relevant data came in (Geiger & Turley, 2003). Literature suggests that a good sample size is typically between 5 and 50 respondents (Dworkin, 2012). Some recommend conducting 4 to 6 key informant interviews (Muellmann et al., 2021). In this study, saturation was reached with 5 respondents but recruited 2 more. After that, no new insights were gathered, which indicates informational redundancy or a point of saturation.

Data Measures and Instrumentation

Phase 1 of the study was an interview with 20 Filipino Ophthalmologists to determine the factors they consider when prescribing a drug. Phase I is critical in the study since the factors mentioned by the doctors were used in designing the conjoint survey instrument for Phase II, which is the quantitative design. In the conjoint survey, the ranking of the attributes of the respondents' bundles was analyzed to determine which combination of attributes is the most important for them to shape their prescribing decisions. Conjoint analysis allows the participants to reveal their preferences by selecting from groups of attributes that typify the actual buying situation in the marketplace. Van Gils and Zwartz (2009) assert that conjoint is the appropriate model to determine the importance of attribute levels and rank order of a large group of attributes. In determining the combination of attributes, the full profile or full concept approach was applied in which the respondents can rank a set of attributes according to preferences. Each set is composed of a different combination of attributes at three levels.

To avoid the drawback of producing too many possible combinations associated with more than a few factors, with each factor having more than two levels of attributes, a fractional factorial design was used for the respondents to rank the combinations more meaningfully. The combination of sets to be created is an orthogonal array, which can seize the main effects for each factor level. Interactions between levels of one factor and another are assumed to be negligible (IBM, SPSS Conjoint 25, 2019). Ten (10) attributes of ophthalmic drugs were identified during phase 1 of the study. The ten attributes were clustered to form a main group of attributes, and these are: attributes that relate to products (product variables), attributes that relate to the medical representative (MR variables), attributes that relate to the manufacturer (firm variables), and attributes that relate to the patient (patient variable). The application of SPSS resulted in 31 combinations of attributes in the conjoint survey instrument (Appendix A) at three (3) levels. The SPSS processed the ten attributes at three (3) levels multiple times, and these levels are defined in Table 3. The main statistical model adopted in the study is Path-worth analysis. Path-worth model is a conjoint utility that gives attribute importance score and level values to measure how much each feature influences the respondents' decision in selecting an alternative. It is an extension of regression analysis and can be used to analyze models that are more complex than multiple regression; It can compare different models to

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determine which best fits the data (Streiner, 2005). The attribute that yields the highest score is the first priority of the respondent in terms of relative importance. In determining the fitness of the conjoint model, Pearson correlation coefficient and Kental t were performed. The Pearson correlation coefficient is typically used for data assumed to have normal. distribution with a scale that ranges between -1 and +1 (Schober & Schwarte, 2018). A scale of -1 indicates inverse relationship between variables, while +1 shows direct relationship. Additionally, Kendall's τ was used. Kendall's τ is a non-parametric model that measures the correlation of variables calculated according to the ranks of the variables (Ma, 2012). Hence, it is distribution-free. Furthermore, it does not assume a linear relationship between *x* and *y* and thus can be applied to both continuous and discrete bivariate random variables. Kendal t has a return to scale of 0 – 1, where 0 shows no relationship between two variables exists, while 1 indicates a perfect relationship. Primary data was gathered onsite. The attributes or factors of Filipino Ophthalmologists' prescriptions were gathered in Phase I via face-to-face interviews with select doctors. The respondents' responses revealed several factors processed through SPSS to make bundles or combinations of attributes at three levels. The combinations of attributes generated by the SPSS generated 31 combinations that formed the conjoint survey instrument. The respondents in phase II consisted of 318 Filipino Ophthalmologists who ranked the attribute combinations according to importance from the perspective of each respondent, with rank 1 being the most important combination while rank 31 being the least important combination of attributes. Regarding the reliability and validity of the conjoint instrument, the model generated by the process provides the analysis of reliability and validity (Kaijie & Min, 2016), which is different from the test of reliability and validity for the traditional survey questionnaire. A letter to the respondents soliciting their information was sent out prior to the survey's completion.

Analysis of Qualitative Approach in Phase III

In-depth online structured interviews with key informants were the mode of gathering Phase III data that lasted approximately 1 hour for each interview. The Key informants provide critical points of view and insights about issues or questions being studied (Pahwa et al., 2023). The key informants, as the respondents, offer a wealth of information that can help researchers better understand a phenomenon or situation. The validity and reliability test coincided with the actual interview; the test of relevance and clarity was maintained throughout the 7 interviews. This means the interview questions may be modified during the actual interview proceedings. The interviews were conducted online with the participants' permission, each lasting an hour for each interview using the Google Meet platform. Recording of the interview serves two purposes, i.e., to capture the details of the interview proceedings with precision, and the interviewer could focus on the discussion rather than taking down notes. Open-ended questions were asked to allow the respondents to discuss the topic in detail and obtain rich information by elaborating on the responses. Thematic analysis was performed. Thematic analysis is the foundation of qualitative research since it is the core skill required for qualitative re. Moreover, the interview was transcribed. Transcription allows for the content of the interview to be taken and analyzed with the use of codes. A code in qualitative research is a word or short phrase that captures the essence of language-based or video data. Coding fundamentally is a simple manner of identifying meanings by part in the data and tagging them with a code (Skjott Linneberg & Korsgaard, 2019). The coding approach for this study followed reverse validation, where pre-conceived codes lifted from research questions and theories were arranged, and the respondents' responses were tagged in the codes. The reverse validation technique concentrates on relevant issues in the existing literature and is useful for testing and fine-tuning theories (Skjott Linneberg & Korsgaard, 2019). These codes are then categorized into themes and analyzed to test the research questions and hypotheses. Key informants were asked open-ended questions to find out detailed information that could help explain the conjoint results. The current research is about the deterministic factors of Filipino ophthalmologists' prescribing decisions using a mixed-methods design. An informal interview was done in Phase I to identify the attributes that Filipino Ophthalmologists consider when prescribing a drug. The quantitative method in phase II utilized conjoint analysis to evaluate the factors or product attributes that influence the prescribing habits of Filipino ophthalmologists and which of these factors or attributes strongly influence their prescribing habits. In Phase III, phenomenology design via Key Informant Interview was conducted using a qualitative technique to extrapolate an array of information that can help explain the complex process of shaping the prescribing decisions of Filipino ophthalmologists for ophthalmic drugs. Moreover, to ensure the accuracy of the seven interviews, a summary of transcriptions was presented to the ophthalmologists who participated in the interview to seek their confirmation and attest to the correctness of their responses by affixing their signatures in the transcription.

Result and Discussion

This section presents the interview results in Phase 1 of the study, Phase II for conjoint analysis, and Phase III for Key Informant Interview (KII). For the preliminary interview in Phase I, the specific factors or drug attributes sought by the Filipino Ophthalmologists are drug quality, drug price, CME sponsorship, frequency of MR visit (firm's representative), MR's detailing of the drug being promoted, MR's relationship skills, free drug samples, firm image, patient's economic condition, and the preservative content of the drug. The preservative content of the drug was hardly mentioned in foreign studies since these mainly involved internists and general practitioners. From the point of view of the Filipino Ophthalmologists, drug quality encompasses a drug efficacy-safety profile. In turn, drug quality, research, and development are associated with the firm image. Drug quality and frequency of MR visits were mentioned by 17

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respondents (85%); price was mentioned by 16 of the respondents (80%); firm image was mentioned by 13 of the respondents (65%); free drug samples were mentioned by 9 of the respondents (45%); CME and MR relationship by 5 of the respondents (25%); economic condition and drug preservatives were mentioned by 4 of the respondents (20%). Some of the attributes mentioned by the ophthalmologists were clustered to form main groups of attributes. For example, drug quality constitutes efficacy and tolerability, while R & D reflects firm image. The 10 attributes were processed with SPSS to develop the conjoint instrument via orthogonal design. The SPSS generated 31 different combinations of factors/attributes (Appendix A). The result of the conjoint analysis is presented in Table 4.

Quantitative Technique Result

The result of the quantitative technique is presented in this section, which determines the determinants of Filipino ophthalmologists' prescribing decisions. Statistical result is shown in Table 1. Path-worth analysis is the main statistical model used in the study. Path-worth is a conjoint utility, also known as the attribute importance score and level values, that measures how much each attribute or feature influences the respondents' decision in choosing an alternative. Path analysis can be utilized to analyze models that are more intricate and realistic than multiple regression. It can compare different models to ascertain the best fit for the data (Streiner, 2005). The relative importance of each attribute shows importance relative to other attributes. Path-worth, therefore, allows digging deeper to analyze and understand what specific levels within an attribute trigger the physician's choice. The level that yields the highest score is the level that the physicians strongly prefer. Conversely, the level that yields the lowest scoreis the level least preferred by the physicians shown in table 1:

Preferences of Filipino ophthalmologists

		Utility Estimate	Std. Error	Importance
Quality	High efficacy/high tolerability	3.442	.554	24.519
	High efficacy/less tolerability	.949	.554	
	Low efficacy/high tolerability	-4.391	.554	
Samples	No samples	-.930	.554	11.319
	1 bot	1.173	.554	
	2 and up	-.243	.554	
CME Convention	No CME & No participation in Convention	-.158	.554	9.086
	CME but no participation in Convention	-.676	.554	
	No CME but participates in Convention	.835	.554	
MR	Full/Classical Detailing	-.025	.554	6.988
	Partial	.191	.554	
	Sample Drop only	-.166	.554	
Patient Financial	Not important	.571	.554	9.910
	Less Important	-.324	.554	
	Important	-.247	.554	
Corporate	Originator	-.369	.554	8.066
	Branded Generic	.153	.554	
	Generic	.217	.554	
Med rep	Professional/Formal Relationship	-.291	.554	6.880
	Personal Relationship	.315	.554	
	Mere Acquaintance	-.024	.554	
Preservative	Preservative-free	.090	.554	9.839
	Purite/Polyquad	.557	.554	
	Benzalkonium Chloride (BAK)	-.646	.554	
Price	801 and up	-.287	.480	5.175
	601-800	-.575	.960	
	400-600	-.862	1.440	
Frequency	1x	.732	.480	8.218
	2x-3x	1.463	.960	
	4x	2.195	1.440	
(Constant)		13.111	1.413	

Pearson's R = 0.955, $p < .05$.
Kendall's Tau = 0.818, $p < .05$.

Table 1: Result of Conjoint Analysis (Path-worth)

To determine the path-worth model's fitness, the Pearson Correlation Coefficient or Pearson r, and Kendall tau were performed. The Pearson correlation coefficient draws the line of best fit to indicate how far away the data points are from the line of best fit. The value close to +1 indicates the observation's closeness to the respondents' actual preference. The outcomes of the statistics demonstrated that the conjoint model performed for this study (see Table 4) was considerably a fit: Pearson's R is .955, and Kendall's T is .818, which means that the observations in conjoint are close to the preference of the Filipino Ophthalmologists in a real-world setting. The table indicates that the results of the conjoint technique, showing that the quality feature if the most important attribute (24.519%) considered by Filipino ophthalmologists. This is followed by sampling features (11.319%) and then the Patient's Financial Condition (9.910%), which respondents also prioritized. Price (5.175%) was found to be the least important attribute. Concerning the part-worth of firm variables such as drug quality features which resulted from the conjoint analysis, the higher preference is given to high efficacy/high tolerability drugs (3.442) over high efficacy/less tolerability (.949) and low efficacy/high tolerability (-4.391). As for the free drug sampling feature, the doctors prefer one bottle of sample (1.173) than no sample (-.930) or 2 bottles and up (-.243). The preferred sponsorship feature is no CME, but the firm participates in the convention (.835), while the least preferred is with CME but without participation (-.676). For corporate image, generic is more preferred (.217) over branded generic (.153) and originator (-.369). In terms of the preservative feature, purite/polyquad (.557) is preferred over preservative-free (.090) and BAK (-.646). Then, for drug price, ₱801 and up (-.287) is more preferred over ₱400-₱600 (-.862) and ₱601-₱800 (-.575). The part-worth of medical representative variables like detailing feature shows a higher preference on partial (.191) than full/classical detailing (-.025) and sample drop only (-.166). As for the medical representative's frequency of visit features, the doctors prefer 4 or more times of visit (2.195) than once (.732) or two to three times (1.463). In terms of relationship features, having a personal relationship (.315) is more preferred over a mere acquaintance (-.024) or a professional/formal relationship (-.291). Lastly, the part-worth of patient variable like financial condition feature shows that ophthalmologists consider it not important

*Corresponding Author: **Castro, Gerardo M., Ph.D.**

(.571), compared to those who consider it less important (-.324) or important (-.247).

Result 1: Path-worth analysis indicated that Filipino ophthalmologists prioritize ophthalmic drugs with high efficacy and tolerability (3.442) over those with high efficacy and low tolerability (0.949) or low efficacy and high tolerability (-4.391).

Previous studies support this result. Sharifnia et al. (2018) found a positive relationship between product-related factors such as safety, efficacy, bioavailability and doctors' prescribing habits claiming that physicians consider first product efficacy when prescribing a drug. Moreover, Davari et al. (2018) claim that a change of prescription could happen when physicians face uncertainty as to the indication of drugs or have developed a fear of complications. From this point of view, drugs' clinical efficacy and safety are usually considered to attain the therapeutic objective and improve patient compliance. In addition, Jayasooria & Samarasinghe (2019) and Ranjan Napit (2016) support this finding, claiming that drug quality and physicians' prescriptions are directly related.

Result 2: Path-worth analysis showed that Filipino Ophthalmologists place high preference for 1 units of sample (1.173) over no sample (-.930) or 2 and units of sample (-.243).

Path-worth results on free drug samples showed that Filipino Ophthalmologists favor receiving samples. Sampling is an important promotional collateral in pharmaceutical marketing. Henceforth, it is a standard practice in the industry. In the Philippines, Thea Laboratories (2012) spent roughly 4%-5% of its net sales while in the US, spending of drug firms on promotion with free samples alone accounted for 60% of the industry's promotional spending in 2010 (Kornfield et al., 2013). According to Rafique (2017), physicians can evaluate the efficacy and safety of the drug. In his study, Khazzaka (2019) found drug samples motivated physicians' prescriptions in Lebanon. A study conducted in Lima, Peru, yielded similar results. Close to 50% of the study participants said that medical samples influence the physicians' prescribing patterns and receiving samples along with industry-supported research is the most ethical source of benefit from the industry (De Ferrari et al., 2014). Ahmed et al. (2014) found that drug samples are among the significant factors affecting physicians' prescribing behavior. Their conclusion suggests drug samples, along with the new drug and other promotional tools, significantly affect the prescription behavior of physicians. Moreover, Warrier et al. (2016) had a more dramatic finding, claiming samples induced the physicians to dispense the sampled brands and prescribe drugs that differ from their preferred drug choice. The result of the conjoint analysis of this study corroborates with previous studies that free drug samples are a motivating factor for prescription. However, no study has been conducted regarding the preferred quantity of samples to influence prescription. In the current study using conjoint analysis, the preference of Filipino Ophthalmologists on a per-visit basis is 1 unit of free drug sample over 2 units of free drug samples per visit. Considering ophthalmologists' preference for a 4X frequency of MR's visit a month the 1 unit of sample per visit is equivalent to 4 units of samples in a month.

Result 3: Path-worth analysis showed that Filipino Ophthalmologists prefer the no Continuing Medical Education (CME) participation (.835), but participates in conventions of the Philippine Academy of Ophthalmology. The least preferred is with CME but no participation in conventions (-.676).

Filipino Ophthalmologists favor firms that participate in conventions even if they don't sponsor CMEs (Pocket meetings). Bucklin et al. (2015) and Kamarudin et al. (2013) claim that CME has a critical role in improving patients' well-being and enhancing the total quality and efficiency of the healthcare system that, reduces healthcare costs. CME brings about rational prescribing of medicines, which, according to the World Health Organization, requires prescribing appropriate medications to address the critical needs of the patients (Kamarudin et al., 2013). Furthermore, Vishavadia (2017) posits that CME is a rich source of information. Forums of this kind allow the free exchange of ideas and best practices, which enhance the rational prescribing of drugs. Moreover, Hailu et al. (2021) assert that CME influences physician's prescribing patterns. While CME could enhance doctors' rational prescribing, the effects of CME sponsorship on prescribing habits are not definite. The result of the conjoint analysis does not seem to support previous studies' findings. Filipino ophthalmologists prefer no CME sponsorship but favor the participation of firms in conventions. This result is in agreement with previous studies that showed CME has no significant effects on physicians prescribing behavior in Bangladesh (Ahmed et al., 2014) and had lower influence on physicians' prescribing behavior in Dessie, Etiopia and that CME, alongside other promotional activities of the industry influence physicians' prescribing behavior (Hailu et al., 2021). Similarly, R.M.H. & Sivakumaran (2023) found a significant and positive impact of CME sponsorship on sales performance. Corollary, De Ferrari et al., (2014) revealed that CME was among the five activities of the pharmaceutical industry that influenced the physicians' prescribing behavior in public general hospital in Lima, Peru. In the Philippine setting, CME sponsorship is a common practice in the industry as part of the institutional-level strategy of drug firms. The doctors' preference for "no sponsorship but participates in convention" is somewhat surprising. There is no ready explanation for this, but the Internet of Things (IoT) available in advanced communication technology widely used during the COVID-19 outbreak has become an alternative to CME sponsorship since the Internet provides a wide array of information without external environmental exposure during the outbreak. The "no CME" sponsorship preference is a welcome development that can mean a transition from the traditional pharmaceutical

*Corresponding Author: **Castro, Gerardo M., Ph.D.**

marketing practice. The advancement in communications technology has leveled the playing field among the industry players. Furthermore, this finding indicates a preference of Filipino ophthalmologists for the firm's participation in conventions of the Philippine Academy of Ophthalmology (PAO). Conventions provide new information in treating diseases where resource speakers share their expertise in managing specific eye diseases and surgical procedures. Drug firms that participate in conventions have greater exposure through product exhibits in booths, and ophthalmologists have access to convention deals and discounts offered by drug firms that are not offered on ordinary occasions.

Result 4: Path-worth analysis showed that for corporate image, Filipino Ophthalmologists prefer generics (.217) over branded generics (.153), and the originators (-.369).

We first define corporate image as the strength of trust, commendation, and regard of physicians over drug firms; physicians are more likely to prescribe drugs with their history of efficacy. Corporate image creates a mental picture in the minds of the external stakeholders and the information that a firm conveys about itself impacts on customers' perceptions of that firm (Goldring, 2015; Vahabzadeh et al., 2017). There is no definite measure of corporate image in the pharmaceutical industry. Operationally, the corporate image variable in this study is viewed at three levels i.e., as the originator (research and development-based), branded generic, and generic. Originators are research and development-based firms who have the new knowledge, to create new products or improve the existing products. The originators are protected by a patent, which is valid for 20 years, and generic drugs can compete in the market after the patent of the originator expires (Yu & Gupta, 2014). In the pharmaceutical industry, doctors consider research and development-based firms as having a high image. The result of the conjoint analysis shows that ophthalmologists' preference for generic medicines should not be construed as a preference for low-image firms. It's just that generics are perceived to have similar or comparable quality to their original counterparts at low prices. Tatham (2020) claims that generic medicines will remain a preference, except when new molecules are discovered that have superior efficacy and the traditional or older medications have become off-patent. The shift to generic medication reduces the cost of health care especially for conditions that require lifetime treatment (Tatham, 2020).

Result 5: Path-worth analysis showed that Filipino Ophthalmologists prefer ophthalmic drugs containing polyquad/purite as preservatives (.557) over preservative-free (.090), and Benzalkonium Chloride (-646).

The inclusion of eye drops preservatives in the bundle of attributes in conjoint makes this study an addition to studies of the factors relating to prescription habits of physicians. Focused on Filipino Ophthalmologists adds to the novelty of this study. Previous studies and reviews corroborate this finding. In brief, preservatives prolong ophthalmic drug's shelf-life by preventing contamination with pathogens (Sarkar, 2021). This is of great importance, especially for multi-dose medications. Although there is tangible information and precautions from vicarious learnings and cases, BAK remains the main preservative in eye drops due to its good efficacy and safety profile. There has been a stream of studies, both experimental and clinical, that indicate major and frequent changes in ocular surface associated with the long-term application of topical medications, and many preservatives have been used that elicited ocular surface damage. While preservatives are important in ophthalmic drugs, their use is of important concern for patients, especially for those with chronic eye diseases that require long-term treatment because the accumulation of preservatives in the tissue may present ocular side effects (Rosin & Bell, 2013). Sarkar (2021) further claims that there are two broad categories of preservatives in ophthalmic drugs namely, detergents such as BAK, and polyquad, and oxidizing preservatives like purite which is less harmful on ocular tissues. The detergent effect of BAK has irreversible damages on the lipid layer that cause easy evaporation of the tear film thereby causing dry eye (Coroi et al., 2015). Given that, reducing preservative content is crucial, especially for long-term treatment. The advantage of preservative-free ophthalmic drugs compared with preserved drugs is the reduced side effects that enhance patient comfort and compliance. Highly tolerable eye drops can ensure compliance since these drugs can prevent preservative toxicity-induced side effects that can result in better therapeutic results. Although preservative-free eye drops offer noteworthy medical advantages, their use has drawbacks. Preservative-free drugs increase therapeutic costs as they come in single-use or single-unit-dose packaging. Once opened, there could be possible contamination; therefore, the leftover content must be discarded to prevent the patient from using it. This special packaging adds to production costs and is carried over to the patient. With this increased cost, patients may tend to miss doses and eventually neglect drug use, thus affecting the therapeutic outcome due to decreased compliance (Rosin & Bell, 2013). Thus, from a practical standpoint, multi-dose preparations remain an option. Most drugs used for long-term treatment contain Benzalkonium Chloride, although the use of polyquad and purite as a preservative in multi-dose ophthalmic drugs in the treatment of chronic diseases is increasing. While polyquad is a derivative of benzalkonium chloride, it has less harmful properties (Coroi et al., 2015) and does not cause toxic effects as BAK does.

Result 6: Path-worth analysis showed that Filipino Ophthalmologists prefer ophthalmic drugs priced at P801 and above (-0.287) over those in the P400-P600 (-0.862) and P601-P800 (-0.572) ranges.

Results of conjoint showed that Filipino Ophthalmologists prefer the highest price level for ophthalmic drugs. Nonetheless, this result is consistent with the choice of ophthalmologists for eye drops that contain polyquad/purite

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preservatives. A drugstore survey at Mercury Drug, the leading drug retailer in the Philippines reveals eye preparations that contain these preservatives have a price range between P782 and P1,400. These drugs are indicated for glaucoma which requires long-term treatment. As mentioned, for long-term treatment, preservative-free drugs or drugs that contain safer preservatives are more preferred. Preservative-free drugs are safer than polyquad/purite and BAK. Likewise, polyuad/purite has less harmful effects on the eye than BAK (Sarkar, 2021). Moreover, due to high cost of preservatives-free drugs, ophthalmologists seem to settle their choice on the next level of safe preservatives i.e., polyquad/purite which are cheaper than the preservative-free drugs and yet safer than BAK.

Result 7: Path-worth shows that Filipino ophthalmologists favor partial detailing (.191) over full or classical detailing (-.025), and sample dropping only (-.166).

According to the path-worth result, Filipino ophthalmologists prefer the detailing provided by medical representatives (MRs). The MR variable in this study consists of detailing, frequency of visit, and level of relationship with the ophthalmologists. MRs are a source of information about the company's products, with latest clinical studies, and using various marketing activities to convince the physicians to prescribe their products (Lieb & Scheurich, 2014). The MRs are the medium of communication between the firm and the physicians, and therefore, the information that these representatives should convey to doctors must be both accurate and complete. In terms of the duration of interaction. Workneh et al. (2016) reported that about 48% of those physicians visited by medical representatives in Northern Ethiopia were influenced by drug promotions. In actual clinical situations, physicians do not give MRs much time for detailing due to their busy practice attending to patients. In the same token, half of the physician respondents in their study interacted with MRs for only 2-10 minutes only (Workneh et al., 2016). These studies, therefore, support the conjoint result of the current study that Filipino Ophthalmologists prefer partial detailing only since there is just a limited interaction time between an MR and a physician.

Result 8: Path-worth analysis showed Filipino Ophthalmologists prefer the 4x or more visits a month (2.195), 2x-3x (1.463), and 1x (.732).

The Path-worth results indicate that Filipino Ophthalmologists prefer more frequent visits. The frequency of visits is a crucial factor in pharmaceutical promotion to influence doctors' prescriptions. The frequency of clinic visits of MRs may vary from country to country. In the Philippine setting, MRs visit physicians at a frequency of 1X-4X a month, depending on the physician's classification for the drug firm. This is similar in other countries. For example, in a tertiary care teaching hospital in South India, it was reported that physicians were visited by MRs 2X a month and once a week or 4X a month (Gupta et al., 2016). In Mekele, Etiopia, MRs visited physicians only occasionally, and a small fraction of the respondents were visited daily (Workneh et al., 2016). For doctors to be enticed to shift prescription habits, they should be seen several times to get their attention. In their study, Lieb & Scheurich (2014) found that frequent visits of MRs translated to frequent prescriptions and in higher daily doses. With the assumption that a close relationship between the physician and the MR exists, such a visit has a more direct impact on the physician's prescription at the time of prescribing. Within the context of these studies, it may seem that the more frequent an MR's visit to a physician is, the more frequently his product will be prescribed. These studies, therefore, validate the result of conjoint analysis regarding the choice of Filipino ophthalmologists for 4X or more frequent visits of an MR.

Result 9: Path-worth analysis showed Filipino Ophthalmologists favor personal relationships (.315) over mere acquaintance (-.024) and professional/formal relationships (-.291).

Path-worth analysis of the relationship between Filipino Ophthalmologists and Medical Representatives (MRs) revealed that the former favor MRs who have a closer and more personal relationship with them. Wikipedia defines interpersonal relationships in the social psychological sense as a "social association or affiliation between two or more persons." In other words, interpersonal relationships generally refer to the linkage, interaction, and bonding of two or more people. Hence, interpersonal relationships relate to the interdependence of individuals in satisfying their needs. An interpersonal relationship is a "give and take" relationship between two or more people brought about by their various needs, and this relationship may be a mere acquaintance to a close relationship (Imamoglu, 2008, as cited in Kocak & Onen, 2014). For their part, Francis and Fernandez (2022) claim that interpersonal relationships encompass communication, listening, trust, conflict, and conflict management, which are acknowledged as the well-received elements of interpersonal relationships. In this study, MR relationship with physicians variable was placed at three (3) levels, i.e., professional, personal, and acquaintance. In a professional relationship, formality exists where the MR performs his business functions such as clinic visits, product promotion or detailing, and wearing appropriate attire during visits. In personal relationships, no formality exists, and treatment is based on friendship built on honesty, trust, support, and loyalty. Trust is the seal of a full-grown interpersonal relationship (Francis & Fernandez, 2022). Acquaintance is when someone is seen regularly but not a good friend. According to (Krunal et al. , 2021), personality traits like grooming, attitude, and communication skills are attention catchers that bring favorable feelings toward the MR. Klemenc-Ketis & Kersnik (2013) found that trustworthiness is the most valued characteristic of MR among Slovenian family physicians, and during clinic visits,

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physicians focus their attention on the MRs' trustworthiness and objectivity more than his selling skills.

The study's conjoint analysis revealed that Filipino Ophthalmologists prefer personal relationships over professional and acquaintance types. It may seem that this attitude toward MRs stems from the typical characteristics of Filipinos, such as "pakikisama," "Bayanihan," and "utang na loob," to name a few. Moreover, it is asserted that public relations play a crucial role in influencing a physician's prescription behavior (K.B. & UK, 2016). Therefore, the MR, being the firm's representative, serves as the conduit to attain this goal.

Result 10: Path-worth analysis of the patient variable economic condition considered not important for Filipino Ophthalmologists (.571), compared to those who consider it less important (-.324, or important (-247).

Path-worth results on patients' economic condition showed that Filipino Ophthalmologists do not consider the patients' economic condition important. Gilbert et al. (2013) reported that the poor in the Philippines have no access to health care, which remains inequitable for all, especially for the marginalized sector of the society. Among the sources of health expenditures, out-of-pocket expenses remain the major source of financing for medical care for Filipinos. The World Bank defines out-of-pocket expenditure as the cash outlay by households, including gratuities and in-kind payments to health practitioners and suppliers of pharmaceuticals, therapeutic appliances, and other goods and services whose primary intent is to contribute to the restoration or enhancement of the health status of individuals or population groups. High out-of-pocket spending discourages people from complying with prescribed drugs due to high costs or borrowing money to buy the prescriptions, and they may even relinquish spending for other necessities (Gilbert et al., 2013). Operationally, the patient's economic condition would refer to the patient's economic situation, which indicates his capability to purchase a prescription or health service. Ophthalmologists are concerned with patients' affordability and the effective and efficient use of the drug prescribed to their patients. Physicians prescribe generic equivalents because they are cheaper than their original counterparts (Oferi-Adjei & Fiakpornoo, 2019; Ahmed, 2014). Previous studies have mixed results as to the impact of the patient's economic condition, but the current study suggests that Filipino Ophthalmologists don't consider it important in their prescription.

Qualitative Technique Result

During interviews with 7 Filipino ophthalmologists, it was discovered that they share similar views on the factors influencing their prescription patterns.

Efficacy and Safety of Ophthalmic Drugs

The interviews revealed that the primary consideration for Filipino ophthalmologists when prescribing medication is quality, which encompasses efficacy and safety, supported by clinical studies.

"When we evaluate a pharmaceutical compound, we need to use reliable evidence from scientific studies about the medication. It is important to look closely at how effective it is, especially through therapeutic evaluations like randomized clinical trials" (Dr. E. Reyes, personal interview, March 28, 2024).

"When choosing medications, two key factors are important. First, the drug must be effective; it should work well for treating diseases based on experience or recommendations. This is the most critical factor. Second, the drug needs to be safe, meaning it should have few side effects or none at all. So, when selecting a medication, we first ensure it is effective and then check that it is safe to use" (Dr. G. Bunagan, personal interview, April 5, 2024).

"I know how important it is to ensure that medications are effective and safe. For example, when I prescribe antibiotics, I think about how broad the drug's effects are. Effectiveness and safety are key factors for me when picking the right medication" (Dr. J. Abano, personal interview, April 8, 2024).

"I want an antibiotic that is proven to work based on studies and clinical trials. It should use evidence-based medicine and must not cause stinging, as this could lead to patients not following the treatment" (Dr. L.P. Mallari, April 20, 2024).

"It's mainly about quality, effectiveness, and cost. The quality of a medication depends on who makes it. If a product has FDA approval, it is likely safe. It's rare to find eye medications that are unsafe" (Dr. J. Ong, personal interview, April 25, 2024).

"The most important thing about a drug is how well it treats a condition. After that, safety is key, especially having as few side effects as possible." (Dr. R. Milante, personal interview, January 30, 2024).

"Efficacy is the most important factor. When treating external corneal diseases, we commonly use a mix of steroids and antibiotics. We choose the antibiotic based on the specific organism we are targeting. For topical steroids, even if the generic name is the same, their effectiveness can vary between brands. This is based on our personal experiences and those of our colleagues and superiors. The thickness of the medication matters too; some brands have a consistency that is too thin, making them less effective." (Dr. J. Lim, personal interview, February 8, 2023).

Drug Price

"I also consider the cost of the drug if its affordable to the patients" (Dr. E. Reyes, personal interview, March 28, 2024).

"The drugs we tested are in a higher price range. Many people believe that more expensive products are of better

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quality. However, it is important for patients to be able to afford their medication. If the cost is too high, I always suggest considering generic options as a good choice for patients." (Dr. G. Bunagan, personal interview, April 5, 2024).

"I focus on how well a drug works rather than its cost. I always choose the medication that I think will be most effective, which is why I don't prescribe generic drugs." (Dr. J. Abano, personal interview, April 8, 2024).

“The medicine should be cost-efficient as the patient won't get well if they can't afford it” (Dr. L.P. Mallari, personal interview April 20, 2024).

"The medication must be reliable and priced lower than my competitors' products. I want to support my patients financially and build a reputation for caring about their well-being more than profit. If the price is too high, people might think that I am more focused on making money than on my patients' health and welfare." (Dr. J. Ong, personal interview, April 25, 2024).

"The third important factor to consider is cost. In the Philippines, patients usually pay for healthcare out of their own pockets. Because of this, the cost becomes a key issue. This is different from more developed countries, where the government or insurance companies often cover medical expenses. In those places, patients usually feel less direct financial burden from healthcare costs" (Dr. R. Milante, personal interview, January 30, 2024).

“In East Avenue Medical Center, the majority of our patients, about 90%, are indigent or part of the working class. When I operate on patients, for pre-operative management for example, I give my patients the option. I prefer the brands I am comfortable with because it’s based on experience, and patients ask where the medications are made from. They don’t want medications made in China or India. Even garbage workers will find a way to buy superior drugs for their eyes. So, the patients can afford to pay for the difference because they will always find a way” (J. Lim, personal interview, February 8, 2023).

Drug Preservative

“In my practice, it's essential to check for preservatives in eye medications, as they can cause inflammation, swelling, and dryness over time. While I prefer prescribing preservative-free drugs because they are better for patients' eyes, they often come with higher costs. If practicing in Metro Manila, cost may not be a concern, but in the provinces, affordability must be considered. In these cases, prescribing medications with preservatives, such as those using polyquad or purite, may be necessary. If the prices are comparable, I always choose non-preservative options due to their benefits in reducing inflammation and protecting the cornea.” (Dr. E. Reyes, personal interview, March 28, 2024).

"The main issue is cost, but some patients are sensitive to preservatives. We need to determine if patients have allergies to preservatives. If they do, we should choose preservative-free products. If they aren’t sensitive and the preservative-containing options are more affordable, we can select those. Preservative-free products are generally used for treatment, and over the years, many studies have explored the pros and cons of preservatives. Many patients using older preservatives have faced issues, while fewer have reported problems with newer ones. Ultimately, the decision about using preservatives depends on individual patient sensitivities. Some may react to certain preservatives, while others may not.” (Dr. G. Bunagan, April 5, 2024).

“As a cornea specialist, I recognize the importance of preservatives, but preservative-free options are often preferable. Frequent use of antibiotics may be necessary, and these preservative-free products help minimize eye damage. Though more expensive, ophthalmologists in rural areas may turn to alternatives like Purite or Polyquad, knowing to avoid benzalkonium chloride. Some practitioners hesitate to use preservative-free medications due to limited awareness, as companies have only recently begun promoting them” (Dr. J. Abano, personal interview, April 8, 2024).

"I prioritize non-preserved medications in my corneal care practice, though they tend to be more expensive. For instance, using preserved medications for treating corneal ulcers can delay healing. Research shows that non-preserved options reduce discomfort and speed up recovery. Some ophthalmologists may avoid these medications due to limited awareness, as their benefits are often overlooked in scientific lectures" (Dr. L.P. Mallari, April 20, 2024).

"I generally prescribe preservative-free medications for long-term treatments, like glaucoma or dry eye. In contrast, preservatives aren't a major issue in post-cataract care, as I’ve only seen two cases of preservative allergies in my practice. Although preservative-free options are pricier, I prefer safer preservative alternatives and avoid Benzalkonium Chloride" (Dr. J. Ong, personal interview, April 25, 2024).

“If a drug causes side effects like irritation or redness, I look at the preservatives. For example, if two drugs have the same active ingredients but different side effects, the preservatives might be the issue. However, I primarily prescribe based on my clinical experience and do not prioritize preservatives” (Dr. R. Milante, personal interview, January 30, 2024).

“As a cornea specialist, I prioritize the impact of preservatives on corneal and conjunctival surfaces. When patients use fewer than 4 to 6 drops daily, preservatives are typically not a concern. However, for those requiring over 6 drops per day, especially with chronic conditions, the risks of preservatives increase. Therefore, the frequency of dosing is crucial in my prescribing decisions. While Purite and Polyquad are milder preservatives, I prefer preservative-free

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medications (Dr. J. Lim, personal interview, February 8, 2023)*).*

Drug Price Range

"Some doctors prescribe and sell medications, while others only dispense them. When medications are expensive and their costs low, doctors can boost their profits, which may lead them to prefer prescribing pricier options. They might also choose generic drugs for their lower costs and higher profit margins. This behavior indicates that doctors can sometimes operate like businessmen, an important reality we should acknowledge." (Dr. E. Reyes, personal interview, March 28, 2024).

"Many believe that cheaper products are less effective, while higher-priced items are often seen as more effective due to clinical trials. For sellers and consumers, the ideal price for medication usually falls somewhere in the middle—neither too expensive nor too cheap" (Dr. G. Bunagan, personal interview, April 5, 2024).

"Are doctors selling medications? I'm not sure if they think that higher prices mean better quality. If they are selling medications, they should keep affordability in mind, unless their main goal is to make a profit from these sales" (Dr. J. Abano, personal interview, April 8, 2024).

“Dispensing doctors may seek to acquire generic products at lower costs in order to sell them at higher prices and generate greater margins” (Dr. L.P. Mallari, personal interview, April 20, 2024).

“There is no generic priced at P800 and up. Mine is a branded generic, so my price range is in the middle. Some doctors prioritize profit” (Dr. J. Ong, personal interview, April 25, 2024).

“When it comes to pricing, there's a common belief that inexpensive medications are not very effective. The idea is that you get what you pay for. However, my experience has been different. Some medications are not very expensive, yet they work effectively. Personally, I don't prioritize price. Price, for me, is a lower priority attribute” (Dr. R. Milante, personal interview, January 30, 2024).

“From a specialist’s perspective, our cases are not ordinary. As a specialist, I opt for the original medications because they have proven effective and safe. However, these drugs are expensive” (Dr. J. Lim, personal interview, February 8, 2023).

MR’s Frequency of Physician Visit

“I always consider the products of medical representatives who visit me regularly and promote them by explaining their benefits. If you don't visit, we tend to forget about your products” (Dr. E. Reyes, personal interview, March 28, 2024).

"I only need to receive information about the medical representative's product once a month to remember it, especially for older products. If I'm familiar with a product and trust its effectiveness, I'm more likely to prescribe it. More frequent visits are helpful for updates or new products." (Dr. G. Bunagan, personal interview, April 5, 2024).

“A medical representative visited me almost daily, but I haven't prescribed his product. What matters most is its efficacy and safety. If I'm confident in a product, I will prescribe it regardless of representative visits.” (Dr. J. Abano, personal interview, April 8, 2024).

“In my opinion, a visit every two weeks is enough; weekly visits are unnecessary. Even without a representative promoting a product like 'Systane,' I would still prescribe it. A visit once a month or every two months would suffice, but I do appreciate visits as they can influence my prescribing decisions.” (Dr. L.P. Mallari, April 20, 2024).

"I buy in bulk once convinced about your product. Text messaging is sufficient, with in-person visits only once a quarter or twice a year. For new product promotions, more frequent visits are needed." (Dr. J. Ong, personal interview, April 25, 2024).

"Frequency of visits is important for new drugs, especially when reminders are needed. For me, twice a month is sufficient; too many visits can be disruptive." (Dr. R. Milante, personal interview, January 30, 2024).

“The frequency of visits does not impact my prescribing habits. While frequent visits may irritate the doctor, regular visits with complimentary samples are helpful for hard-to-remember products. Larger companies rely on automatic brand recognition, while smaller companies may benefit from more frequent visits to build awareness” (Dr. J. Lim, personal interview, April 25, 2024).

Detailing

“With so many drugs available today, detailing can be time-consuming, especially with multiple medical representatives in line. However, detailing is appropriate when new drugs are introduced and I’m looking for alternatives.” (Dr. G. Bunagan, personal interview, April 5, 2024).

"I often feel sorry for medical representatives, so I try to be accommodating when they visit my clinic and allow them to come at the end of my hours to get my signature. However, I was annoyed once when my secretary let one in during clinic hours just because she received a Starbucks coffee. My clinic can get very busy, and by the end of the day, around 7:00 or 8:00 PM, I'm already tired. I’ll meet with them, but it has to be brief since they need my signature." (Dr. J. Abano, personal interview, April 8, 2024).

"I pay attention to detailing for new medications. For older drugs I'm familiar with, I ask representatives not to waste their time. However, I listen to detailing on products I'm not acquainted with, especially when clinical studies are

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presented, as I know my knowledge isn't complete." (Dr. L.P. Mallari, personal interview, April 20, 2024).

"Detailing for me is irritating. Others would listen out of courtesy. In my case, I don't like it especially the classical detailing" (Dr. J. Ong, personal interview, April 25, 2024).

"I feel sorry for the medical representative if I don't listen to his presentation. I respect the time he spends visiting me, so I make sure to listen. I also don't want to make him feel embarrassed, especially when he is promoting a new product." (Dr. R. Milante, personal interview, January 30, 2024).

"When a medical representative presents important information, such as dry eye medications, I prefer listening to their presentation rather than searching online. This approach is more convenient for retention. I also focus on products relevant to my specialty, like anti-glaucoma medications. Additionally, some representatives use iPads, which aid in memory retention." (Dr. J. Lim, personal interview, February 8, 2023).

Free Drug Samples

"I welcome samples because they are often very helpful. Some patients will only try a medication if they receive a sample, and if it works for them, they will buy the commercial version. To me, samples are more useful than items like pens or prescription pads. Having a few more samples would be beneficial." (Dr. G. Bunagan, personal interview, April 5, 2024).

"Sample distribution has greatly decreased, with only 10% to 20% of companies offering samples today compared to the past when all firms did. Samples are important to assess a product's effectiveness, safety, and the validity of the company's claims. I give samples to my patients for free and collect their feedback." (Dr. L.P. Mallari, personal interview, April 20, 2024).

"Samples aren't important to me; the drug's efficacy and safety are what matter most. Samples only matter for new drugs. When companies send many samples of an old product, it suggests the product isn't selling well" (Dr. R. Milante, personal interview, January 30, 2024).

"For pain reliever, drug samples will matter. For anti-biotics, quantity of samples are not enough to complete the treatment" (Dr. J. Ong, April 25, 2024).

"Free drug samples do not affect my prescriptions directly. I usually give my patients samples, and if they have good feedback, that's the only time I consider prescribing it" (Dr. J. Lim, personal interview, February 8, 2024).

MR's Relationship with Ophthalmologist

"I believe in balancing personal and professional relationships. Outside the clinic, friendship should come first, while inside, professionalism must prevail." (Dr. E. Reyes, personal interview, March 28, 2024).

"I believe a professional relationship is most effective in the medical field. As doctors, we often prioritize the products and their uses over the medical representative's background. A professional connection allows me to access necessary information more easily. While personal connections can lead to friendships, a professional approach is generally more beneficial, especially during first encounters. If interactions become too friendly, doctors may feel the representative is pushing their products too hard. Therefore, I prefer to maintain a professional relationship." (Dr. G. Bunagan, personal interview, April 5, 2024).

"If a doctor is based in Manila or works in an institution, a formal relationship is most effective. Conversely, for provincial doctors, an informal relationship tends to work better. Some provincial doctors even request transportation services when visiting Manila. While personal relationships can help medical representatives promote their products, they should not lead to prescribing based solely on friendship." (Dr. J. Abano, personal interview, April 8, 2024).

"The most important consideration for me is the professional relationship. However, if all things are equal, I will prescribe the products of a medical representative friend, as personal relationships also matter." (Dr. L.P. Mallari, personal interview, April 20, 2024).

"I prioritize a professional relationship over a personal one to maintain objectivity. However, it helps if the medical representative supports in-house product presentations and staff training." (Dr. J. Ong, personal interview, April 25, 2024).

"I value professional relationships highly but am open to personal ones if the medical representative is consistent with their promoted products. Inconsistency makes me hesitant to support their products." (Dr. R. Milante, personal interview, January 30, 2024).

"Building professional relationships with skilled medical representatives from respected firms is essential for me, as this influences my prescribing decisions." (Dr. J. Lim, personal interview, February 8, 2023).

Corporate Image

"I consider the manufacturer of the drug essential. A reputable company suggests thorough research has been conducted. I trust the brand names of well-known companies." (Dr. E. Reyes, personal interview, March 28, 2024).

"Brand reputation is important to me. Established top brands are often associated with effective treatments for eye diseases. Their proven track records and rigorous testing contribute to their enduring leadership in the market." (Dr. G. Bunagan, personal interview, April 5, 2024).

*Corresponding Author: **Castro, Gerardo M., Ph.D.**

"Firm image is important to me as a research-based practitioner and Key Opinion Leader. Some firms claim to be research-based, but their studies lack peer review." (Dr. J. Abano, personal interview, April 8, 2024).

"A strong firm image is essential for stability and support. For example, if a patient complains about a drug, a company with solid research and development can provide clinical insights to address the issue. Thus, the firm's image is very important to me" (L.P. Mallari, personal interview, April 20, 2024).

"Quality is a key criterion for prescribing medications, closely linked to the manufacturer's reputation." (Dr. J. Ong, personal interview, April 25, 2024).

"I prefer products from reputable companies that are stable and trustworthy, avoiding those from 'fly-by-night' firms." (Dr. R. Milante, personal interview, January 30, 2024).

"When we joined the practice, we encountered established firms like Alcon, Allergan, and Santen, known for their high-quality products. Some medical representatives struggle with credibility due to their companies' low public image." (Dr. J. Lim, personal interview, February 8, 2023).

Generic, Branded Generics, and Original Products (Originators)

"I primarily prescribe branded medications, as I trust well-known companies and believe they are more effective than generics. These branded drugs have undergone rigorous testing and clinical trials. Therefore, I consistently choose them to ensure my patients receive the best possible treatment" (Dr. E. Reyes, personal interview, March 28, 2024).

"I always prescribe branded medications, especially for antibiotics, to ensure optimal coverage and minimize the risk of post-operative infections like endophthalmitis. While generics are more affordable and can be suitable for less serious conditions, I prefer branded treatments for serious cases to ensure the best outcomes." (Dr. G. Bunagan, personal interview, April 5, 2024).

"I prescribe the original formulation, not just branded, backed by research and development" (J. Abano, personal interview, April 8, 2024).

"I prefer medications from reputable brands like Alcon and Allergan, as they invest significantly in research and development, resulting in effective products. While there are effective and cheaper generic alternatives, I would choose to prescribe the original formulation for family members." (L.P. Mallari, personal interview, April 20, 2024).

"I prefer branded generics. There are concerns about the quality of other generics, particularly regarding production processes and quality control. While brand-name medications are expensive, I would choose a more affordable option. This is crucial for my patients in the province, where many are not well-off, and cost greatly impacts treatment success." (Dr. J. Ong, personal interview, April 25, 2024).

"I prefer the original medications, as they are developed by reputable companies and have undergone rigorous clinical trials." (Dr. R. Milante, personal interview, January 30, 2024).

"I give my patients a choice. While we are required to prescribe generic medications at this government hospital, many prefer more effective, albeit pricier, options based on my experience. For complicated post-operative care, where intensive steroids and antibiotics may be needed, about 99% choose the more expensive brands. During pre-operative care, I provide the medication brand I trust most." (Dr. J. Lim, personal interview, February 8, 2023).

Patient's Economic Condition

"In my opinion, many doctors, especially in urban areas, overlook patients' economic conditions since they know patients are willing to pay. However, for those in rural areas, financial constraints are crucial because many cannot afford prescribed medications. If patients can't buy their medications, recovery becomes impossible. Therefore, it's important for me to prescribe based on a patient's economic status." (E. Reyes, personal interview, March 28, 2024).

"Consider a case of endophthalmitis following cataract surgery. It is vital for the patient to receive immediate, optimal treatment with proven medications, regardless of cost. While cheaper, inferior options may be tempting for patients with financial constraints, they can lead to further complications. Thus, it is essential to prioritize high-quality medications, even if this means not considering the patient's economic situation." (Dr. G. Bunagan, personal interview, April 5, 2024).

"I don't consider a patient's economic condition when prescribing treatment. I choose the most effective and safest medication because if my choice fails, it will ultimately cost the patient more. I focus on what works best for my patients, and they will always find a way to get what they need." (Dr. J. Abano, personal interview, April 8, 2024).

"I don't refuse anyone. The patient's economic condition is a critical factor. There are times I would ask how much money they have. I no longer ask them to pay the consultation fee if the fund is insufficient. What is more important is the medication. I would even adjust the medications to make it affordable for the patients. I they really cannot afford, I refer them to NGOs" (Dr. J. Ong, personal interview, April 25, 2024).

"The economic status of patients is important, which is why I offer a variety of medicines in my pharmacy. For antibiotics, I provide both expensive and inexpensive options. I prescribe the higher-priced brand to those who can afford it and the more affordable option to lower-income patients. I treat all

*Corresponding Author: **Castro, Gerardo M., Ph.D.**

patients, regardless of their financial situation." (Dr. R. Milante, personal interview, January 30, 2024).

"Some eye centers focus on bulk surgeries and allow patients to claim expenses from PhilHealth, meaning surgeons may overlook their economic conditions—anyone, including garbage collectors, can claim. However, high-end eye centers typically cater to patients who can afford to pay out of pocket, making financial status a significant factor" (Dr. J. Lim, personal interview, February 8, 2023).

Interviews with seven Filipino ophthalmologists provided insights into the Conjoint Analysis results, particularly regarding their unique responses in the survey. The primary consideration for these ophthalmologists when choosing ophthalmic drugs is safety and efficacy connected to drug quality. Clinical trials are critical in drug development, reflecting a company's commitment to research and development (R&D). Firms that invest in clinical trials demonstrate their dedication to advancing medical science and enhancing their reputation among stakeholders, including patients and regulatory bodies. The interviews also confirmed that Filipino ophthalmologists appreciate complimentary drug samples, as they allow them to offer free treatments to patients while personally evaluating product effectiveness. This firsthand testing ensures that the treatments provided are reliable and meet clinical claims, improving overall eye care quality. Additionally, ophthalmologists preferred companies participating in conventions over those sponsoring smaller continuing education groups. Conventions offer valuable knowledge from expert speakers, opportunities for networking, and access to special deals. In contrast, institution-based practitioners favor smaller scientific meetings for their detailed and interactive discussions, which promote a better learning experience. The interview revealed that a strong company image, supported by successful research and development, can enhance trust and positively affect market position and financial performance. Clinical trials are essential in ophthalmology, particularly for Filipino ophthalmologists, who view generics and branded generics as alternatives to premium-priced original products for marginalized patients. Many ophthalmologists prefer low-cost generics, especially in provincial areas, where some are involved in dispensing products that can be sold for a higher price. The highest price range for medicines is often chosen due to the perception of better quality, as these products typically contain safer preservatives. Additionally, institution-based practitioners often prescribe generics for indigent patients. Those with sub-specializations tend to trust original products due to their consistent therapeutic outcomes and the rigorous testing they undergo. Filipino ophthalmologists view the choice of preservatives in ophthalmic medications as crucial for ensuring effective and safe eye care. They prefer medications with less toxic preservatives or, ideally, preservative-free options due to an understanding of the potential risks and benefits. Preservatives are vital for extending the shelf life of these products by preventing microbial growth, thus maintaining sterility and safety. However, preservatives can irritate the delicate ocular surface, which includes the cornea, conjunctiva, and tear film. In the Philippines, factors like humidity, temperature, and pollution can increase the risk of ocular surface diseases. This makes it essential for ophthalmologists to select medications that effectively treat eye conditions while being gentle on the eyes. Developing ophthalmic drugs involves careful consideration of the types and concentrations of preservatives used.

Pharmaceutical companies work to find safe preservatives that prevent contamination without harming the eyes. They need to strike a balance: the preservative should effectively stop germs but must also be gentle enough to avoid damaging the eye or reducing the medicine's effectiveness. Filipino ophthalmologists support choosing ophthalmic medications wisely. They prefer drugs with safer preservatives or preservative-free options to lower the chances of unwanted side effects. This approach helps ensure that the medicine works well without causing harm to the eye, leading to better outcomes for patients. It shows a commitment to patient-centered care, focusing on both the treatment's effectiveness and the patient's overall eye health. The majority of Filipino ophthalmologists have shown a preference for receiving detailed information exclusively about new products. They emphasize that this information should be presented briefly and concisely, highlighting the essential aspects without unnecessary elaboration. This approach is particularly relevant in today's landscape, where advancements in communication technology have significantly simplified information access. As a result, ophthalmologists can effortlessly obtain up-to-date information on product details and stay informed about the latest trends and developments in medicine. This accessibility ensures that healthcare professionals can quickly integrate new knowledge and technologies into their practice, thus enhancing patient care. Medical representatives should visit ophthalmologists with a balanced approach in mind. They should not visit too often, which can be annoying and disruptive, or too infrequently, which can lead to a lack of brand awareness. This recommendation differs from the Pathworth survey, which found that Filipino ophthalmologists prefer more regular meetings with medical representatives. The gap between the survey results and interview feedback shows that preferences are complex. Frequent visits can help keep the brand visible, but too many can harm the relationship. On the other hand, if visits are too rare, the brand may not stay top of mind, leading to lower loyalty and preference among ophthalmologists. Medical representatives are important in connecting the pharmaceutical industry with medical professionals. They aim to build relationships that combine professionalism and personal interaction. A professional relationship is crucial; it is formal and focuses on sharing information about medical products, new developments, and healthcare trends. This relationship ensures that healthcare professionals get accurate and up-to-date information to make informed decisions about patient care. At the same time, having a personal connection with healthcare providers is just as important. This kind of relationship builds trust and confidence. When medical representatives create a good rapport and show genuine

*Corresponding Author: **Castro, Gerardo M., Ph.D.**

interest in the needs and challenges of healthcare providers, the partnership becomes more productive. This personal connection strengthens the professional relationship and fosters an open and trusting environment for communication. Balancing both aspects ensures that interactions are respectful and beneficial to patient care. The interview also highlighted the positive practices of Filipino ophthalmologists, who treat all patients fairly, no matter their socio-economic status. Patients from rich or low-income backgrounds receive the same quality of care in diagnosing, treating, and prescribing medications for eye conditions. This approach emphasizes equality and fairness in healthcare, prioritizing the well-being of all patients. However, Filipino ophthalmologists face a significant challenge with the accessibility of specialized drugs needed for severe eye infections, like fungal infections. Due to the lack of available medications, they often have to mix their own treatments. Although these infections are uncommon, the pharmaceutical industry must ensure that necessary medications are consistently available. This situation shows the need for better supply chains and policies that make healthcare products easy to access for medical professionals, which protects patient health and vision. This research has revealed the complex nature of prescription habits among Filipino ophthalmologists, which may be similar to trends in other medical fields. Several factors need the industry's attention. The company's image is shaped by drug quality, preservatives, and continuing medical education, all of which depend on the company's commitment to research and development. Additionally, consider the following points: (a) The firm's relationship with ophthalmologists is key to influencing prescription habits, balancing professionalism and personal connections; (b) Ongoing training and development for medical representatives are essential to improve their skills in communication, sales, and presence in clinics; (c) The company's image and the relationships maintained by medical representatives are crucial to implementing the firm's strategies. Finally, a tiered pricing strategy can help meet the varying needs of patients from different backgrounds, making approaches more inclusive.

The Demand Strategy Framework for Ophthalmology is shown below:

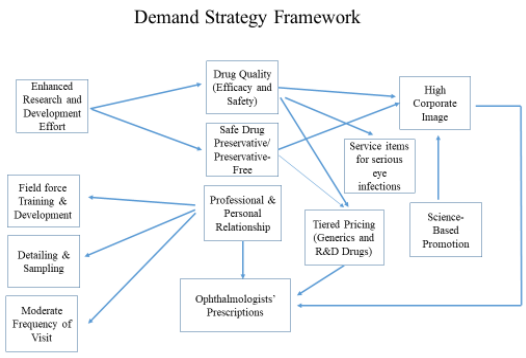

Fig. 2. Emerging Demand Strategy Framework for Ophthalmology Market

Pharmaceutical companies focus on market research to enhance their reputation by examining drug effectiveness, consumer demand, side effects, and patient satisfaction. R&D is crucial for meeting the needs of eye specialists in ophthalmology. Filipino eye doctors seek to develop gentle medications on the eyes and free of harmful preservatives, which may improve patient adherence to medication and outcomes. The ophthalmology market faces a significant medication shortage, forcing ophthalmologists to compound their own medicines. While this customization can benefit patients, it is time-consuming and diverts attention from patient care, compromising treatment quality. Addressing this gap is essential for timely, and effective treatment of severe fungal ocular infections. Medical representatives link pharmaceutical companies to healthcare professionals, providing not just sales for the firm but also accurate information and insights on new trends for doctors. Effective communication and professional relationships are key. Moreover, firms should adapt tiered pricing strategies, offering research-based and generic products to meet diverse patients needs, including budget-conscious patients. Medical representatives typically visit ophthalmologists in the Philippines two to four times a month, with many preferring twice-monthly visits to avoid feeling overwhelmed. Free samples from drug companies help patients start treatments, increasing the likelihood of future purchases. Investing in continuing medical education programs is important, as it allows doctors to stay updated on medical advances, ultimately benefiting patient care. Filipino ophthalmologists view these efforts as appreciation from companies, which strengthens industry relationships and positively influences their prescribing decisions.

Conclusion

This research highlights the complex factors influencing the prescribing decisions of Filipino ophthalmologists. A key finding is the significant emphasis on the preservative content in ophthalmic drugs, which is crucial for patient tolerance. This focus sets ophthalmology apart from other medical fields. The study identifies the general and specific levels of these qualities that affect prescribing choices, providing a detailed understanding of how ophthalmologists select medications. The research offers valuable insights into the pharmaceutical industry using a mixed-methods approach. Companies can better align their strategies to build lasting relationships by understanding what ophthalmologists prioritize. The major influences on prescribing decisions include the pharmaceutical company's reputation and the quality of relationships, such as trust and communication. Additionally, a flexible pricing strategy that meets diverse patient needs plays a significant role. From this study, a demand strategy framework was developed to help shape the prescribing habits of Filipino ophthalmologists. Healthcare providers should focus on patient-centered services and rational prescribing policies, while business educators should teach students to use analytical frameworks for informed business proposals.

*Corresponding Author: **Castro, Gerardo M., Ph.D.**

References

1. Singh Chowhan, et al., (2024). Purchasing behavior of pharmaceutical products in rajasthan: an exploratory study on influencing variables in pharmaceutical marketing. In *Academy of Marketing Studies Journal* (Vol. 28, Issue S4).
2. Soremekun, R., & Omitiran, B. (2014). *African Journal of Pharmacy and Pharmacology Factors affecting physicians' prescription and pattern of prescription in the management of secondary infertility*. *8*(48), 1205–1212. https://doi.org/10.5897/AJPP2014.4118.
3. Sharifnia H.A.S., (2018). Main Factors Affecting Prescribing Decisions: The Iranian Experience. *Iranian Journal of Pharmaceutical Research 3(17).*
4. Goyal, R. & Pareek, P. (2013). A Review Article on Prescription Behavior of Doctors, Influenced by the Medical Representative in Rajasthan, India. IOSR *Journal of Business and Management* 8, (1) 56-60. www.iosrjounals.org.
5. Parmar, V. et al. (2014). Factors InfluencingPrescription Behavior of Physicians. The Pharma Innovation Journal 3(5), pp. 30-35). https://www.researchgate.net/publication/263672916.
6. Khan, N. et al. (2016). Perceptions and Attitudes of Medical Sales Representatives (MSRs) and Prescribers regarding Pharmaceutical Sales Promotion and Prescribing Practices in Pakistan, Journal of Young Pharmacists, (Vol., 8, Issue 3, pp. 244-250). https://doi.or/10.5530/jyp.2016.3.13.
7. Gupta, S.K. (2016). A Study on the Interactions of Doctors with Medical Representatives of Pharmaceutical Companies in a Tertiary Care Teaching Hospital of South India, 51Journal of Pharmacy and Bioallied Sciences, 8(1), 47-51. https://doi.org/10.4103/0975-7406,171695.
8. Workneh, B.D. et al. (2016). Influence of Medical Representatives on Prescribing Practices in Mekelle, Northern Ethiopia. PLos One 11(16) https://doi.org/10.1371/journal.pone.0156795.
9. Mahmoud, M.A. (2016). Consumer Trust and Physician Prescription of Branded Medicines: An Exploratory Study. International Journal of Pharmaceutical and Healthcare Marketing, 10(3), 285-301. https://doi.org/10.1108/IJPHM-05-2015-0017.
10. Davari, M. et al. (2018). Factors Influencing Prescribing Decisions of Physician: A Review. Ethiopian Journal of Health Sciences, 28(6), 795-804. httos://doi.org/10.4314.ejhs.v28i6.15.
11. Ali Murshid, M., & Mohaidin Z. (2017). Models and Theories of Prescribing Decisions: A Review and Suggested a New Model in Pharmacy Practice, 15(2). *Grupo de Investigacion en Atencion Farmaceutica.* *https://doi.org/10.18549/PharmPract.2017.02.990*.
12. Hailu, A.D. et al. (2021). Influence of Pharmaceutical Marketing Mix Strategies on Physicians' Prescribing Behaviors in Public and Private Hospitals, Dessie, Ethiopia: A Mixed Study Design. BMC Public Health, 21(1). https://doi.or/10.1186/s12889-020-10063-2.
13. Brax, H. et al. (2017). Association Between Physicians' Interaction with Pharmaceutical Companies and their Clinical Practices: A Systematic Review and Meta-Analysis. *PLoS ONE, 12(4)*. https://doi.or/10.1371/journal.pone.0175493.
14. Parodi Lopez, N. & Wallerstedt. S.M. (2019). Quality of Prescribing in Older People from a Broad Family Physician Perspective: A Descriptive Pilot Study. *BMH Open 9(6). BMJ Publishing Group*. https://doi.or/10.1136/bmjopen-2018-027290.
15. Biswas, K. et al. (2016). Influential Factors on Prescription; A Cross Sectional Study from Bangladesh: Focus on Pharmaceutical Marketing. *International Journal of Pharmaceutical Research and Innovation, 9, 17-22.* https://doi.or/10.20530/ijpri_9_17-22.
16. Hossain, M.M. et al. (2013). Assessment of Influencing Factors on Prescription Practices of Physicians in Bangladesh. *International Research Journal of Pharmacy, 4(8)m 112-116. https://doi.org/107897/2230-8407.04819*.
17. Koley M., et al. (2013). A Study on Drug Utilization and Prescription Habits of Physicians in a Government Homeopathic *Hospital in West Bengal, India. Journal of Integrative Medicine, 11(5) 305-313. https://doi.org/10.3736/jintegrmed2013048*.
18. Creswell. J.W. (2014). Research Design: Qualitative, Quanatitative, and Mixed Methods Approaches (4th Edition). Sage.
19. Hammarberg, K. et al. (2016). Qualitative Research Methods: When to Use Them and How to Judge Them. *Human Reproduction* 31(3), 498-501. Oxford University Press. https://doi.org/10.1093/humrep/dev334.
20. de Guzman, A.B., et al. (2014). Health-Seeking Preferences of Elderly Filipinos in Community via Conjoint Analysis. *Educational Gerontology*, 40(11), 801-815. https://doi.org/10.1080/03601277.2014.882110.
21. Arora, R. (2006). Product positioning based on search, experience and credence attributes using conjoint analysis. *Journal of Product & Brand Management*, *15*(5), 285–292. https://doi.org/10.1108/10610420610685695.
22. Ong, F.S. et al. (2010). Marketing a Consumer Durable Brand in Malaysia: A Conjoint Analysis and Market Simulation. *Journal of Consumer Marketing*, 27(6), 507-515. https://doi.org/10.1108/07363761011078344.
23. Hair, J.F. et al. (2014). *Multivariate data analysis*, 7th Edition. USA: Pearson Pearson Education Limited.lBrig.

*Corresponding Author: **Castro, Gerardo M., Ph.D.**

24. Vasileiou, K. et al. (2018). Characterising and Justifying Sample Size Sufficiency in Interview-Based Studies: Systematic Analysis of Qualitative Health Research over a 15-year Period. *BMC Medical Research Methodology*, 18(1). https://doi.org/10.1186/s12874-0180594-7).
25. Geiger, S., & Turley, D. (2003). Grounded theory in sales research: An investigation of salespeople's client relationships. *Journal of Business and Industrial Marketing*, *18*(6–7), 580–594. https://doi.org/10.1108/08858620310492437.
26. Dworkin, S. L. (2012). Sample size policy for qualitative studies using in-depth interviews. In *Archives of Sexual Behavior* (Vol. 41, Issue 6, pp. 1319–1320). Springer Science and Business Media, LLC. https://doi.org/10.1007/s10508-012-0016-6.
27. Muellmann, S. et al. (2021). How Many Key Informants are Enough? Analysing the Validity of the Community Readiness Assessment. *BMC Research Notes*, 14(1)l https://doi.org/10.1186/s13104-021-05497-9.
28. Van Gils, A., & Zwart, P. S. (2009). Alliance formation motives in SMEs: An explorative conjoint analysis study. *International Small Business Journal*, *27*(1), 5–37. https://doi.org/10.1177/0266242608098345.
29. Streiner, D. L. (2005). Finding Our Way: An Introduction to Path Analysis. *Can J Psychiatry* 50, (2).
30. Schober, P., & Schwarte, L. A. (2018). Correlation coefficients: Appropriate use and interpretation.
31. *Anesthesia and Analgesia*, *126*(5), 1763–1768. https://doi.org/10.1213/ANE.000000000000286.
32. Ma, Y. (2012). On inference for kendall's τ within a longitudinal data setting. *Journal of Applied Statistics*, *39*(11), 2441–2452.
33. Kaijie, M. A., & Min, D. (2016). A study of statistical tests application to conjoint analysis. *International Journal of Simulation: Systems, Science and Technology*, *17*(2), 6.1-6.6. https://doi.org/10.5013/IJSSST.a.17.02.06.
34. Pahwa, M. et al. (2023). Key Informants in Applied Qualitative Health Research. *Qualitative Health Research*, 33(14), 1251-1261. https://doi.org/10.1177/10497323231198796.
35. Skjott Linneberg, M., & Korsgaard, S. (2019). Coding qualitative data: a synthesis guiding the novice. In *Qualitative Research Journal* (Vol. 19, Issue 3, pp. 259–270). Emerald Group Holdings Ltd. https://doi.org/10.1108/QRJ-12-2018-0012.
36. Ranjan Napit, P. (2016). Promotional Efforts of Pharmaceutical Industries on Prescribing Pattern of Antibiotics Among Medical Doctors in Nepal. *Journal of Business and Social Sciences Research* 1(2), 201-214.
37. Jayasooriya, T.D., & Samarasinghe, G.D. (2019). Determinants Towards Doctors' Prescribing Intention of Branded Medicines: A Case of Antibiotics in Sri Lankan Pharmaceutical Industry. Sri Langka Journal of Management Studies, 1(1), 129-146. https://doi.or/10.4028/sljms.vlil.61.
38. Kornfield, R. et al. (2013). Promotion of Prescription Drugs to Consumers and Providers, 2001-2010. *PLoS ONE*, 8(3). https://doi.or/10.1371/journal.pone.0055504.
39. Rafique, S. (2017). Influence of free drug samples on prescribing by physicians: A cross sectional survey. In *Article in Journal of the Pakistan Medical Association*. https://www.researchgate.net/publication/316584367.
40. Khazzaka, M. (2019). Pharmaceutical marketing strategies' influence on physicians' prescribing pattern in Lebanon: Ethics, gifts, and samples. *BMC Health Services Research*, *19*(1). https://doi.org/10.1186/s12913-019-3887-6.
41. De Ferrari, A. et al. (2014). Attitudes and Relationship Between Physicians and the Pharmaceutical Industry in a Public General Hospital in Lima, Peru. *PLos ONE*, 9(6). https://doi.or/10.1371/journal.pne.0100114.
42. Ahmed, R.R. et al. (2014). Factors Influencing Prescription Behavior of Physicians. *The Pharma Innovation Journal 3(5), 30-35. https://www/researchgate.net/publication/263672916.*
43. Warrier, R. et al. (2016). Effect of Drug Sample Availability on Physician Prescribing Behavior: A Systematic Review. *African Journal of Medical Case Reports, 4(3).* www.internationalschoarsjournals.org.
44. Buklin, B.A. (2015). The Influence of a Continuing Medical Education Campaign on New Strategies to Improve Appropriate Use of Antibiotics. *Journal of Biomedical Education*, 2015, 1-5. https://doi.org/10.1155/2015/579726.
45. Karamudin, G. et al. (2013). Educational Interventions to Improve Prescribing Competency: A Systematic Review. BMJ Open 3(8). https://doi.org/10.1136/BMJOpen-2013-003291.
46. Vishavadia, K. (2017). Impact Study on Various Promotional Practices Done by Pharmaceutical Companies on Doctor's Prescription Behavior: What Does Literature Say? *www.serialsjournals.com*.
47. R.M, H., & Sivakumaran, B. (2023). Promotional inputs and selling: evidence from India. *Journal of Business and Industrial Marketing*, *38*(5), 1000–1014. https://doi.org/10.1108/JBIM-01-2021-0040.
48. Goldring, D. (2015). Reputation orientation: Improving marketing performance through corporate reputation building. *Marketing Intelligence and Planning*, *33*(5), 784–803. https://doi.org/10.1108/MIP-11-2013-0183.
49. Goldring, D. (2015). Reputation orientation: Improving marketing performance through

*Corresponding Author: **Castro, Gerardo M., Ph.D.**

corporate reputation building. *Marketing Intelligence and Planning*, *33*(5), 784–803. https://doi.org/10.1108/MIP-11-2013-0183.

50. Tatham, A. J. (2020). The Use of Generic Medications for Glaucoma. In *Journal of Ophthalmology* (Vol. 2020). Hindawi Limited. https://doi.org/10.1155/2020/1651265.
51. Sarkar, R. (2021). Effects of preservatives used in ocular medications on the eye: a comparative review. *Ophthalmology Journal*, *6*(0), 44–52. https://doi.org/10.5603/oj.2021.0009.
52. Rosin, L. M., & Bell, N. P. (2013). Preservative toxicity in glaucoma medication: Clinical evaluation of benzalkonium chloride-free 0.5% timolol eye drops. In *Clinical Ophthalmology* (Vol. 7, pp. 2131–2135). https://doi.org/10.2147/OPTH.S41358.
53. Coroi, M.C. et al. (2015). Preservativess from the Eye Drops and the Ocular Surface. Romanian Journal of Ophthalmology, 59(1), 2-5.
54. Lieb, K., & Scheurich, A. (2014). Contact between doctors and the pharmaceutical industry, their perceptions, and the effects on prescribing habits. *PLoS ONE*, *9*(10). https://doi.org/10.1371/journal.pone.0110130
55. Koçak, C., & Önen, A. S. (2014). The Analysis on Interpersonal Relationship Dimensions of Secondary School Students According to their Ruminative Thinking Skills. *Procedia - Social and Behavioral Sciences*, *143*, 784–787. https://doi.org/10.1016/j.sbspro.2014.07.476.
56. Francis. J. & Fernandez, F. (2022). Licensed Under Creative Commons Attribution CC BY Interpersonal Relationship: A Socio-Psychological Approach. International Journal of Science and Research. https://doi.org/10.21275/SR22521095642.
57. Krunal, V. et al. (2021). Personal & Professional Qualities of Medical Representative and Impact on Doctor's Prescribing Behavior. *Universal Journal of Public Health*, *9*(6), 385–391. https://doi.org/10.13189/UJPH.2021.090605.
58. Klemenc-Ketis, Z., & Kersnik, J. (2013). Which pharmaceutical sales representatives' features do Slovenian family physicians value? *Acta Informatica Medica*, *21*(4), 257–260. https://doi.org/10.5455/aim.2013.21.257-260.
59. K, B., & UK, F. (2016). Influence of Pharmaceutical Marketing on Prescription Behavior of Physicians: A Cross-sectional Study in Bangladesh. *Journal of Accounting & Marketing*, *5*(2). https://doi.org/10.4172/2168-9601.100016.
60. Gilbert, V. et al. (2013). Analysis of Out-of-Pocket Expenditures in the Philippines. Philippine JOurnal of Development 72(2).
61. Ofori-Adjei, Y. A., & Fiakpornoo, M. (2019). The influence of physicians' specialty on prescribing patterns at a general medicine out-patients clinic. Ghana Medical Journal, 53(3), 204–209. https://doi.org/10.4314/gmj.v53i3.4

*Corresponding Author: **Castro, Gerardo M., Ph.D.**