# Developing Effective Molecule Selection Frameworks: Enhancing Portfolio Strategy and Business Growth

**Chona V. Concepcion**

**Central Colleges of the Philippines**

**DOI: https://doi.org/10.51244/IJRSI.2026.1307000406**

**Received: 05 August 2026; Accepted: 10 August 2026; Published: 21 August 2026**

## ABSTRACT

This study develops and validates a strategic molecule selection framework designed to enhance portfolio strategy and business growth within the Philippine branded generic pharmaceutical industry. Operating under intense market competition and strict regulatory requirements, branded generic companies must optimize their resource allocation and accelerate time-to-market. This research addresses the critical gap between project selection and long-term corporate financial outcomes by examining strategic, financial, and operational variables governing portfolio decisions. Employing a quantitative research design, data were gathered from 300 verified pharmaceutical and healthcare professionals across key business districts in Makati and Bonifacio Global City (BGC) using purposive sampling. The analytical sequence incorporated descriptive statistics, Kendall's W agreement analysis, Spearman rank correlation (evaluated using association-based terminology), Kruskal-Wallis tests with Dunn's post-hoc analyses, and Exploratory Factor Analysis (EFA) with rigorous psychometric validation (KMO, Bartlett's test, communalities, factor loadings, and Cronbach's alpha). The findings isolate two core underlying dimensions—Operational Resources and Strategic Market Alignment—and demonstrate significant variations in selection priorities across company types (multinationals, local manufacturers, distributor-importers, and toll manufacturers). Furthermore, empirical results highlight critical vulnerabilities, including the frequent omission of voice-of-customer surveys and post-implementation reviews. To resolve these challenges, the study formulates the Adaptive Portfolio Selection Framework, introducing the 40/30/30 Molecule Selection Matrix as a managerial proposal requiring future independent validation, supported by a centralized data repository, a Market Validation Gate, a Learning Loop mandate, and five key performance metrics.

**Keywords:** Generic medicine selection, Portfolio management, Regulatory strategy, Resource allocation, Organizational learning, Branded generic competition

## INTRODUCTION

Pharmaceutical industry is a very competitive market that operates under strict government law, both locally and internationally. Players of these industry are both from multinational innovator companies to multinational and local generic companies.

Over the decades, pharmaceutical industry in the Philippines has changed its landscape from an industry dominated by the multinational innovator companies to being dominated by branded generics companies. Innovator companies are the companies that launches breakthrough molecule or medicines across different therapeutic segments and these medicine are the so-called innovator brands. However, due the cost of research of these innovator drugs, they are priced at premium which may not be accessible to other patients especially in a country where the cost of medication is out of the pocket. Then came the companies that produces branded generic medicines that reshaped the industry by producing a therapeutically equivalent medicine of the innovator brands but at a more affordable price. These branded generic medicines captures a good percentage of market share of the molecule they enter like in the recent data from IQVIA MAT September 2025 for example, Risperidone market, the share of branded generics accounts to 91% market share versus the innovator brand with only 9% share. Branded generics especially in low-middle income country branded generic is more common than non-branded generics (Warren Kaplan 2013). But, not all molecule offers the same opportunity to generic

companies that is why strategic decision is a crucial part of deciding which drug or molecule to develop as generics. There are multiple factors to consider such as market opportunities, manufacturing capacity of the company or from outsourced one, regulatory requirements, competition and viability of a generic product.

To steer over the complexities of selecting a medicine to produce generics, companies must develop a framework that would enable a systematic evaluation of potential molecules and which among them should be prioritized, to make certain that the investment will lead to generics that has the highest potential profitability and regulatory approvals. Without a clear framework, company might face risks of investing to a molecule with high cost of production due to difficulty of manufacturing in terms of availability of active pharmaceutical ingredient (API), minimal market demand, regulatory barriers, which will delay access to affordable medications to community and might lead to a possible financial loss.

Essentially, having a structured framework will be a good tool for a strategic decision making of the company to pinpoint molecule that aligns with public health needs and business objectives maximizing commercial success and impact to the market and society.

This study aims to develop a strong framework for generic development which should consider interrelated factors ensuring operation feasibility. Market potential is one of the major factor to consider as it reflects the current demand of that medicine, an estimate patient population and possible pricing. Another factor is the regulatory requirements which includes the list of medicine with approaching patent expiry and other regulatory pathways that determine the approval delays or risk as Food and Drugs Administration plays a crucial role in timely approval of generic application (Ravi Gupta et.al 2017) In addition, manufacturing capacity either of your own company or of your third party supplier, also plays a crucial role especially in ensuring they will meet the demand in production and is capable of producing or outsourcing API. Manufacturing cost is another story as it will affect the price of the generic medicine the company will produce to ensure price competitiveness and business profitability. Competitive analysis must be accounted as it encompasses the number of possible generic player if the drug is yet to expire its patent, number of existing generics, and potential new entrants. Therapeutic relevance and need to determine the demand for the treatment and if it answer unmet medical needs. Current business portfolio may also be considered as it will give a competitive advantage if the company is already familiar with the therapeutic segments for they already have profile of the customers either, doctors, drugstores and patients alike. By assessing the criteria, pharmaceutical companies can arrived at informed data-driven decisions, with high likelihood of a timely market entry leading to a successful market launch.

This study will apply quantitative research design which will measure the different selection process done by different branded generic companies dominantly in Makati and BGC area where most pharmaceutical company is located. This study will employ interview using survey questionnaires mostly done in face to face. The date to be gathered will undergo different statistical treatment where result will be evaluated and interpreted. All data will be used exclusively for the purpose of this study alone.

**Keyword 1: Generic Medicine Selection**

ASPE Issue Brief 2025, The molecule with less expected generic competitors with huge market size are the target for generic entry.

Nguyen, et al. 2021, Generic pharmaceutical companies selects molecule based on brand vulnerability and right timing on top of considering a high value molecule.

R G. Frank 2021, Forms of medicine like oral solids who have huge marekt usually has more generic players compare to injectable market that are usually smaller in size pertaining to units, invites lesser generic player in the competition.

**Keyword 2: Market Size and Potential**

U. S. Department of Health & Human Services (ASPE) 2025, Competition in large markets is most intense, averaging close to 10 labelers per drug. This shows that higher pre-entry market size, in terms of user volume, directly correlates with the number of entrants.

Minyoung Bae at al. 2025, The Original Drug's Sales Value and the Therapeutic Market Size (at the ATC

Level 4) one year prior to generic launch were the strongest predictors of generic uptake and success, meaning pre-entry revenue is the core selection criterion.

Henry Grabowski. 2021, New molecule entities with pre-generic entry sales greater than $250 million (blockbusters) faced an average of 6.0 years of Paragraph IV challenges (showing high generic interest) and experienced more rapid sales erosion, confirming large market size attracts intense, early competition.

Simon van der Schans, et al. 2020, Found that generic uptake was faster and higher for drugs with higher revenue prior to patent expiry. Four years after expiry, generic share was 86% for drugs with annual revenue exceeding €40 million, versus 70% for drugs below €4 million.

**Keyword 3: Physicians and Patients Acceptance**

Marcin Lewandowski, et al. 2025, While the majority of physicians disagree that original drugs are more effective or safer, older and more experienced physicians are significantly more likely to harbor concerns and favor original drugs, especially for long-term therapy.

Tomoyuki Takura., et al. 2024, A superior physician-patient relationship significantly correlated with a higher rate of generic drug prescribing (51.6% vs. 47.7%), demonstrating that trust impacts prescribing habits.

Trond Røed Pettersen, et al. 2022, Mistrust and uncertainty about generic safety/efficacy remains in a sizable proportion of patients after major procedures, especially those of lower socioeconomic status, older age, and female sex.

Md Sayeed Akhtar , Khalid Orayjl. 2024, Most participants had positive acceptance towards generic medications, but reported significant differences in knowledge about their country of origin and regulatory standards.

Neetu Bairagi 2024,Confirmed that an educational intervention is effective in modifying and improving perceptions of generic medicines, but can paradoxically lead to increased reporting of side effects (the nocebo effect).

**Keyword 4: Branded Generic Competition**

Shaira Mae A. Vitales. 2025, Found that Filipino consumers foremost consider economic factors and cultural factors in their preferences. Competition is driven by price, but the cultural element of trust often favors established branded generics over lower-cost pure generics.

Wong, J. Q., et al. 2014, Found that while physician compliance with generic prescribing is high, patient preference for branded names remains strong (only 15% preferred pure generics if prices were equal). This resistance fuels the branded generic competitive advantage.

Monira Alwhaibi., et al. 2025, Found that around two-thirds of consumers preferred using brand medicines, and a third perceived generics as having more side effects/lower efficiency. This lack of trust is a key competitive barrier for pure generics across Asia.

Pratik P. Bhosale 2025, Concluded that pharmaceutical marketing significantly impacts physician prescribing behavior, making promotional strategies a key factor in brand preference. Branded generics heavily invest in this area to maintain their competitive edge over unbranded generics.

**Keyword 5: Generic Drug Regulation**

Shahmoradi Mostafa et. al 2021, Analyzes the impact of government and regulatory policies (both supply-side and demand-side, like INN prescribing or financial incentives) on generic uptake. This is critical as policy significantly shapes the environment for branded generics.

Amatha Sreedevi. 2025, Highlighted that regulatory ambiguity and lack of specific guidance for complex generics are major barriers, leading to increased development costs, longer timeframes, and a higher chance of rejection.

Yixin (Iris) Wang 2022, Found that a shortened drug approval review time significantly increases the average number of generic entrants per market. Regulatory efficiency is a direct incentive for generic firms to enter, even in complex markets.

Apratim P. Mahajan 2025, Found significant differences in regulatory timelines: India's regulatory approval is generally faster (approx. 90 days), while Australia's TGA process takes longer (approx. 11 months). These differences create regulatory arbitrage opportunities and affect global market entry strategy.

Carolina Santos et.al 2025, Investigated how price regulations (like price caps) affect competition. Suggested that while regulations foster competition, price caps might sometimes act as "coordination anchors," potentially lowering price competition between firms aiming for the cap.

This study integrates five core management and organizational paradigms:

1. **Molecule Selection Frameworks:** Grounded in decision-theory and multi-criteria decision analysis (MCDA), evaluating commercial viability under uncertainty.

2. **Portfolio Management Theory:** Drawing on asset allocation and risk-return optimization to balance pipeline velocity against capital constraints.

3. **Regulatory Strategy:** Examining how institutional pressures and compliance pathways (e.g., Food and Drug Administration [FDA] approval timelines and patent expirations) dictate market entry timing (Gupta et al., 2017).

4. **Resource Allocation Theory:** Analyzing how internal capabilities—specifically human capital, financial resources, and technical manufacturing feasibility—constrain or enable strategic execution.

5. **Organizational Learning Theory:** Utilizing feedback loops and post-implementation reviews to institutionalize knowledge and refine future screening criteria.

The generic medicine sector, while vital for healthcare cost containment, operates in a complex environment defined by a paradox of robust global demand against relentless price commoditization and increasing product complexity. A generic company's decision on where and when to enter a market is arguably the most critical factor for success. Therefore, adopting a systematic framework for market selection is not merely a strategic luxury but an operational necessity to ensure sustainable profitability and resource allocation.

This systematic framework rests on mitigating high-stakes risk and maximizing return on investment. Without a structured approach, a company risks entering highly competitive, low-margin markets, or overlooking high-value complex generics and biosimilars opportunities. The framework must integrate multi-faceted criteria, moving beyond simple market size to include: patent intelligence (decoding the patent cliff and navigating patent thickets), regulatory complexity (understanding country-specific approval pathways and pricing/reimbursement policies like reference pricing), competitive intensity (especially the profound impact of First-Mover Advantage and predictable price erosion with each subsequent entrant), and the firm's own operational capability (supply chain resilience and technical expertise for complex dosage forms). In summary, a systematic framework transforms market entry from a speculative gamble into a value-maximized, risk-adjusted portfolio decision, ensuring the company’s limited R&D and commercial resources are directed toward regions where a defensible and profitable market share is achievable.

Existing literature predominantly investigates generic drug market penetration from a macro-economic or purely regulatory standpoint, frequently neglecting the internal micro-foundations of corporate portfolio decision-making in emerging Southeast Asian markets. Specifically, prior studies lack a unified, empirically grounded framework that bridges the gap between pre-launch molecule screening and post-launch commercial performance.

This study addresses this research gap by:

- Identifying the latent structural dimensions governing generic molecule selection in the Philippine context.
- Quantifying the relationship between perceived task difficulty and the frequency of critical process omissions.
- Establishing organizational disparities across different business models (multinationals versus local manufacturers).
- Proposing a modular, actionable framework—the Adaptive Portfolio Selection Framework—equipped with clear implementation mechanisms and performance metrics designed to mitigate analysis paralysis and departmental silos.

**Significance of the Study**

A molecule selection framework is critically significant for a generic pharmaceutical company as it transforms product development from a high-risk, reactive effort into a strategic, data-driven engine for sustainable profitability and market leadership.

1. Risk Mitigation and Resource Optimization. A systematic framework minimizes the colossal risks inherent in generic drug development. By integrating comprehensive analysis of patent landscape, regulatory complexity (e.g., bioequivalence challenges), and technical feasibility *before* significant R&D spending, a company avoids dedicating multi-million dollar resources to products that are likely to fail due to litigation or insurmountable technical hurdles. This optimizes the Return on Investment (ROI) by directing R&D capital only toward the most viable opportunities.

2. Competitive Advantage: Achieving First-to-File (FTF) In the generic industry, the First-to-File (FTF) status often grants a significant market exclusivity period (e.g., 180 days in the U.S.), resulting in a substantial revenue advantage before the market is saturated. A selection framework enables the company to proactively identify and prioritize drugs with imminent or challengeable patents and align its Abbreviated New Drug Application (ANDA) filing date to secure this crucial exclusivity. This strategic timing is key to capturing the initial, highest-margin market share.

3. Portfolio Enhancement and Market Diversification. The framework forces the company to look beyond simple oral solid-dose generics (where price erosion is rapid) and strategically incorporate complex generics (e.g., injectables, long-acting formulations, transdermals) and biosimilars. These higher-barrier-to-entry products offer higher profit margins and greater market longevity. The selection framework ensures the resulting product pipeline is balanced and resilient against fluctuating market prices.

4. Informed Legal and Commercial Strategy. The framework provides the quantitative data needed to support high-stakes legal and commercial decisions. It evaluates the strength of a potential Paragraph IV patent challenge and quantifies the expected post-entry price erosion based on anticipated competition. This allows the executive team to set accurate internal targets, negotiate better supply chain contracts, and align commercial launch plans with the anticipated market reality, leading to a more predictable and profitable product launch.

## SCOPE AND LIMITATIONS

The scope of the study is on identifying current selection process generic companies use to decide a generic entry. It will be confined to certain domains relevant to generic strategy, such as Patent/Legal Viability, Commercial/Market Potential, Technical/R&D Feasibility, and Regulatory Pathway Complexity. Data collect-

ion is strictly limited to pharmaceutical/healthcare professionals, business development executives, and legal experts physically based or with professional roles centered in the Makati and Bonifacio Global City (BGC) areas. The sample size is fixed at 300 respondents. The target population must be professionals who are actively involved in strategic planning, business development, R&D management, or regulatory affairs within generic/branded pharmaceutical companies or related consulting/legal firms. The study will be limited to a specific, defined period of 4 months for data collection and analysis. The criteria and weightings derived reflect the current competitive and regulatory environment in the Philippines at the time of data collection.

The limitation of the study are the lack of national representatives which is limiting the study to professionals in Makati and BGC results in a severe geographical bias. These areas represent the headquarters/commercial hubs but likely exclude valuable perspectives from R&D or manufacturing professionals located in industrial zones or other parts of the country. Respondents from BGC and Makati may represent firms with larger budgets, more complex portfolios, or specific strategic priorities (e.g., multinational companies) that do not reflect the strategies or operational realities of smaller, local generic companies operating outside the primary central business districts. In context specificity, while the general principles of a molecule selection framework are universal, the specific weightings and criteria (e.g., the perceived importance of local regulatory challenges versus international patent risk) will be heavily influenced by the perspectives of the 300 professionals in the sample. Applying this framework directly to a generic company in Vietnam, Indonesia, or even a different region of the Philippines may yield sub-optimal results. Though 300 is often considered a respectable sample size, it may be insufficient if you plan to perform complex multivariate statistical analysis (e.g., testing the framework across different sub-segments like "Small-Molecule vs. Biosimilar ). The sample size may limit the statistical power to detect meaningful differences between these subgroups.

Respondents involved in developing corporate strategy may provide answers that align with what is considered "best practice" or what their company *claims* to prioritize, rather than the true, unstated, or political factors that actually drive molecule selection decisions. The framework's quality relies entirely on the expertise and honesty of the 300 individuals surveyed. If a high percentage of respondents lack deep, recent experience in all core domains (Legal, Commercial, Technical, Regulatory), the resulting framework's criteria or weightings will be inherently flawed.

## METHODOLOGY

This study adopted a rigorous quantitative research design structured across four sequential phases to develop and validate the molecule selection framework.

### Sampling Frame and Population

The target population comprised active pharmaceutical and healthcare professionals operating within major Philippine business hubs, specifically **Makati** and **Bonifacio Global City (BGC)**, where the corporate headquarters and commercial offices of the nation's leading pharmaceutical firms are concentrated.

### Participating Companies and Respondent Profile

A total of 300 validated responses were gathered. The sampling frame utilized purposive sampling to ensure that all participants possessed direct, professional involvement in the commercialization, portfolio management, or technical lifecycle management of generic drugs. The respondent profile encompassed key functional roles:

- Business Development Managers
- Sales and Marketing Managers

- Regulatory Affairs Professionals
- Supply Chain and Procurement Managers
- Finance and Portfolio Managers

Participating organizations represented four distinct operating models within the Philippine industry:

1. Multinational Generic Corporations
2. Local Branded Generic Manufacturers
3. Distributor-Importers
4. Toll Manufacturers

**Questionnaire Development and Pilot Testing**

The survey instrument was developed following an extensive review of literature on pharmaceutical portfolio management and regulatory compliance. The questionnaire was structured into closed-ended Likert-scale items measuring:

- Perceived level of influence of strategic, financial, and operational factors (1 =Not Influential to 5 = Very Influential).
- Perceived level of difficulty of portfolio steps (1 = Very Easy to 5 = Very Difficult).
- Frequency of process omission (1 = Never to 5 = Always).
- Perceived importance and feasibility of proposed implementation mechanisms and performance metrics (1 = Very Low to 5 = Very High).

A pilot test was conducted with 30 industry experts (excluded from the final sample) to evaluate item clarity, face validity, and reliability. Feedback from the pilot phase resulted in minor refinements to terminology regarding regulatory milestones and supply chain bottlenecks.

**Ethical Procedures**

Ethical compliance was strictly maintained throughout the research process:

- Informed consent was secured electronically from all participants prior to survey administration.
- Confidentiality and data privacy protocols were observed in accordance with the Philippine Data Privacy Act of 2012 (Republic Act No. 10173).

Gathered data were aggregated and used exclusively for academic research and framework development.

## RESULT

Primary Goal and Research Design: The study aims to create a molecule selection framework to enhance portfolio strategy and drive business growth within the generic pharmaceutical industry. This research utilized a quantitative research design with closed-ended survey questions distributed via purposive sampling to relevant managers.

Objective 1: Strategic, Financial, and Operational Factors:

This section evaluates the foundational pillars that currently govern how generic pharmaceutical companies prioritize new molecules. Through the use of weighted means, the perceived influence of strategic fit, financial returns, and operational capacity on the decision-making process is being measured. To move beyond surface-level observations, Exploratory Factor Analysis (EFA) is employed to uncover the underlying latent structures of these variables.

To be able to explain the factors that influence the portfolio selection, the researcher created the summary of profile of the respondents who is connected to molecule selection processand different typs of generic pharmaceutical company which can be seen in table 1 and table 2, respectively.

Table 1.

Summary of the Profile of the Respondents

| Variable | Frequency (n) | Percentage (%) |
|---|---|---|
| *Professional Role* | | |
| Medical Director / Medical Affairs | 3 | 1.00 |
| Business Development Manager / Director | 36 | 12.00 |
| Marketing / Product Manager/Marketing Manager/Director | 107 | 35.67 |
| Operation/ Sales Manager/Director | 104 | 34.67 |
| Regulatory Affairs Officer / Manager | 26 | 8.67 |
| Supply Chain / Procurement Head | 24 | 8.00 |
| *Years of Experience in the Pharmaceutical Industry* | | |
| Less than 5 years | 2 | 0.67 |
| 5 – 10 years | 75 | 25.00 |
| 11 – 20 years | 138 | 46.00 |
| More than 20 years | 85 | 28.33 |

Table 2.

Summary of the Company Profile

| Variable | Frequency (n) | Percentage (%) |
|---|---|---|
| *Type of Company Operation* | | |
| Distributor-Importer: Exclusively imports finished products from abroad. | 146 | 48.83 |
| Local Manufacturer: Owns manufacturing facilities in the Philippines. | 20 | 6.69 |
| Multinational Subsidiary: Philippine branch of a global pharmaceutical firm. | 126 | 42.14 |
| Toll Manufacturer / CMO: Manufactures for other brands. | 7 | 2.34 |
| *Company Size* | | |
| Large (More than 100 registered molecules) | 72 | 24.00 |
| Medium (21 – 100 registered molecules) | 221 | 73.67 |
| Small (1 – 20 registered molecules) | 7 | 2.33 |
| *Therapeutic Area Focus* | | |
| Anti-Infectives (Antibiotics/Antivirals) | 111 | 18.94 |
| Cardiovascular & Metabolic | 223 | 38.05 |
| Neurosciences | 143 | 24.40 |
| Oncology & Specialized Medicine | 27 | 4.61 |
| Over-the-Counter (OTC) & Consumer Health | 20 | 3.41 |
| Others | 62 | 10.58 |

This section evaluates the foundational pillars that currently govern how generic pharmaceutical companies prioritize new molecules. Through the use of weighted means, the perceived influence of strategic fit, financial

returns, and operational capacity on the decision-making process is being measured. To move beyond surface-level observations, Exploratory Factor Analysis (EFA) is employed to uncover the underlying latent structures of these variables.

Table 3.

Perceived Level of Influence of Strategic Factors on Company's Portfolio Selection Decisions

| | Weighted Mean | Standard Deviation | Interpretation |
|---|---|---|---|
| Anticipated patent cliff of a blockbuster drug | 4.1233 | 0.9404 | Influential |
| Competitive market positioning | 4.4633 | 0.6351 | Very Influential |
| Number of generic players | 4.1033 | 0.6589 | Influential |
| Ready to submit dossier from foreign manufacturer | 4.0233 | 0.9964 | Influential |
| Will fit with long-term company vision | 4.4667 | 0.7901 | Very Influential |

***Legend:*** *5.00 – 4.21 (Very Influential); 4.20 - 3.41 (Influential); 3.40 - 2.61 (Moderately Influential); 2.60 – 1.81 (Slightly Influential); 1.80 – 1.00 (Not Influential)*

Table 4.

Perceived Level of Influence of Financial Factors on Company's Portfolio Selection Decisions

| | Weighted Mean | Standard Deviation | Interpretation |
|---|---|---|---|
| Budgetary constraints | 3.9933 | 0.9467 | Influential |
| Capital availability | 4.0800 | 0.7973 | Influential |
| Potential Return on Investment (ROI) | 4.7367 | 0.5789 | Very Influential |
| Presence of mandatory price ceilings under Cheaper Medicine Act | 3.3300 | 0.7548 | Moderately Influential |
| Price offered by foreign manufacturer (cost of goods) | 3.8700 | 0.7757 | Influential |

***Legend:*** *5.00 – 4.21 (Very Influential); 4.20 - 3.41 (Influential); 3.40 - 2.61 (Moderately Influential); 2.60 – 1.81 (Slightly Influential); 1.80 – 1.00 (Not Influential)*

**Table 5.**

Perceived Level of Influence of Operational Factors on Company's Portfolio Selection Decisions

| | Weighted Mean | Standard Deviation | Interpretation |
|---|---|---|---|
| Availability of human resources (if adding new molecule can be promoted well by the current number of field force) | 3.7367 | 0.9471 | Influential |
| Ease of Logistics from other country | 3.3800 | 1.3372 | Moderately Influential |
| Molecules that are already approve by USFDA, EMA to expedite local approval | 4.0533 | 1.1438 | Influential |
| Regulatory requirements | 4.3667 | 0.9064 | Very Influential |
| Technical feasibility | 3.8933 | 1.1012 | Influential |

***Legend:*** *5.00 – 4.21 (Very Influential); 4.20 - 3.41 (Influential); 3.40 - 2.61 (Moderately Influential); 2.60 – 1.81 (Slightly Influential); 1.80 – 1.00 (Not Influential*

**Table 6**

Bartlett's Test for Sphericity

| $X^2$ | df | p-value |
|---|---|---|
| 2552.098 | 105 | <0.0001 |

Since the test result is statistically significant, it confirms that the data collected is suitable for further analysis. This means the researcher can confidently proceed in identifying underlying groupings or themes among the items, which helps in developing a more structured and reliable framework.

Table 7

Measures of Sampling Adequacy

| Item | MSA | Interpretation |
|---|---|---|
| Will fit with long-term company vision | 0.7359 | Acceptable MSA |
| Competitive market positioning | 0.8091 | Acceptable MSA |
| Potential Return on Investment (ROI) | 0.7390 | Acceptable MSA |
| Capital availability | 0.7233 | Acceptable MSA |
| Availability of human resources (if adding new molecule can be promoted well by the current number of field force) | 0.7886 | Acceptable MSA |
| Ready to submit dossier from foreign manufacturer | 0.6522 | Mediocre MSA |
| Anticipated patent cliff of a blockbuster drug | 0.5771 | Mediocre MSA |
| Number of generic players | 0.5898 | Mediocre MSA |
| Budgetary constraints | 0.6418 | Mediocre MSA |
| Price offered by foreign manufacturer (cost of goods) | 0.5309 | Mediocre MSA |
| Presence of mandatory price ceilings under Cheaper Medicine Act | 0.5699 | Mediocre MSA |
| Technical feasibility | 0.5169 | Mediocre MSA |
| Regulatory requirements | 0.6610 | Mediocre MSA |
| Molecules that are already approve by USFDA, EMA to expedite local approval | 0.5816 | Mediocre MSA |
| Ease of Logistics from other country | 0.4534 | Unacceptable MSA |

***Legend:*** *$\geq 0.70$ (Acceptable MSA); $0.69 \leq KMO \leq 0.50$ (Mediocre MSA); $\leq 0.49$ (Unacceptable MSA)*

This table shows how well each individual item fits with the rest of the data in contributing to meaningful groupings. Most of the items fall under the *acceptable* category, indicating that they work well together with other variables and help explain broader patterns in the data.

However, several items are only considered *mediocre*, which suggests that while they still contribute, their connection to other items is not as strong. One item, *Ease of Logistics from other country*, was found to be unacceptable, which implies that it does not align well with the rest of the variables. Thus, this item was removed from the factor analysis.

Table 8

Kaiser-Meyer-Olkin Measure of Sampling Adequacy

| Overall Sampling Adequacy |
|---|
| 0.73 |

The overall KMO value of 0.73 indicates that the dataset is generally well-suited for factor analysis. This indicates that the responses gathered from participants show enough consistency and shared patterns to allow meaningful conclusions to be drawn.

This result suggests that the variables are sufficiently connected and that the data has a solid foundation for identifying underlying factors. For the study, this strengthens confidence that the framework being developed is based on reliable and well-structured information.

Table 9

Assessing Number of Factors

| Criteria | Suggested Factors |
|---|---|
| Velicer MAP | 2 |
| VSS Complexity 1 | 1 |
| VSS Complexity 2 | 2 |
| Parallel Analysis | 5 |
| BIC | 6 |
| Adjusted BIC | 8 |

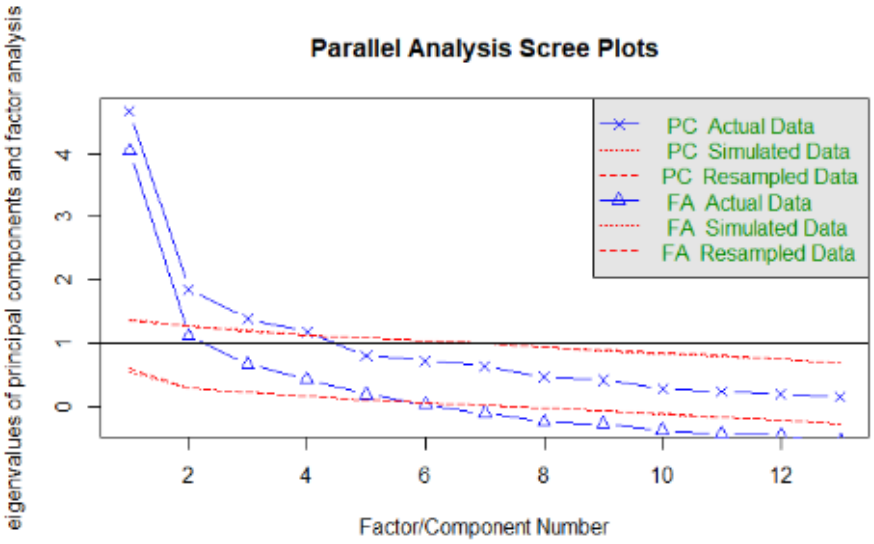


**Figure1.1** Scree plot for determining the number of factors

To identify the optimal number of factors that can be used for this study, various criteria and plots were considered. Because these methods do not fully agree, the researcher carefully considered both the statistical results and the practical meaning of the factors. While some techniques suggested a higher number of factors, too many groupings can make the framework complicated and difficult to interpret. The scree plot visually shows how much each factor contributes to explaining the data. The point where the line begins to flatten indicates that adding more factors does not significantly improve understanding. In this study, the scree plot suggests that only two to six factors are needed to capture the most important information. Thus, based on the scree plot and the criteria used, the one that has highest agreement is the two factors. Therefore, it was determined that having two factors would be the most optimal.

Table 10

Factor Structure and Loadings

| | Factor 1 | Factor 2 | Communality | Uniqueness |
|---|---|---|---|---|
| Availability of human resources | 1.0286 | -0.2980 | 0.8509 | 0.1491 |
| Capital availability | 0.7186 | 0.0079 | 0.5219 | 0.4781 |
| Technical feasibility | 0.5931 | 0.2235 | 0.5297 | 0.4703 |
| Anticipated patent cliff of a blockbuster drug | -0.2897 | 0.8711 | 0.5991 | 0.4009 |
| Regulatory requirements | 0.2033 | 0.7491 | 0.7496 | 0.2504 |
| Will fit with long-term company vision | 0.3277 | 0.4519 | 0.4545 | 0.5455 |

The Exploratory Factor Analysis (EFA) presented in Table 10 reveals a two-factor structure that governs the portfolio selection process. To ensure the statistical integrity of the model, a rigorous filtering process was applied, where seven variables—including ready to submit dossier from foreign manufacturer (0.173), presence

of mandatory price ceilings under Cheaper Medicine Act (0.239), Budgetary constraints (0.282), molecules that are already approve by USFDA, EMA to expedite local approval (0.245), number of generic players (0.283), potential ROI (0.3410) and competitive Market Positioning (0.3620)—were excluded due to low communality scores (<0.40). These exclusions indicates that such items did not share sufficient common variance with the identified factors, allowing the remaining six items to provide a more cohesive and reliable representation of the decision-making landscape.

Therefore, the table above illustrates different factors influencing molecule selection naturally group together based on how respondents evaluated them. Two main themes emerged from the analysis. The first factor includes items such as availability of human resources, capital availability, and technical feasibility. These elements all relate to whether a company has the internal capacity and operational strength to successfully develop or launch a molecule. The strong loadings of these items suggest that respondents view these considerations as closely connected and essential when assessing readiness for implementation. Thus, this factor can be identified as Operational Resources.

The second factor includes anticipated patent cliffs, regulatory requirements, and alignment with the company's long-term vision. These factors reflect a more forward-looking and strategic perspective, focusing on compliance and overall direction of the company. This suggests that respondents also evaluate opportunities based on how well they fit external conditions and long-term goals. Thus, this can be named Strategic Market Alignment.

Table 11

Factor Loadings and Variability

| Factor | SS Loadings | Proportion Variance | Cumulative Variance | Proportion Explained | Cumulative Proportion Explained |
|---|---|---|---|---|---|
| 1 | 3.01 | 0.23 | 0.23 | 0.55 | 0.55 |
| 2 | 2.51 | 0.19 | 0.42 | 0.45 | 1 |

This table shows how much each identified factor contributes to explaining the overall decision-making process as shown in the proportion and cumulative variance. The first factor, Operational Resources, explains a slightly larger portion of the variation in responses, accounting for 23% of the total. This indicates that internal capabilities play a primary role in how decisions are made. The second factor, Strategic Market Alignment, explains 19% of the variation. While slightly lower, this still represents a substantial contribution, highlighting the importance of external considerations such as regulatory requirements and strategic fit. When combined, the two factors explain 42% of the total variation in the data. This means that nearly half of the decision-making process can be understood through these two dimensions. While not exhaustive, this level of explanation is acceptable in social science research and suggests that the framework captures the most important patterns influencing molecule selection.

Table 12

Operational Resources Factor and Associated Items

| Item | Factor Loadings | Communality |
|---|---|---|
| Availability of human resources | 1.0286 | 0.8509 |
| Capital availability | 0.7186 | 0.5219 |
| Technical feasibility | 0.5931 | 0.5297 |

Among the items, availability of human resources shows the strongest relationship with the factor, indicating that having sufficient manpower is a critical consideration in molecule selection. This highlights the importance of ensuring that the organization has the necessary workforce to support new projects. Capital availability and technical feasibility also show meaningful contributions, suggesting that financial capability and technical

readiness are key supporting elements. These factors collectively emphasize that decisions are strongly influenced by whether the company has the means and ability to execute the project successfully.

Table 13

Strategic Market Alignment Factor and Associated Items

| Item | Factor Loadings | Communality |
|---|---|---|
| Anticipated patent cliff of a blockbuster drug | 0.8711 | 0.5991 |
| Regulatory requirements | 0.7491 | 0.7496 |
| Will fit with long-term company vision | 0.4519 | 0.4545 |

The anticipated patent cliff of a blockbuster drug shows the strongest influence within this factor. This suggests that timing and market opportunities play a crucial role in decision-making. Companies appear to prioritize molecules that can take advantage of upcoming gaps in the market. Regulatory requirements also contribute significantly, which indicates that compliance and approval processes are major considerations when selecting molecules. This reflects the highly regulated nature of the pharmaceutical industry. Meanwhile, alignment with the company's long-term vision shows a moderate contribution, suggesting that while strategic direction is important, it may be considered alongside more immediate opportunities and constraints.

Objective 2: Challenges and Process Omissions:

Identifying Challenges and Process Omission in Portfolio Steps

This section focuses on the practical challenges encountered during the selection process. By ranking and calculating weighted means for both difficulty and omission, the steps that are most challenging can be identified. Furthermore, portfolio step that is frequently bypassed may be also evaluated.

Table 14

Perceived Level of Difficulty of Portfolio Step

| Difficulty Ranking | Portfolio Step | Weighted Mean | Standard Deviation |
|---|---|---|---|
| 1 | FDA's filling and approval process | 3.9233 | 1.0104 |
| 2 | Risk Assessment & Mitigation | 3.5800 | 0.5872 |
| 3 | Financial Benefit Estimation (ROI/NPV) | 3.5200 | 0.9518 |
| 4 | Resource Capacity Planning | 3.4233 | 0.9524 |
| 5 | Strategic Alignment Scoring | 3.1333 | 0.6353 |
| 6 | Final Selection/Prioritization | 3.1233 | 0.6655 |
| 7 | Project Proposal Screening | 3.1233 | 0.8105 |
| 8 | Post-Implementation Review. | 2.9267 | 0.7810 |
| 9 | Survey with doctors if the molecule the company think of launching will still have place on their practice | 2.1633 | 0.7246 |

***Legend**: 1 = Very easy, 2 = Easy, 3 = Moderately difficult, 4 = Difficult, 5 = Very difficult*

Table 15

Perceived Level of Omission of Portfolio Step

| Omission Ranking | Portfolio Step | Weighted Mean | Standard Deviation |
|---|---|---|---|
| 1 | Survey with doctors if the molecule the company think of launching will still have place on their practice | 3.8033 | 0.9906 |
| 2 | Post-Implementation Review | 3.3267 | 1.1908 |
| 3 | Strategic Alignment Scoring | 3.2800 | 1.0223 |
| 4 | Project Proposal Screening | 3.2333 | 1.2236 |
| 5 | Resource Capacity Planning | 2.5667 | 1.2875 |
| 6 | Risk Assessment & Mitigation | 2.3867 | 1.0102 |
| 7 | Final Selection/Prioritization | 2.1633 | 1.1809 |
| 8 | Financial Benefit Estimation (ROI/NPV) | 1.9233 | 1.2258 |
| 9 | FDA's filling and approval process | 1.5567 | 1.1937 |

***Legend**: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always*

Table 16

Kendall's W Agreement Analysis

| | $X^2$ | p-value |
|---|---|---|
| Agreement on Level of Difficulty | 721 | <0.0001 |
| Agreement on Level of Omission | 579 | <0.0001 |

Table 17

Spearman Rank's Correlation of Level of Difficulty and Omission on Portfolio Step

| Portfolio Selection Step | ρ | p-value | Relationship Interpretation |
|---|---|---|---|
| Survey with Doctors | -0.6186 | <0.0001 | Strongly Negative: As difficulty increases, omission significantly decreases. |
| Post-Implementation Review | 0.3496 | <0.0002 | Weakly Positive: Higher difficulty leads to a higher frequency of skipping. |
| Project Proposal Screening | 0.3693 | <0.0003 | Weakly Positive: Higher difficulty leads to a higher frequency of skipping. |
| Financial Benefit Estimation | -0.2295 | <0.0004 | Weakly Negative: Difficulty has a minor inverse effect on omission. |
| FDA's Filing and Approval | -0.2271 | <0.0005 | Weakly Negative: Difficulty has a minor inverse effect on omission. |
| Resource Capacity Planning | -0.2262 | <0.0006 | Weakly Negative: Difficulty has a minor inverse effect on omission. |
| Final Selection/Prioritization | -0.2105 | <0.0007 | Weakly Negative: Difficulty has a minor inverse effect on omission. |
| Risk Assessment & Mitigation | 0.1307 | 0.0236 | Very Weak Positive: Slight trend of skipping as difficulty increases. |
| Strategic Alignment Scoring | -0.0649 | 0.2626 | Not Significant: Difficulty does not influence the rate of omission. |

***Legend:**1.00-0.81(Very Strong); 0.80-0.61 (Strong); 0.60-0.41 (Moderate); 0.40-0.21 (Weak); 0.20 – 0.01 (Very Weak); 0.00 (No relationship); Level of significance at α = 0.05*

The Spearman Rank correlation analysis in Table 18 identifies the critical relationship between the perceived difficulty of a portfolio step and the frequency with which it is omitted by generic pharmaceutical firms. Based on the gathered data, the p-values for nearly all steps are below the alpha = 0.05 threshold, indicating that the

observed associations are statistically significant and unlikely to be the result of random chance. This implies that at 0.05 level of significance, the null hypothesis that the level of difficulty and frequency of omission are not associated is rejected. The only exception is strategic alignment scoring ($p = 0.2626$), where the null hypothesis cannot be rejected, suggesting that for this specific step, the level of difficulty has no measurable influence on whether the task is skipped.

The most striking finding is the strongly negative correlation for the survey with doctors ($rho = -0.6186$, $p < 0.0001$). This indicates that as the difficulty of conducting medical surveys increases, the frequency of omission significantly decreases, this may be seen as constrasting in the descriptive data shown in the tables preceding this analysis. Despite the high effort required, the perceived risk of skipping clinical input is high that companies are compelled to complete them. Conversely, post-implementation review ($rho = 0.3496$, $p < 0.0002$) and project proposal screening ($rho = 0.3693$, $p < 0.0003$) exhibit weakly positive correlations. This implies that higher difficulty leads to a higher frequency of skipping, marking these steps as vulnerable bottlenecks where operational complexity directly results in process negligence. For the remaining significant steps, such as financial benefit estimation and FDA's filing and approval, the results show weakly negative correlations. These negative rho values suggest a disciplined approach to the more technical and regulatory aspects of the portfolio; as these steps become more complex, companies actually become more diligent in ensuring they are not omitted, likely due to strict compliance requirements. However, risk assessment & mitigation ($p = 0.0236$) shows a very weak positive trend, indicating a slight tendency to bypass risk checks when they become too cumbersome.

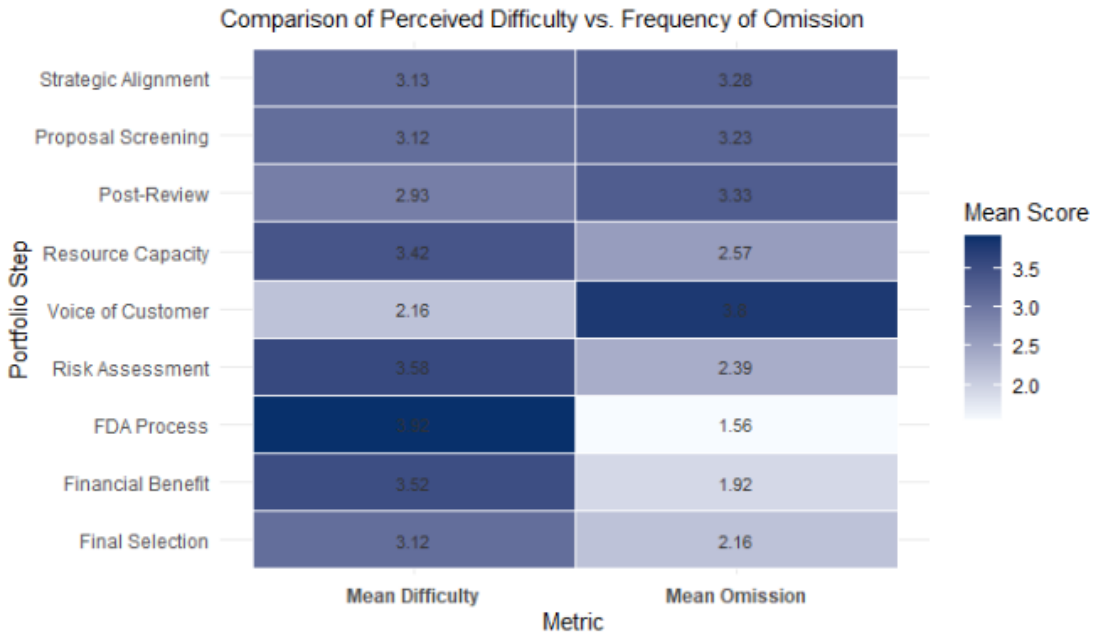


**Figure 1.1** *Heatmap of Portfolio Selection*

The FDA Process (3.92 difficulty) and Financial Benefit (3.52 difficulty) are rated as one of the most difficult steps, yet they demonstrate the lowest omission scores. Therefore, despite their high complexity and resource requirements, the legal and financial stakes are too high for firms to bypass them. This confirms that regulatory compliance acts as a powerful enforcer of process adherence. On the other hand, a critical vulnerability is observed in the voice of customer (3.80 omission) and post-review (3.33 omission). While these steps are perceived as relatively less difficult (2.16 and 2.93 difficulty), they are the most frequently skipped. This suggests that without the "push" of a regulatory deadline, internal strategic steps are often sidelined in favor of speed.

Regulatory processes (FDA approvals) and financial benefit estimations are rated as the most difficult steps, but they exhibit the lowest omission scores because the legal and financial stakes are too high to bypass. Conversely, the "voice of the customer" and post-implementation reviews are perceived as less difficult but are among the most frequently skipped steps due to a lack of regulatory deadlines. Spearman rank correlations indicate that as the difficulty of conducting medical surveys increases, the frequency of omission significantly decreases because companies perceive a high risk in skipping clinical input.

**Objective 3: Comparative Analysis Across Company Profiles**:

**Comparative Analysis of Portfolio Selection Process Across Company Profiles**

This section compares the selection methodologies across different company profiles, including type of company operation and company size. This comparative lens ensures the final framework is adaptable to diverse organizational structures.

Table 18

Comparison of Portfolio Selection Process Across Type of Company Operation

| Factor | Test Statistic | p-value | Interpretation |
|---|---|---|---|
| Strategic Portfolio Selection | 29.879 | <0.0001 | Significantly Different |
| Financial Portfolio Selection | 29.622 | <0.0001 | Significantly Different |
| Operational Portfolio Selection | 26.433 | <0.0001 | Significantly Different |

Level of significance at $\alpha = 0.05$

Table 19 demonstrates that the approach to portfolio selection is not uniform across the Philippine pharmaceutical industry. The Kruskal-Wallis test statistics revealed that with p-values consistently falling below the 0.05 threshold, the null hypothesis that there is no significant difference on the portfolio selection process of companies with different types of operation is rejected. Therefore, at 0.05 level of significance, there is sufficient evidence that they are statistically different. This indicates that the differences observed between company operations (Distributor-Importers, Local Manufacturers, Multinationals, and Toll Manufacturers) are highly significant and not due to random variation.

The results suggest that having only one framework would be ineffective for the industry. Thus, the implementation mechanisms must be modular, allowing for different weightings of strategic and operational metrics depending on the type of company operation.

Table 19

Dunn's Post-hoc Analysis on Strategic Portfolio Selection Across Type of Company Operation

| Comparison | Z-Statistic | Adjusted p-value | Interpretation | Directional Interpretation (Based on Z-Statistic) |
|---|---|---|---|---|
| Distributor-Importer vs. Local Manufacturer | 4.0258 | 0.0003 | Significant | Importers rate this significantly higher than local manufacturers. |
| Distributor-Importer vs. Toll Manufacturer | 3.8667 | 0.0007 | Significant | Importers rate this significantly higher than toll manufacturers. |
| Multinational vs. Toll Manufacturer/CMO | 3.1295 | 0.0105 | Significant | Multinationals rate this significantly higher than toll manufacturers. |
| Local Manufacturer vs. Multinational | -2.821 | 0.0287 | Significant | Multinationals rate this significantly higher than local manufacturers. |
| Distributor-Importer vs. Multinational | 2.3098 | 0.1254 | Not Significant | Importers rate this higher, but not statistically significant. |
| Local Manufacturer vs. Toll Manufacturer | 1.221 | 1 | Not Significant | The perspective of the two groups are not statistically different. |

Following the Kruskal-Wallis test which confirmed significant differences across company types, Dunn's Post-hoc Analysis was conducted to perform pairwise comparisons and isolate exactly which specific companies diverge in their strategic selection logic.

By utilizing the Bonferroni-adjusted p-value, the analysis maintains statistical stringency, effectively controlling the family-wise error rate and preventing Type I errors (false positives) that often arise when performing multiple simultaneous comparisons.

The Z-statistic serves as the standardized evidence of the magnitude and direction of these differences, functioning as a numerical bridge to the adjusted p-value. In this context, a Z-statistic with an absolute value exceeding the critical threshold directly corresponds to a significant p-value.

While the p-value indicates the probability that the difference occurred by chance, the Z-statistic provides the directionality: a positive value suggests that the first group in the comparison holds a higher mean rank, whereas a negative value indicates the second group is statistically dominant. For instance, the Z-statistic of -2.8210 for Local Manufacturer vs.

Multinational ($p = 0.0287$) confirms that multinationals place a significantly higher strategic priority on strategic factor than local manufacturers do.

Objective 4: Benefits and Limitations of Current Processes:

**Evaluation of Benefits and Limitations of Current Portfolio Selection Process**

Before formulating a new framework, it is essential to assess the strengths and weaknesses of existing systems. This section constructs a detailed list of benefits and limitations as perceived by the respondents.

Table 20

Perceived Level of Potential Benefits on Company's Current Portfolio Selection Process

| | Weighted Mean | Standard Deviation | Interpretation |
|---|---|---|---|
| Competitive Intelligence | 4.1200 | 0.8172 | Agree |
| First to file advantage | 3.9133 | 0.9742 | Agree |
| It allows for better allocation of limited resources. | 4.1900 | 0.8542 | Agree |
| It helps maximize the financial return on investments. | 4.4967 | 0.7153 | Strongly Agree |
| It improves transparency in how decisions are made. | 3.8533 | 1.0109 | Agree |
| Optimize resource allocation | 4.1533 | 0.7010 | Agree |
| Portfolio diversification | 4.0067 | 0.5236 | Agree |
| Regulatory De-risking | 4.1533 | 0.8596 | Agree |
| The process ensures projects align with strategic goals. | 4.2567 | 0.8081 | Strongly Agree |
| Therapeutic synergy | 4.0233 | 0.7947 | Agree |

***Legend:*** *5.00 – 4.21 (Strongly Agree); 4.20 - 3.41 (Agree); 3.40 - 2.61 (Neutral); 2.60 – 1.81 (Disagree); 1.80 – 1.00 (Strongly Disagree)*

Table 21

Perceived Level of Potential Limitation on Company's Current Portfolio Selection Process

| | Weighted Mean | Standard Deviation | Interpretation |
|---|---|---|---|
| Analysis paralysis | 2.8167 | 0.8238 | Neutral |
| Decisions are often influenced by "office politics." | 2.3433 | 0.9636 | Disagree |
| Inaccurate API intelligence (difficulty of finding supplier who is compliant and uses non-infringing process). | 2.7600 | 0.9792 | Neutral |
| Lack of cross-functional synergy | 2.8533 | 1.0996 | Neutral |
| Shifting standard of care | 2.7700 | 1.0036 | Neutral |
| Sunk-cost Fallacy | 2.8767 | 0.8930 | Neutral |
| The complex generic trap | 2.6100 | 0.8207 | Neutral |
| The criteria used are too rigid and lack flexibility. | 2.5667 | 0.7577 | Disagree |
| The selection process takes too much time to complete. | 3.2400 | 0.9445 | Neutral |
| There is a lack of high-quality data to inform decisions. | 2.6700 | 1.0351 | Neutral |

***Legend:*** *5.00 – 4.21 (Strongly Agree); 4.20 - 3.41 (Agree); 3.40 - 2.61 (Neutral); 2.60 – 1.81 (Disagree); 1.80 – 1.00 (Strongly Disagree)*

Exploratory Factor Analysis on the Potential Benefits and Limitations

Table 22

Bartlett's Test for Sphericity

| $\mathbf{X}^2$ | df | p-value |
|---|---|---|
| 5290.791 | 190 | <0.0001 |

The results confirm that the items related to the potential benefits and limitations are sufficiently related to one another. This means that respondents answered the items in a consistent pattern rather than randomly. Therefore, the dataset is appropriate for factor analysis, allowing the researcher to identify meaningful groupings of benefits and limitations within the selection process.

Table 23

Measures of Sampling Adequacy

| Item | MSA | Interpretation |
|---|---|---|
| The process ensures projects align with strategic goals. | 0.8239 | Acceptable MSA |
| It helps maximize the financial return on investments. | 0.7842 | Acceptable MSA |
| It improves transparency in how decisions are made. | 0.7728 | Acceptable MSA |
| It allows for better allocation of limited resources. | 0.7923 | Acceptable MSA |
| First to file advantage | 0.7364 | Acceptable MSA |
| Optimize resource allocation | 0.7697 | Acceptable MSA |
| Competitive Intelligence | 0.7897 | Acceptable MSA |
| The selection process takes too much time to complete. | 0.7244 | Acceptable MSA |
| Inaccurate API intelligence (difficulty of finding supplier who is compliant and uses non-infringing process). | 0.7427 | Acceptable MSA |
| The complex generic trap | 0.7168 | Acceptable MSA |
| Lack of cross-functional synergy | 0.7968 | Acceptable MSA |
| Regulatory De-risking (meets and compliance with regulatory standardst avoid legal risks) | 0.6244 | Mediocre MSA |
| Therapeutic synergy | 0.5878 | Mediocre MSA |
| Decisions are often influenced by "office politics." | 0.6161 | Mediocre MSA |
| The criteria used are too rigid and lack flexibility. | 0.6912 | Mediocre MSA |
| There is a lack of high-quality data to inform decisions. | 0.6841 | Mediocre MSA |
| Shifting standard of care | 0.5992 | Mediocre MSA |
| Analysis paralysis | 0.5979 | Mediocre MSA |
| Sunk-cost Fallacy | 0.6567 | Mediocre MSA |
| Portfolio diversification | 0.3665 | Unacceptable MSA |

Most of the items demonstrate acceptable levels of sampling adequacy, indicating that they work well together in forming meaningful groups. This suggests that the majority of the listed benefits and limitations are relevant and consistently understood by respondents. However, a few items fall under the mediocre category, meaning they are somewhat less connected to the overall pattern but still usable. One item, portfolio diversification, was

identified as having an unacceptable value, suggesting that it does not align well with the other factors and may represent a separate or less clearly defined concept. Thus, this item was removed in the factor analysis.

Table 24

Kaiser-Meyer-Olkin Measure of Sampling Adequacy

| Overall Sampling Adequacy |
|---|
| 0.73 |

The overall KMO value of 0.73 indicates that the dataset has a good level of consistency and shared patterns among the variables. This means that the responses are sufficiently connected to allow the identification of underlying themes. This supports the reliability of the analysis and suggests that the results can be used as a sound basis for understanding the benefits and limitations of the molecule selection process.

Table 25

Assessing Number of Factors

| Criteria | Suggested Factors |
|---|---|
| Velicer MAP | 3 |
| VSS Complexity 1 | 2 |
| VSS Complexity 2 | 2 |
| Parallel Analysis | 4 |
| BIC | 8 |
| Adjusted BIC | 8 |

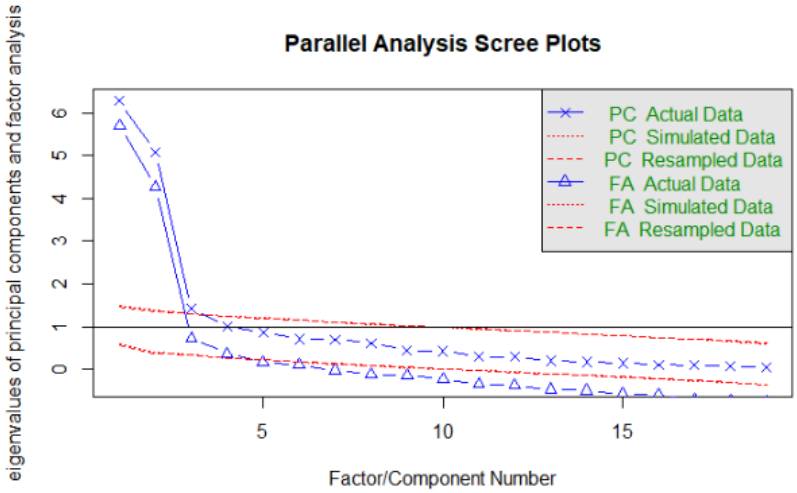


**Figure 1.2** *Scree plot for determining the number of factors*

Different criteria suggested varying numbers of factors, ranging from two to as many as eight. While some approaches recommended more factors, using too many can make the results overly complex and difficult to interpret. After considering both the statistical outputs, scree plot, and the practical goals of the study, a two-factor solution was selected. This choice provides a clearer and more meaningful structure by grouping the items into broader categories, likely representing the overall benefits and limitations of the selection process.

Table 26

Factor Structure and Loadings

| | Factor 1 | Factor 2 | Communality | Uniqueness |
|---|---|---|---|---|
| Competitive Intelligence | 0.8370 | 0.0743 | 0.7219 | 0.2781 |
| The process ensures projects align with strategic goals. | 0.8288 | -0.0391 | 0.6802 | 0.3198 |
| Optimize resource allocation | 0.8147 | -0.2493 | 0.6741 | 0.3259 |
| It allows for better allocation of limited resources. | 0.7758 | 0.0738 | 0.6219 | 0.3781 |
| It improves transparency in how decisions are made. | 0.7680 | 0.0435 | 0.6003 | 0.3997 |
| First to file advantage | 0.7395 | -0.2074 | 0.5508 | 0.4492 |
| It helps maximize the financial return on investments. | 0.7168 | -0.0588 | 0.5065 | 0.4935 |
| Therapeutic synergy | 0.6730 | 0.1450 | 0.4989 | 0.5011 |
| The complex generic trap | 0.1224 | 0.8066 | 0.6907 | 0.3093 |
| Decisions are often influenced by "office politics." | -0.0182 | 0.8064 | 0.6469 | 0.3531 |
| The criteria used are too rigid and lack flexibility. | 0.0467 | 0.7856 | 0.6287 | 0.3713 |
| There is a lack of high-quality data to inform decisions. | -0.1792 | 0.7459 | 0.5543 | 0.4457 |
| Sunk-cost Fallacy | -0.3158 | 0.6986 | 0.5315 | 0.4685 |
| Shifting standard of care | -0.1668 | 0.6954 | 0.4818 | 0.5182 |
| Analysis paralysis | 0.2792 | 0.6462 | 0.5415 | 0.4585 |
| Lack of cross-functional synergy | -0.0547 | 0.6393 | 0.4028 | 0.5972 |
| The selection process takes too much time to complete. | 0.1591 | 0.5962 | 0.4049 | 0.5951 |
| Inaccurate API intelligence | 0.4176 | 0.4313 | 0.4064 | 0.5936 |

While conducting the factor analysis, the item regulatory de-risking was removed since its communality is only 0.373, which is below the 0.4v threshold.

The first factor is composed of items with strong positive loadings such as competitive intelligence, alignment with strategic goals, resource optimization, transparency, and financial returns. These items can be observed to belong to the potential benefits construct. These high loadings indicate that these items are closely related and collectively represent the value-creating aspects of the selection process. The relatively high communalities further confirm that these items share a substantial amount of common variance, meaning they consistently reflect the same underlying concept. This factor captures how the selection process contributes to efficiency and long-term strategic positioning. Thus, this factor can be named as Strategic Value Drivers.

On the other hand, the second factor consists of items such as the complex generic trap, office politics, rigid criteria, lack of quality data, and decision delays. These items also exhibit strong loadings on the second factor indicating that they form a coherent dimension representing barriers or inefficiencies in the process. These items belong in the potential limitations category. The presence of moderate to high communalities suggests that these limitations are consistently perceived across respondents. This factor can be named as Process Constraints.

It is also observed that most items load strongly on only one factor, indicating good separation between the two dimensions. However, inaccurate API intelligence shows moderate loadings on both factors, suggesting that it may relate to both value creation and process limitations, reflecting its dual role in decision-making.

Table 27

Factor Loadings and Variability

| **Factors** | **SS Loadings** | **Proportion Variance** | **Cumulative Variance** | **Proportion Explained** | **Cumulative Proportion Explained** |
|---|---|---|---|---|---|
| 1 | 5.2 | 0.29 | 0.29 | 0.51 | 0.51 |
| 2 | 4.94 | 0.27 | **0.56** | 0.49 | 1 |

This table presents the contribution of each factor in explaining the overall variation in the data. The first factor, Strategic Value Drivers, accounts for 29% of the total variance as seen in the proportional variance. This indicates that value-generating aspects of the process play a slightly more dominant role in shaping perceptions. The second factor, Process Constraints, explains 27% of the variance, showing that limitations and inefficiencies are almost equally influential. When combined, the two factors explain 56% of the total variance. This suggests

that the two-factor solution provides a meaningful and balanced representation of both the strengths and weaknesses of the molecule selection process.

Table 28

Strategic Value Drivers Factor and Associated Items

| Item | Factor Loadings | Communality |
|---|---|---|
| Competitive Intelligence | 0.8370 | 0.7219 |
| The process ensures projects align with strategic goals. | 0.8288 | 0.6802 |
| Optimize resource allocation | 0.8147 | 0.6741 |
| It allows for better allocation of limited resources. | 0.7758 | 0.6219 |
| It improves transparency in how decisions are made. | 0.7680 | 0.6003 |
| First to file advantage | 0.7395 | 0.5508 |
| It helps maximize the financial return on investments. | 0.7168 | 0.5065 |
| Therapeutic synergy | 0.6730 | 0.4989 |

This table focuses on the first factor, Strategic Value Drivers, highlighting the items that define its structure. All items exhibit strong factor loadings, indicating that they are reliable indicators of this construct. Competitive intelligence and alignment with strategic goals show the highest loadings, suggesting that strategic awareness and direction are central to perceived value. Items related to resource allocation, transparency, and financial returns also demonstrate strong contributions, reinforcing the importance of efficiency and clarity in decision-making. The communalities for these items are generally high, indicating that a large portion of their variance is explained by the factor. This suggests that the items consistently measure the same underlying concept. This factor reflects the extent to which the selection process improves organizational performance and decision quality, which in return supports long-term business growth.

Table 29

Process Constraints Factor and Associated Items

| Item | Factor Loadings | Communality |
|---|---|---|
| The complex generic trap | 0.8066 | 0.6907 |
| Decisions are often influenced by "office politics." | 0.8064 | 0.6469 |
| The criteria used are too rigid and lack flexibility. | 0.7856 | 0.6287 |
| There is a lack of high-quality data to inform decisions. | 0.7459 | 0.5543 |
| Sunk-cost Fallacy | 0.6986 | 0.5315 |
| Shifting standard of care | 0.6954 | 0.4818 |
| Analysis paralysis | 0.6462 | 0.5415 |
| Lack of cross-functional synergy | 0.6393 | 0.4028 |
| The selection process takes too much time to complete. | 0.5962 | 0.4049 |
| Inaccurate API intelligence | 0.4313 | 0.4064 |

This table presents the second factor, Process Constraints, which captures the limitations within the selection process. Items such as the complex generic trap, office politics, and rigid criteria exhibit strong loadings, indicating that structural and organizational challenges are key concerns. The presence of items related to lack of data, decision delays, and cognitive further highlights the operational difficulties that may hinder effective decision-making. While most items show moderate to strong loadings, a few, such as inaccurate API intelligence, display relatively lower values, suggesting weaker but still relevant contributions. This factor reflects the barriers that reduce efficiency, slow down decision-making, and potentially compromise the effectiveness of the molecule selection process.

Objective 5: Implementation Mechanisms and Performance Metrics:

This section details the formulation of implementation mechanisms and the performance metrics required to monitor long-term effectiveness. The confirmatory Factor Analysis (CFA) was conducted to validate the proposed framework consisting of implementation mechanisms and performance metrics in terms of importance and feasibility.

Table 30

Perceived Level of Importance of Proposed Implementation Mechanisms

| | Weighted Mean | Standard Deviation | Interpretation |
|---|---|---|---|
| Dynamic Resource Scaling (Real-time resource reallocation) | 4.4548 | 0.6955 | Very High |
| Mandatory cross functional review before approval (R&D Legal and commercial) | 4.4716 | 0.5388 | Very High |
| Formalize Fast-Track mechanism for molecule with high first- to-file potential | 4.6555 | 0.6280 | Very High |
| Continuous Governance (Bi-annual audits of selection criteria) | 4.7893 | 0.4837 | Very High |
| Automated data feeds (patent alerts, market pricing) | 4.7425 | 0.5346 | Very High |

***Legend:*** *5.00 – 4.21 (Very High); 4.20 - 3.41 (High); 3.40 - 2.61 (Moderate); 2.60 – 1.81 (Low); 1.80 – 1.00 (Very Low)*

Table 31

Perceived Level of Feasibility of Proposed Implementation Mechanisms

| | Weighted Mean | Standard Deviation | Interpretation |
|---|---|---|---|
| Continuous Governance (Bi-annual audits of selection criteria) | 4.1371 | 0.7972 | High |
| Dynamic Resource Scaling (Real-time resource reallocation) | 3.8462 | 0.7210 | High |
| Mandatory cross functional review before approval (R&D Legal and commercial) | 4.2575 | 0.6324 | Very High |
| Automated data feeds (patent alerts, market pricing) | 4.0702 | 0.9650 | High |
| Formalize Fast Track mechanism for molecules with high first- to-file potential | 3.8595 | 0.8437 | High |

***Legend:*** *5.00 – 4.21 (Very High); 4.20 - 3.41 (High); 3.40 - 2.61 (Moderate); 2.60 – 1.81 (Low); 1.80 – 1.00 (Very Low)*

Table 32

Perceived Level of Importance of Proposed Performance Metrics

| | Weighted Mean | Standard Deviation | Interpretation |
|---|---|---|---|
| Strategic Alignment Score (% of projects meeting vision) | 4.8294 | 0.4717 | Very High |
| P2: Portfolio Velocity (Time from selection to del ivery) | 4.6756 | 0.5420 | Very High |
| Ratio of molecule selected vs molecule launched (measure efficiency of the selection funnel) | 4.3177 | 0.7482 | Very High |
| Technical success rates (first fast bioequivalence) | 4.5886 | 0.7694 | Very High |
| Postmortem analysis for every molecule that fails to reach the market (assess organizational learning loop) | 4.4281 | 0.6054 | Very High |

***Legend:*** *5.00 – 4.21 (Very High); 4.20 - 3.41 (High); 3.40 - 2.61 (Moderate); 2.60 – 1.81 (Low); 1.80 – 1.00 (Very Low)*

Table 33

Perceived Level of Feasibility of Proposed Performance Metrics

| | Weighted Mean | Standard Deviation | Interpretation |
|---|---|---|---|
| Strategic Alignment Score (% of projects meeting vision) | 4.4582 | 0.6352 | Very High |
| Portfolio Velocity (Time from selection to delivery) | 3.7191 | 0.7993 | High |
| Ratio of molecule selected vs molecule launched (measure efficiency of the selection funnel) | 4.0368 | 0.8367 | High |
| Technical success rates (first fast bioequivalence) | 3.8896 | 0.5946 | High |
| Postmortem analysis for every molecule that fails to reach the market (assess organizational learning loop) | 3.9064 | 0.8097 | High |

***Legend:*** *5.00 – 4.21 (Very High); 4.20 - 3.41 (High); 3.40 - 2.61 (Moderate); 2.60 – 1.81 (Low); 1.80 – 1.00 (Very Low)*

Confirmatory Factor Analysis (CFA) was utilized to validate proposed implementation mechanisms and performance metrics regarding their perceived importance and feasibility.

The study's primary goal was to develop an Effective Molecule Selection Framework to enhance portfolio strategy and business growth for generic pharmaceutical companies.

Branded generics are more prevalent than non-branded generics, particularly in low-middle-income countries (Warren Kaplan 2013). However, not every molecule presents the same possibility to generic businesses, therefore choosing which medicine or chemical to create as a generic requires careful consideration. Competitive market positioning, molecule that will fit long term company vision, potential return on investment, capital availability, and availability of human resources ranks as very influential in selecting generic molecule.

This study applied a quantitative research design to measure the various selection processes used by various branded generic companies. The majority of pharmaceutical firms are located in the Makati and BGC areas, hence the setting of the survey will be on these areas. With the use of purposive sampling, the respomdents are seasoned experts who actively participate in the pharmaceutical industry's commercial, technical, and strategic decision-making processes. The emphasis is only on individuals who oversee or carry out the selection of new generic medicines, including business development managers, sales and marketing managers, regulatory affairs staff, supply chain and finance managers.

In addition to taking into account a high-value molecule, generic pharmaceutical businesses choose their molecules based on brand vulnerability and appropriate timing, according to earlier research like Nguyen et al. (2025). Other aspects of the process include operational capabilities, financial objectives, and strategic alignment.

Differences in company’s way of selecting molecule also calls for a different or modular framework that would fit their company model and capacity.

## CONCLUSION

Based on the data analysis, the study concludes that portfolio selection in the Philippine generic pharmaceutical industry is primarily driven by two foundational pillars: Operational Resources and Strategic Market Alignment. The selection process is heavily influenced by internal capacities—specifically the availability of human resources, capital, and technical feasibility—which collectively account for the largest portion of decision-making variance. Concurrently, external strategic factors, most notably the "patent cliff" of blockbuster drugs and regulatory compliance, act as critical triggers for molecule prioritization. While companies demonstrate high discipline in completing difficult, highly regulated steps like FDA filing and financial ROI estimation, they frequently omit essential strategic phases such as "voice of customer" surveys and post-implementation reviews. This suggests that without regulatory pressure, internal long-term strategic assessments are often sidelined in favor of speed to market.

Furthermore, the research highlights that a "one-size-fits-all" approach to portfolio management is ineffective due to significant operational differences between company types. For instance, local manufacturers place a significantly higher emphasis on technical feasibility and financial returns compared to distributor-importers and multinationals. Additionally, departmental objectives fundamentally dictate screening criteria, with marketing teams prioritizing strategic fit and profitability, while operations and sales leaders rely more on expert judgment and qualitative experience. Ultimately, while the industry recognizes the importance of strategic alignment and performance metrics, current frameworks struggle with "analysis paralysis," office politics, and a lack of high-quality data, indicating a need for more modular, data-driven, and cross-functional implementation mechanisms. With that, the study recommends the formulated framework based on the data analysis which will address the need for structured, data-driven system designed for long-term resilience rather than reactive "execution-heavy"model that can be adapted by different generic company types which is The Adaptive Portfolio Selection Framework as follows:

**The Adaptive Portfolio Selection Framework**

**Core Implementation Mechanisms (The Structural Pillars)**

To ensure effectiveness and cross-functional alignment, the framework utilizes four integrated mechanisms:

1. **Molecule Selection Matrix 40/30/30:** To mitigate the impact of "office politics" and departmental silos, the framework replaces a single-layer approval process with specialized modules. Each department is granted a specific, evidence-based mandate: **Marketing (40%)** evaluates strategic alignment, market demand. This department evaluates strategic fit and market demand, specifically ensuring that **20% of the portfolio selection is allocated to "High-Need Local Gaps"**, to address underserved therapeutic areas in the Philippines. **The Regulatory Feasibility Gate (30%):** By moving Regulatory Affairs to the ideation stage, the company avoids the "Most Difficult" challenges identified in before capital is committed. **Financial and Technical (30%),** validates Return on Investment (ROI), price to market viability, technical risk (supply chain).

The proposed **40/30/30 managerial framework** provides a structured, multi-pillar allocation model capable of balancing baseline operational stability, risk-mitigating diversification, and forward-looking strategic innovation. To successfully transition this proposal from a conceptual design to an operational standard, leadership must anchor the framework in rigorous, independent validation. By applying **Multi-Criteria Decision-Making sensitivity analyses**, **predictive scenario stress-testing**, and **cross-functional expert reviews**, organizations can eliminate subjective bias, verify empirical alignment, and ensure long-term strategic resilience.

2. **Standardized Data Repositories:** To eliminate "analysis paralysis" caused by poor data quality, organizations must invest in centralized market intelligence tools. This "single source of truth" provides consistent, reliable data, ensuring all decision-makers are working from the same baseline information.

3. **The Market Validation Gate (MVG):** This addresses the "Most Frequently Missed" step by mandating primary research with doctors. By requiring documented feedback from healthcare providers or market surveys before a molecule can reach final financial estimation, firms reduce the risk of late-stage project failure and ensure the portfolio remains patient-centric rather than purely opportunistic.

4. **The "Learning Loop" Mandate:** This mechanism formalizes **Post-Implementation Reviews** as a standard operational procedure. By analyzing why certain molecules failed to launch or underperformed, firms institutionalize organizational learning, feeding those insights back into the initial screening criteria for future cycles.

**Performance Metrics (The Feasibility Indicators)**

The framework's success is tracked through five high-loading indicators that measure efficiency, speed, and strategic success:

- **Selection Efficiency Ratio:** Measures the ratio of molecules selected versus those successfully launched. A high gap indicates a "leaky" funnel where resources are being wasted on projects that are eventually abandoned (DrugPatentWatch, 2025).

- **Portfolio Velocity:** Tracks the total time from initial molecule selection to actual market delivery, ensuring the organization remains responsive to market triggers.

- **Technical Success Rate:** Specifically monitors "first-past" bioequivalence (BE) rates to validate the accuracy of initial technical feasibility assessments.

- **Strategic Alignment Score:** A weighted metric measuring the percentage of projects that remain aligned with the company's long-term vision and competitive positioning after two years in the market.

- **Organizational Learning Rate:** Quantifies the completion and actionability of post-mortem analyses, measuring how effectively the firm closes the feedback loop.

## REFERENCES

1. U.S. Department of Health & Human Services (ASPE) 2025, Analysis of New Generic Markets: Effect of Market Entry on Generic Drug Prices.
2. Frank, R. G., McGuire, T. G., & Nason, I. (2021). The evolution of supply and demand in markets for generic drugs. *The Milbank Quarterly*, *99*(3), 828–852. https://doi.org/10.1111/1468-0009.12517
3. Kaplan, W., Wirtz, V. J., Mantel-Teeuwisse, A., Stolk, P., Duthey, B., & Laing, R. (2013). Priority medicines for Europe and the world 2013 update. World Health Organization.
4. Gupta, R., Dhruva, S. S., Fox, E. R., & Ross, J. S. (2017). The FDA Unapproved Drugs Initiative: An observational study of the consequences for drug prices and shortages in the United States. *Journal of Managed Care & Specialty Pharmacy*, *23*(10), 1066–1076. https://doi.org/10.18553/jmcp.2017.23.10.1066
5. Nguyen, E. N. T. A. (2025). *Strategies to improve project portfolio management in the pharmaceutical industry* [Doctoral dissertation, Walden University]. Walden University ScholarWorks.
6. DrugPatentWatch 2024, The Global Generic Drug Market: Trends, Opportunities, and Challenges
7. Minyoung Bae (2025) A Five-Year Analysis of Market Share and Sales Growth for Original Drugs after Patent Expiration in Korea.
8. Henry Grabowski (2021, Continuing trends in U.S. brand-name and generic drug competition
9. Simon van der Schans, et al. (2020). The impact of patent expiry on drug prices: insights from the Dutch market. BMC Health Services Research, 20(1).
10. Marcin Lewandowski., et al. (2025). Analysis of the physicians' perception of original and generic drugs in Poland. Arterial Hypertension, 29(5).
11. Tomoyuki Takura., et al. (2024). Factors Influencing Drug Prescribing for Patients With Hospitalization History in Circulatory Disease–Patient Severity, Composite Adherence, and Physician-Patient Relationship: Retrospective Cohort Study. JMIR Aging, 7(1), e59234.
12. Trond Røed Pettersen, et al. (2022). Perceptions of generic medicines and medication adherence after percutaneous coronary intervention: a prospective multicentre cohort study. BMJ Open, 12(9), e061689.
13. Md Sayeed Akhtar , Khalid Orayj (2024). Evaluation of public's knowledge, attitude and experiences towards the generic medications in building healthcare policy. PLOS One, 19(11)
14. Neetu Bairagi (2024). Overcoming Barriers to Generic Drug Adoption: Insights from Global Studies. ResearchGate. (Review/Study).
15. Shaira Mae A. Vitales. (2025). Consumer Preferences between Branded and Generic Medications: A Comparative Study
16. Wong, J. Q., et al. (2014). The Prevalence of Philippine Prescribing, Dispensing, and Use Behavior in Relation to Generic Drugs and their Risk Factors. Philippine Institute for Development Studies (PIDS).
17. Yixin (Iris) Wang (2022). Manufacturing and Regulatory Barriers to Generic Drug Competition: A Structural Model Approach. Illinois Experts.
18. Apratim P. Mahajan (2025). A Comparative Overview of Generic Drug Regulation in US, Europe, Australia and India. International Journal of Drug Regulatory Affairs, 13(1), 40-48.

19. Bhosale, P. P., Kore, P. S., Mutal, M. M., & Bhise, A. S. (2025). Survey on marketing strategies of generic versus branded drugs. *Asian Journal of Pharmaceutical Analysis, 15*(3), 197–202. https://doi.org/10.52711/2231-5675.2025.00031
20. Amatha Sreedevi. (2025). Exploring the challenges faced by generic version of complex drugs: a scoping review. PMC / NIH
21. Carolina Santos et.al (2025). The Impact of Multimarket Competition on Generic Drugs' Regulated Prices. Health Economics.
22. Shahmoradi Mostafa et. al 2021, Analyzes the impact of government and regulatory policies (both supply-side and demand-side, like INN prescribing or financial incentives) on generic uptake. This is critical as policy significantly shapes the environment for branded generics.
23. Apratim P. Mahajan (2025). A Comparative Overview of Generic Drug Regulation in US, Europe, Australia and India. International Journal of Drug Regulatory Affairs, 13(1), 40-48.