

China's Cosmetics Industry Trade Strategy in ASEAN: Macro Drivers and Market Dynamics

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Abstract

Objective: This study investigates how macroeconomic and environmental factors shape the demand for Chinese cosmetic exports to ASEAN countries, with a focus on three key markets: Indonesia, Thailand, and Malaysia. It addresses the lack of systematic analysis on the interaction between economic cycles, environmental quality, and category-specific consumption patterns in the cosmetics sector. **Methods:** An econometric strategy framework was developed using monthly data from January 2023 to May 2025. The study examines both total cosmetic imports and disaggregated demand for lip & eye cosmetics to capture consumer responsiveness at a finer granularity. key macroeconomic and environmental indicators are incorporated to test theoretical predictions from consumption, health, and trade economics. **Results:** (1) Indonesia: Demand for lip & eye cosmetics exhibits a counter-cyclical pattern consistent with the "lipstick effect", where consumers shift towards affordable luxuries during downturns. Air quality deterioration significantly amplifies demand shifts, validating the Environmental Kuznets Curve and health-conscious consumption behaviors. (2) Thailand: Cosmetic import demand is pro-cyclical and closely follows stock market trends, supporting Keynesian consumption theory and the wealth effect under the permanent income hypothesis. (3) Malaysia: The cosmetic market shows structural stability, with moderate sensitivity to exchange rate fluctuations, aligning with purchasing power parity and price elasticity theory. Lip & eye cosmetic demand is relatively inelastic, suggesting entrenched consumer preferences. Pollution-related demand shifts support the health capital theory. (4) Comparative Analysis: Lip & eye cosmetics demonstrate significantly faster adjustment speeds compared to the overall cosmetic category, supporting category management theories linking product agility with market responsiveness. **Conclusion:** This study introduces a macro-micro integrated export strategy framework that captures heterogeneity across ASEAN markets. It offers three actionable recommendations: (1) develop macroeconomically aligned, country-specific promotional calendars; (2) prioritize high-agility product categories such as lip & eye cosmetics to enhance responsiveness; (3) build adaptive, regionally flexible supply chains to buffer demand shocks. These insights contribute both to theoretical discourse and to data-driven operational strategies for China's cosmetic exports. Future research should extend this framework to precision decision models for dynamic international market entry. By bridging macroeconomic modeling with micro-level consumer behavior, the study advances interdisciplinary understanding of export dynamics in volatile markets. The findings also provide policymakers and industry stakeholders with empirical evidence to formulate targeted interventions that balance economic growth with sustainable trade practices.

Keywords

China's cosmetic, Cosmetic industry, Data-driven strategy, Environmental Kuznets Curve, Health conscious

Introduction

In recent years, China's cosmetic industry has experienced rapid internationalization, driven by competitive pricing, rising product quality, and the increasing influence of Chinese cultures. Among China's emerging export markets, the Association

of Southeast Asian Nations (ASEAN) has become a pivotal destination, with Indonesia, Thailand, and Malaysia ranking consistently among the top importers of Chinese cosmetics since 2023, presented in Figure 1.

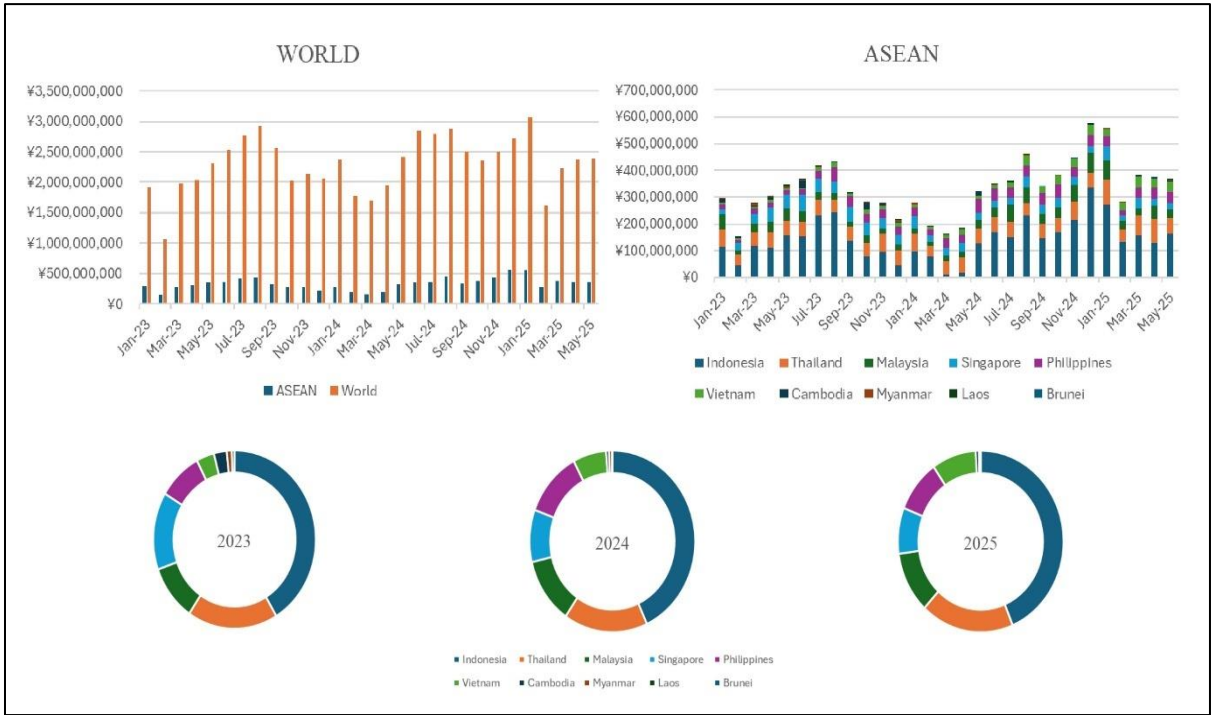


Figure 1. Chinese cosmetics export comparison (January 2023-May 2025).

These markets are characterized by dynamic consumer bases, diverse economic structures, and varying sensitivity to external macroeconomic forces. ASEAN's growing middle class and cultural openness to beauty trends have made it an attractive target for Chinese cosmetic brands seeking market expansion. However, the demand for imported cosmetics in these countries is not solely influenced by product innovation and marketing efforts; it is also subject to broader variables such as exchange rate fluctuations, stock market cycles, and air pollution. Understanding how these macroeconomic drivers shape the consumption of imported Chinese cosmetics is crucial for exporters seeking to develop adaptive and country-specific strategies. With demand elasticity, whether the purchase is regular or impulsive [1,2], the cosmetic

consumption has been closely associated with both individual preferences and macroeconomic conditions, particularly in emerging economies. In international trade, exchange rate fluctuation effects remain a central theme in economic literature. Since the development of the Mundell-Fleming model, it has been widely accepted that a depreciation of the domestic currency can improve the trade balance in the absence of price rigidities [3,4]. This prediction has formed the foundation of numerous empirical studies across various sectors. Recent works continue to examine this relationship through the lens of the J-curve hypothesis, which suggests that a currency depreciation initially worsens the trade balance before improving it over time [5-7]. Stock market fluctuations also have significant impacts on consumers' behaviours. The literature on domestic

stock market performance and consumer behaviour also provides valuable insights. Stock indices are commonly used as proxies for consumer confidence and wealth effects, in both conspicuous consumption and basic consumption [8,9]. These studies primarily explore agricultural goods, raw materials, or durable consumer products, with limited attention given to the cosmetics industry. As cosmetics are typically non-essential, highly elastic goods, their responsiveness to the changes may differ significantly from those of traditional commodities. In addition, the relationship between environmental factors and consumer demand is an emerging area of study. Most environmental consumption studies focus on health products or outdoor lifestyle changes, neglecting the potential influence of pollution on the cross-border cosmetic trade. Critically, there is a notable lack of integrated analyses that simultaneously consider international currency movements, domestic economic confidence, and environmental pressures as joint determinants of consumer demand, particularly within the cosmetics sector. Much of the existing research has treated these drivers in isolation or has concentrated on single-country case studies, leaving a significant gap in comparative regional analyses. Moreover, there remains a limited body of empirical research that examines how macroeconomic fluctuations specifically influence cosmetic demand in ASEAN markets. Current literature often focuses on consumer preferences or aggregate trade volumes, failing to capture the nuanced, country-specific responses to exchange rate dynamics, stock market performance, and environmental conditions. This gap in understanding limits the ability of Chinese cosmetic exporters to optimise pricing, market entry timing, and product positioning strategies across the diverse and rapidly evolving ASEAN economies. Furthermore, the behavioral and financial sensitivities of ASEAN consumers to external shocks remain underexplored, especially in the context of the post-pandemic consumption

recovery.

This study addresses the gap by providing an econometric, comparative analysis of how macro factors affect China's cosmetic exports to Indonesia, Thailand, and Malaysia, offering practical insights for market adaptation. Therefore, the research questions are proposed as follows: How do exchange rate fluctuations influence the import demand for Chinese cosmetics in Indonesia, Thailand, and Malaysia? What is the relationship between stock market performance and the Chinese cosmetic imports in each country? How do PM2.5 air pollution levels affect Chinese cosmetic import demand in these ASEAN markets? Thus, a macro-level, data-driven analysis of cosmetic consumption trends in ASEAN markets is conducted, although often overlooked in traditional consumer behaviour studies. The findings offer valuable, actionable insights for Chinese cosmetic exporters to tailor market entry, pricing, and promotional strategies in response to real-time macroeconomic conditions, supporting the strategic alignment of China's cosmetic industry with the evolving consumption trends in ASEAN, strengthening China's competitiveness in the global cosmetics market. They contribute to both the international trade and consumer economics literatures by deepening the understanding of short-term economic and environmental sensitivities in cross-border consumer goods trade. However, while the research offers robust short-term analysis, its applicability may be limited in the face of long-term structural changes in trade agreements or regulatory frameworks that are beyond the scope of this study.

Materials and methods

The econometrics modelling focuses on Indonesia, Thailand, and Malaysia, for their status as the top three ASEAN importers of Chinese cosmetics within the selected timeframe. Although Malaysia (1,061,661,347 RMB in the period) and Singapore (1,054,190,445 RMB in the period) are numerically

close in total value, a deeper year-by-year examination reveals that Singapore's higher total is largely attributable to strong imports in 2023 only, whereas Malaysia demonstrates greater stability and sustained consumer demand throughout the observed period. Changes in exchange rates, particularly the depreciation or appreciation of the Chinese RMB against ASEAN currencies, directly influence the price competitiveness of Chinese exports in foreign markets. This serves as an indicator of the broader international trade conditions impacting cross-border consumer goods. The stock market index is selected to represent the domestic economic situation in each ASEAN

country. Stock indices reflect national economic health, investor confidence, and consumer purchasing power, which collectively influence local consumption decisions. Finally, PM2.5 concentration is employed as a measure of the domestic environmental situation. Air pollution is increasingly recognized as a factor that affects consumer behavior, lifestyle choices, and health-related consumption priorities.

Together, these three kinds of variables as presented in Figure 2, provide a comprehensive view of the international, domestic economic, and domestic environmental contexts shaping the demand for imported Chinese cosmetics.

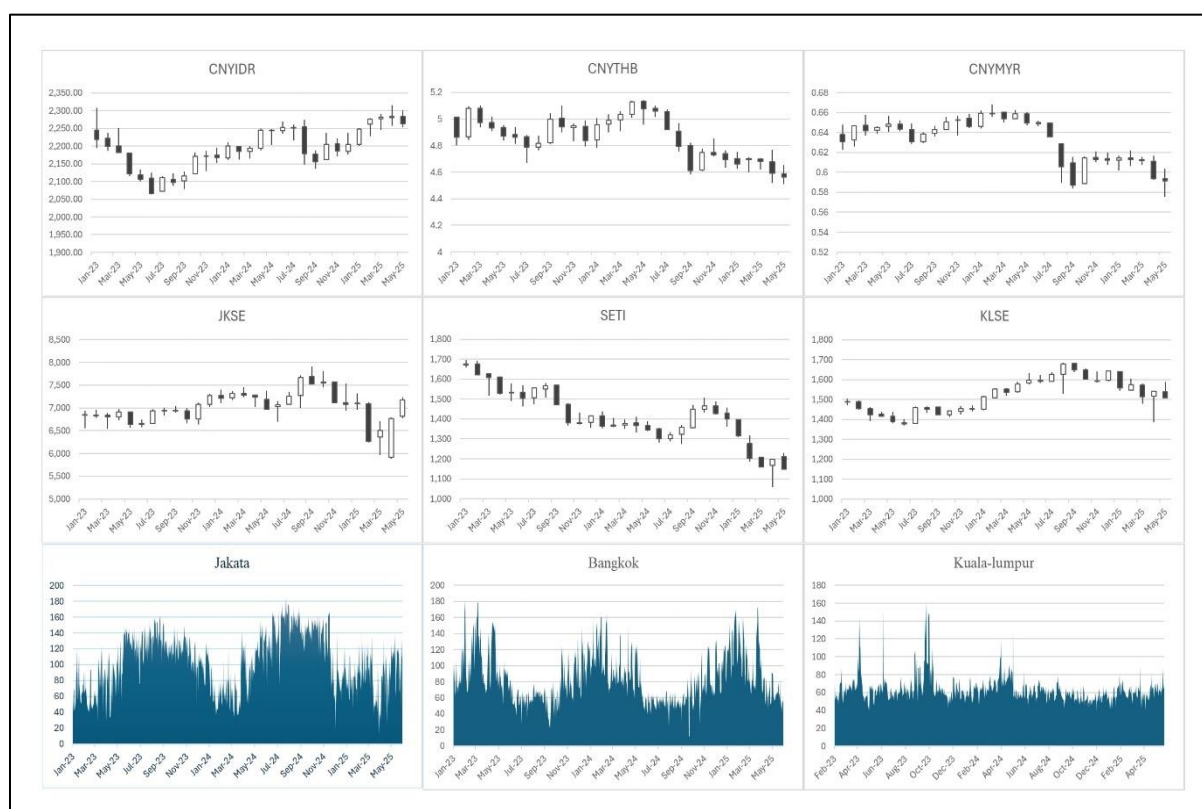


Figure 2. Main indicators' trends in Indonesia, Thailand, and Malaysia (January 2023 - May 2025).

The period from January 2023 to May 2025 is selected to ensure the data is both current and reflective of post-pandemic consumption patterns, which are highly relevant to the conference's theme of consumption upgrading and human well-being in the transitional post-growth era. Values of Chinese cosmetics exported to ASEAN countries are sourced from General Administration of Customs of the

People's Republic of China (<http://stats.customs.gov.cn/>). Closing exchange rates of RMB to IDR, THB, and MYR are sourced from Bank of China (<https://www.boc.cn/en/index.html>). Closing stock indices including Jakarta Composite Index (Indonesia), SET Index (Thailand), and KLSE Index (Malaysia) are sourced from Sina Finance

(<https://finance.sina.com.cn/>). PM2.5 concentration in Jakarta, Bangkok, and Kuala Lumpur are sourced from World's Air Pollution (<https://waqi.info/>). Missing data points for Malaysia in January 2023 are imputed using the average monthly values from February to December 2023, following standard time series interpolation practices.

This approach ensures the continuity of the time series and maintains consistency without introducing artificial trends or volatility. The overall framework is designed to match the statistical

properties of the data.

The Augmented Dickey-Fuller (ADF) unit root test is used to assess whether the series are normally distributed and stationary over time. The impulse response functions (IRF) in a Vector Autoregression Estimates (VAR) system trace the shock effect over time. The relevant data is natural log and first difference when they are introduced into IRF construction. In this study, rate fluctuation is used as a proxy as Table 1 presents definition and measurement of model variables.

Table 1. Definition and measurement of model variables.

| Variable | Definition and measurement |
|----------|---|
| YID | First difference of the natural logarithm of Indonesia's total imports of Chinese cosmetics |
| YTH | First difference of the natural logarithm of Thailand's total imports of Chinese cosmetics |
| YMY | First difference of the natural logarithm of Malaysia's total imports of Chinese cosmetics |
| YLEID | First difference of the natural logarithm of Indonesia's imports of Chinese lip & eye cosmetics |
| YLETH | First difference of the natural logarithm of Thailand's imports of Chinese lip & eye cosmetics |
| YLEMY | First difference of the natural logarithm of Malaysia's imports of Chinese lip & eye cosmetics |
| XCNYIDR | First difference of the natural logarithm of monthly RMB to IDR exchange rate |
| XCNYTHB | First difference of the natural logarithm of monthly RMB to THB exchange rate |
| XCNYMYR | First difference of the natural logarithm of monthly RMB to MYR exchange rate |
| XJKSE | First difference of the natural logarithm of Jakarta Stock Exchange Composite Index |
| XSETI | First difference of the natural logarithm of Stock Exchange of Thailand Index |
| XKLSE | First difference of the natural logarithm of Kuala Lumpur Stock Exchange Composite Index |
| XPMID | First difference of the natural logarithm of Jakarta's average PM2.5 concentration |
| XPMTH | First difference of the natural logarithm of Bangkok's average PM2.5 concentration |
| PMMY | First difference of the natural logarithm of Kuala Lumpur's average PM2.5 concentration |

Results

The variables employed for econometric modelling and subsequent analysis were first transformed by taking the natural logarithm of the original data, after which a first-order difference was applied to ensure data suitability for time-series analysis. To examine the stationarity of the transformed variables, the Augmented Dickey-Fuller (ADF) test

was conducted on each series individually [10]. The test results indicate that the variables, including cosmetic import values, exchange rates, stock indices, and PM2.5 levels, exhibit stationarity, thereby fulfilling the basic requirements for econometric modelling. A detailed summary of these results is presented in Table 2.

Table 2. Stationarity test results for model variables.

| | YID | YLEID | XPMID | XCNYIDR | XJKSE |
|-------------|---------|---------|---------|---------|---------|
| t-Statistic | -5.2404 | -5.7723 | -3.9899 | -3.0214 | -5.0762 |
| Probability | 0.0002 | 0.0001 | 0.0012 | 0.0471 | 0.0003 |
| | YTH | YLETH | XPMTH | XCNYTHB | XSETI |
| t-Statistic | -6.4486 | -7.1673 | -5.5840 | -6.0526 | -3.7445 |
| Probability | 0.0000 | 0.0000 | 0.0002 | 0.0000 | 0.0090 |
| | YMY | YLEMY | XPMMY | XCNYMYR | XKLSE |
| t-Statistic | -7.2225 | -8.0429 | -4.7761 | -4.9704 | -5.7454 |
| Probability | 0.0000 | 0.0000 | 0.0005 | 0.0004 | 0.0001 |

The VAR framework is designed to capture the dynamic interdependencies and shock transmission mechanisms among variables [11,12]. The General VAR Specification outlines the structural form as the following vector autoregressive equations as $y_t = c + A_1y_{t-1} + A_2y_{t-2} + \dots + A_p y_{t-p} + u_t$. Accordingly, six distinct models are established to separately examine the total and lip & eye cosmetic import dynamics for Indonesia, Thailand, and

Malaysia, facilitating a detailed assessment of market-specific shock responses and intervariable relationships across categories. In the following VAR frameworks of order p in total cosmetic imports analysis and lip & eye cosmetic imports y_t is a $k \times 1$ vector of endogenous variables at time t , c is a $k \times 1$ vector of intercept terms (constants), A_i are $k \times k$ coefficient matrices for lag i , u_t is a $k \times 1$ vector of error terms.

$$\begin{aligned}
 YID &= -0.0722YID(-1) - 0.3107YID(-2) + 0.3384XPMID(-1) + 1.9347XPMID(-2) \\
 &\quad + 10.9072XCNYIDR(-1) - 5.6270XCNYIDR(-2) - 1.1692XJKSE(-1) \\
 &\quad + 4.2181XJKSE(-2) - 0.0137 \\
 YTH &= -0.9483YTH(-1) - 0.3654YTH(-2) + 0.1888XPMTH(-1) - 0.0113XPMTH(-2) \\
 &\quad + 1.8260XCNYTHB(-1) + 2.1708XCNYTHB(-2) + 0.4422XSETI(-1) \\
 &\quad - 0.7639XSETI(-2) + 0.0400 \\
 YMY &= 0.1568YMY(-1) - 0.0889YMY(-2) + 0.1841XPMMY(-1) + 0.1773XPMMY(-2) \\
 &\quad + 5.6093XCNYMYR(-1) - 1.2697XCNYMYR(-2) - 0.2509XKLSE(-1) \\
 &\quad + 0.0988XKLSE(-2) + 0.0076 \\
 YLEID &= -0.2271YLEID(-1) - 0.3466YLEID(-2) + 0.1762XPMID(-1) + 1.8831XPMID(-2) \\
 &\quad + 14.3800XCNYIDR(-1) - 3.8848XCNYIDR(-2) - 3.1125XJKSE(-1) \\
 &\quad + 3.4875XJKSE(-2) - 0.0182 \\
 YLETH &= -0.8281YLETH(-1) - 0.4653YLETH(-2) + 0.1014XPMTH(-1) + 0.0553XPMTH(-2) \\
 &\quad + 1.9951XCNYTHB(-1) + 2.0084XCNYTHB(-2) + 1.4315XSETI(-1) \\
 &\quad - 0.6311XSETI(-2) + 0.0770 \\
 YLEMY &= -0.5907YLEMY(-1) - 0.2832YLEMY(-2) - 0.5489XPMMY(-1) - 0.0344XPMMY(-2) \\
 &\quad - 0.6168XCNYMYR(-1) + 0.0662XCNYMYR(-2) - 1.9304XKLSE(-1) \\
 &\quad + 0.8075XKLSE(-2) - 0.0114
 \end{aligned}$$

The impulse response functions (IRF) trace the effect of a one-time shock to one variable across all other indicators over time. The impulse response at horizon h in a VAR model is generally written as $y_t = \mu + \sum_{i=0}^{\infty} \Phi_i u_{t-i}$, where y_t is the vector of endogenous variables, μ is the mean or intercept vector, u_t is the vector of innovations (shocks), Φ_i is the matrix of impulse response coefficients at

lag i . It specifically describes the elements of Φ_i , meaning $\Phi_i = \frac{\partial y_{t+i}}{\partial u_t}$. It shows how a one-unit shock to the system at time t affects the variables at time $t+i$. The IRFs specifically reveal how macroeconomic shocks affect the import demand for Chinese cosmetics across Indonesia, Thailand, and Malaysia based on the VAR frameworks. The

analysis is conducted under two distinct conditions. One condition is the total cosmetic imports, and the other condition is lip & eye cosmetic imports. This dynamic sensitivity provides meaningful insights into consumer behaviour patterns that are not contingent on achieving high explanatory power in

a traditional regression sense. The total cosmetic imports IRFs are visualised in Figure 3, and the lip & eye cosmetic imports IRFs are visualised in Figure 4, presenting the variable's response to Cholesky One S.D. (d.f. adjusted) innovations in 95% CI using analytic asymptotic S.E.s.

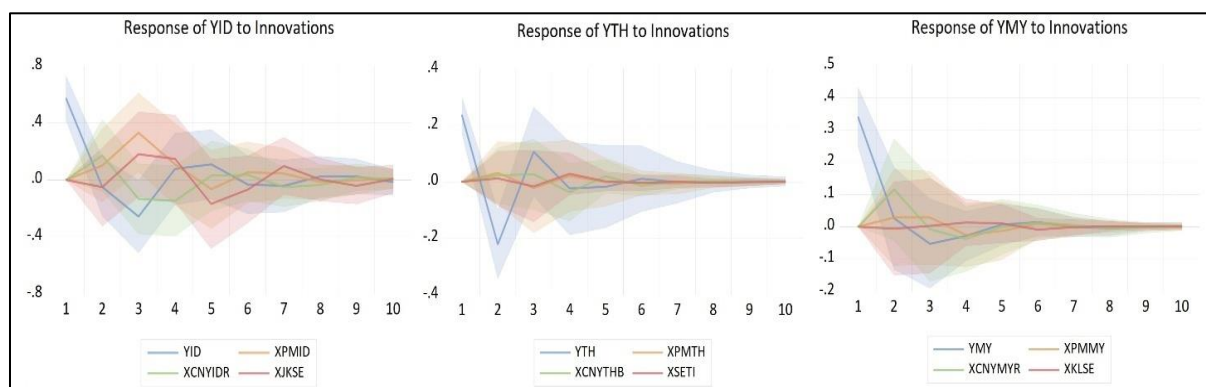


Figure 3. Impulse response for total cosmetic imports in Indonesia, Thailand, and Malaysia.

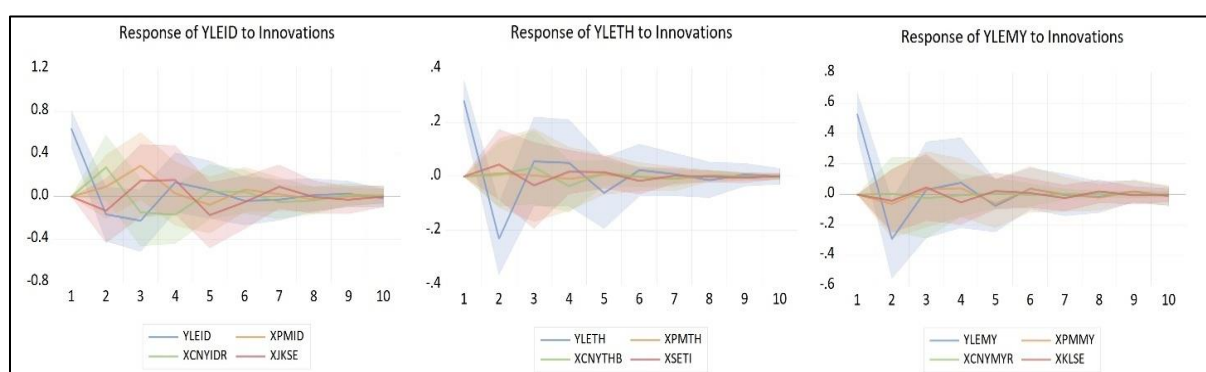


Figure 4. Impulse response for lip & eye cosmetic imports in Indonesia, Thailand, and Malaysia.

The results clearly demonstrate that: Indonesia's total cosmetic imports rise significantly when the RMB depreciates, increase during stock market downturns, and are positively influenced by higher PM2.5 levels. Its lip & eye cosmetic imports show a stronger and faster response to RMB depreciation, increase notably when the stock market falls, and are highly sensitive to worsening air quality. Thailand's total cosmetic imports increase when the RMB depreciates and rise further alongside domestic stock market growth, with minimal impact from PM2.5 levels. Its lip & eye cosmetic imports respond quickly to RMB depreciation and stock market growth, showing pro-cyclical patterns, while PM2.5 effects remain insignificant. Malaysia's total cosmetic imports moderately increase with RMB

depreciation and are positively but slightly influenced by higher PM2.5 levels, with little stock market impact. Its lip & eye cosmetic imports respond more quickly to RMB depreciation and show greater sensitivity to air pollution, while stock market effects remain weak.

Discussion

This study provides a comparative evaluation of the dynamic responses of cosmetic import demand to macroeconomic and environmental shocks across Indonesia, Thailand, and Malaysia. By analyzing total cosmetic imports and the lip & eye cosmetics sub-category, several key patterns and country-specific differences emerge. The differentiated responses to macroeconomic and environmental

shocks highlight the necessity of market-specific, data-driven approaches rather than adopting uniform export strategies. This distinction underscores that consumer demand in ASEAN is shaped by fundamentally different sensitivities, with each market demanding bespoke strategies

aligned to its prevailing economic conditions and consumer priorities. Characteristics analysis in Table 3 shows that Indonesian and Malaysian consumers are more price-sensitive and environmentally reactive, while Thai consumers favor aspirational and growth-linked purchases.

Table 3. Comparative characteristics for Chinese cosmetics exports to Indonesia, Thailand and Malaysia.

| Country | Indonesia | Thailand | Malaysia |
|------------------------|--|---|---|
| Macroeconomic impact | Highly sensitive to currency depreciation and stock market declines | Strongly aligned with stock market growth and economic upturns | Moderately affected by currency movements; overall market stability |
| Environmental response | Strong and immediate reaction to PM2.5 spikes; pollution drives consumption shifts | Limited response to air quality changes; environmental factors less influential | Moderate sensitivity: pollution affects specific product preferences |
| Category dynamics | Lip & eye cosmetics surge during downturns; rapid, counter-cyclical adjustments | Lip & eye cosmetics grow with economic expansion; pro-cyclical demand | Lip & eye cosmetics maintain steady growth; balanced across cycles |
| Consumer behavior | Clear lipstick effect: consumers shift to affordable luxuries in crises | Aspirational buying: consumers favor premium products in growth periods | Value-driven and health-conscious; price sensitivity balanced by environmental concerns |
| Market volatility | Highly volatile; quickly reacts to economic and environmental shocks | Moderate volatility: demand tied to confidence in domestic growth | Relatively stable; market less prone to sharp fluctuations |

Building on the comparative characteristics of Chinese cosmetics imports across Indonesia, Thailand, and Malaysia, it is evident that a uniform export strategy would fail to capture the distinct consumer drivers and market responses within each country. Accordingly, Chinese cosmetic exporters should adopt a three-tiered strategic framework to optimize their market positioning and responsiveness across ASEAN economies. First, market-specific adaptation is essential. Tailored pricing and promotional strategies must directly address the unique consumer behaviors in each market. In Indonesia and Malaysia, where

consumers are highly sensitive to exchange rate fluctuations and stock market downturns, timely discounts, dynamic pricing, and targeted promotions during periods of currency depreciation can significantly stimulate demand. Conversely, in Thailand, where cosmetic consumption is pro-cyclical and driven by economic expansion, premium branding, lifestyle-oriented campaigns, and aspirational product positioning are likely to yield stronger results. Thai consumers exhibit lower price sensitivity and prioritize social status, self-expression, and well-being in their purchasing decisions. Second, category prioritization is critical.

Lip & eye cosmetics consistently show faster, stronger, and more elastic responses to macroeconomic fluctuations compared to total cosmetic imports across all three countries. Chinese exporters should therefore focus strategic investments on this sub-category, enhancing market penetration through product diversification, fashionable packaging, and marketing that taps into the emotional and expressive value of these products. Prioritizing lip & eye cosmetics offers higher growth potential and allows for quicker market adjustments in response to economic shifts. Third, environmental positioning must be aligned with regional sensitivities. In Indonesia and Malaysia, consumer demand for cosmetics is positively influenced by worsening air quality and

rising PM2.5 levels. Chinese brands should leverage this by highlighting pollution protection, sustainability, and eco-friendly packaging. Incorporating air quality protection claims and obtaining relevant certifications can further strengthen consumer trust. In contrast, Thailand's lower environmental responsiveness indicates that marketing efforts should instead focus on fashion-forward themes, beauty enhancement, and premium lifestyle branding. This differentiated strategy directly informs the structure of the Strategy Matrix for Chinese Cosmetic Exports to ASEAN in Table 4, providing an actionable roadmap that integrates market dynamics, consumer behavior, category focus, and supply chain agility tailored to each country's unique market conditions.

Table 4. Strategy matrix for Chinese cosmetics exports to Indonesia, Thailand and Malaysia.

| Country | Indonesia | Thailand | Malaysia |
|-----------------------|---|--|---|
| Market dynamics | Highly volatile; strong response to economic and environmental shocks | Growth-driven; strongly linked to stock market performance and consumer confidence | Stable market; moderate sensitivity to exchange rates and environmental changes |
| Consumer behavior | Price-sensitive, rapid adjustment, clear lipstick effect in downturns | Aspirational, premium-seeking, pro-cyclical consumption | Value-driven, health-conscious, moderate adjustment speed |
| Strategic focus | Prioritize fast-moving, low-cost, high-frequency products | Focus on premium, growth-linked product lines; strengthen brand identity | Emphasize health-oriented, steady-demand products with price flexibility |
| Product positioning | Affordable luxuries, quick consumption cycles, daily use cosmetics | Mid-to-high-end cosmetics, aspirational branding, social status symbols | Health-conscious cosmetics, eco-friendly positioning, trusted daily use products |
| Supply chain strategy | Highly agile, rapid response local supply chains; flexible pricing mechanisms | Semi-agile supply chains, localized inventory planning to match growth cycles | Balanced supply chains with environmental sensitivity; maintain inventory stability |

As shown in Figure 5, the Strategy-Monitoring-Execution-Refinement (SMER) model provides a structured, data-driven framework for China's

cosmetic exporters to navigate diverse international markets with precision and adaptability by continuous strategy optimization.

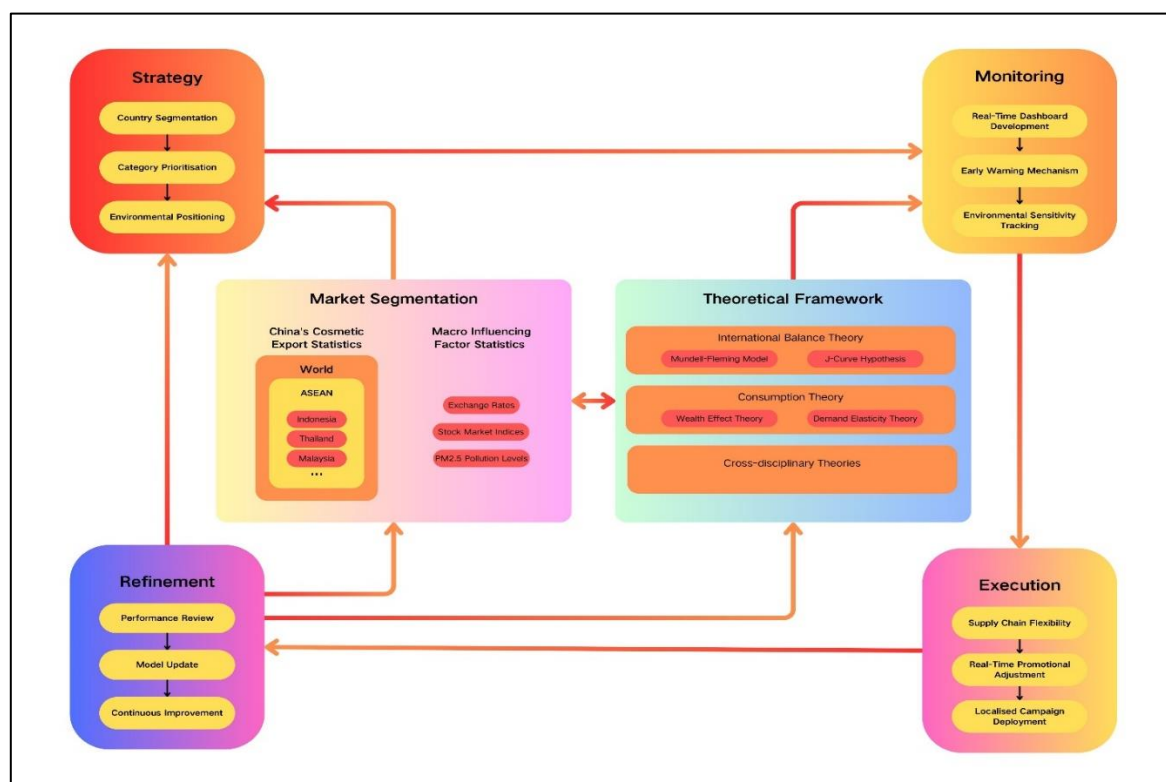


Figure 5. China-ASEAN cosmetics export strategy optimization framework.

Strategy, as the first step, involves strategic market segmentation to tailor export approaches. Countries are segmented based on price sensitivity and economic drivers: Indonesia and Malaysia are price-driven markets with high responsiveness to environmental positioning, while Thailand leans toward premium, aspirational products. Within these segments, category prioritization is critical. For example, lip & eye cosmetics should be emphasized in price-sensitive markets, whereas Thailand presents opportunities for skincare and premium cosmetic expansion. Additionally, eco-friendly product development and sustainability messaging should be leveraged as a competitive differentiator, particularly in environmentally conscious markets like Indonesia and Malaysia.

Monitoring is based on a robust data system. It ensures agility in decision-making. Real-time dashboards integrate key macro indicators to track market conditions. Early warning mechanisms are established, where predefined thresholds for currency fluctuations or stock market volatility trigger adaptive strategies. Environmental

sensitivity tracking, particularly in Indonesia and Malaysia, allows brands to anticipate shifts in consumer demand linked to air quality trends, ensuring proactive rather than reactive adjustments. Operationalizing strategy requires a flexible supply chain and dynamic marketing execution. Regional warehouses and buffer stocks enable rapid response to demand surges, while flexible supplier contracts accommodate fluctuating order volumes. Marketing campaigns are adjusted in real time, whereas pricing, promotions, and ad spending are calibrated based on macroeconomic signals. Messaging is localized that value-driven appeals dominate in Indonesia and Malaysia, while Thailand's campaigns emphasize luxury and aspirational lifestyles.

Refinement brings continuous improvement. It is driven by performance analytics and iterative learning. Sales data is analyzed against macroeconomic and environmental indicators to assess strategy effectiveness. The model's thresholds and marketing tactics are periodically recalibrated based on observed consumer behavior. Long-term refinements include adjusting product

portfolios, pricing structures, and supply chain configurations to align with evolving market dynamics, ensuring sustained competitiveness.

Conclusion

The findings of this study yield significant strategic implications for Chinese cosmetic exporters seeking to expand their presence in international markets. First, the analysis underscores the necessity of adopting country-specific market entry approaches, with particular emphasis on prioritizing product sub-categories that demonstrate heightened demand responsiveness across diverse markets. Second, the study reveals that environmental positioning can serve as a critical differentiator, substantially enhancing market competitiveness in select regions. To capitalize on these insights, Chinese exporters should implement real-time macroeconomic monitoring systems and strengthen regional supply chain agility. Such measures would enable them to respond dynamically to volatile market conditions. Furthermore, a strategic framework combining flexibility, localization, and category-focused prioritization is recommended to bolster competitive positioning, increase market share, and align with evolving consumer trends in ASEAN markets.

In sum, there are three key strategic recommendations.

- (1) Developing country-specific promotional calendars, which align marketing and promotional activities with macroeconomic cycles to optimize market entry timing.
- (2) Prioritizing fast-moving product categories, which focus on high-demand sub-categories to facilitate agile market penetration and scalability.
- (3) Enhancing regional supply chain flexibility, which establishes adaptive logistics and distribution networks to swiftly accommodate demand fluctuations.

However, this study contributes to the limited empirical literature on cosmetic imports and

consumer behavior in ASEAN from a macroeconomic perspective. It integrates exchange rates, stock market indices, and environmental factors into a unified analytical framework, offering a comprehensive, comparative assessment across multiple countries and product categories. It also advances the application of the lipstick effect theory beyond single-country contexts, demonstrating its relevance in cross-border trade and short-term market dynamics. The research provides actionable strategies for Chinese cosmetic exporters to optimize pricing, product focus, and market entry timing in ASEAN markets. Subsequent research should explore data-driven export strategies tailored to the entry and expansion of Chinese cosmetics brands in specific country markets. Further investigation into consumer behavior dynamics, regulatory influences, and competitive benchmarking would provide deeper strategic guidance.

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Conflicts of Interest

The authors declare no conflict of interest.

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