

# Evaluating Supply Models for Sustainable Menstrual Products in Chinese Secondary Schools

Zixi Zhou\*

Cogdel Cranleigh High School, Wuhan, Hubei, 430300, China

*\*Corresponding author: Zixi Zhou*

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**Abstract:** Menstrual health has been defined by the World Health Organization and related international agencies as a comprehensive public health framework encompassing access to menstrual products, adequacy of sanitation facilities, relevant knowledge education, and a supportive social environment. Globally, approximately 1.9 billion women and girls of reproductive age experience menstruation, of whom roughly 500 million lack access to a complete support system meeting menstrual health needs. In Chinese secondary schools, menstrual product supply still relies primarily on individual student purchases, with limited institutional engagement by schools. Although sustainable menstrual products offer long-term cost advantages, their high initial purchase costs create a structural contradiction with the lack of independent income sources among secondary school students, forming liquidity constraints. Meanwhile, the environmental negative externalities of disposable products are not internalized in market prices, and the charitable donation model is constrained by unstable funding sources and low institutionalization. This paper adopts a comparative institutional analysis framework, integrating liquidity constraint theory, environmental externality theory, and transaction cost economics, to conduct a multi-dimensional comparative evaluation of three supply models for sustainable menstrual products in Chinese secondary schools: market-based individual purchasing, charitable donation, and school–social enterprise collaboration. The literature base includes international organizational policy reports, peer-reviewed journals, and relevant educational statistics

The study finds that the market-based individual purchasing model fails due to its neglect of liquidity constraints facing secondary school students and heterogeneity in urban-rural household economies; the charitable donation model can alleviate demand in the short term but struggles to establish stable supply chains and long-term operational mechanisms; the school–social enterprise collaboration model can theoretically reduce transaction costs through economies of scale and achieve financial sustainability through commercial revenue, but in the Chinese context it faces unique obstacles including the absence of product standards, ambiguous legal status of social enterprises, and constraints of the public school management system. It is not a ready-made solution for immediate widespread promotion, but rather a long-term exploratory direction requiring institutional preconditions. The theoretical contribution of this paper lies in integrating liquidity constraint theory, externality theory, and transaction cost economics into the analysis of menstrual product supply, constructing an “economic–environmental–institutional” three-dimensional evaluation framework, and systematically identifying the specific institutional barriers facing the social enterprise model in the Chinese context. The practical contribution lies in providing policymakers with a cautious analysis regarding the construction of school-based menstrual health support systems, pointing out that national standard-setting and pilot projects represent more realistic current pathways.

**Keywords:** Menstrual Health; Sustainable Menstrual Products; Social Enterprise; School Supply System; Liquidity Constraints; Environmental Externalities; Institutional Economics; China

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## 1. Introduction

Menstrual health, as a core issue of public health and gender equality, has gained widespread international recognition. Hennegan et al. (2021) define menstrual health as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity, in relation to the menstrual cycle,” emphasizing that it involves not only access to menstrual products but also sanitation facilities, relevant knowledge education, and a supportive social environment. Globally, approximately 1.9 billion women and girls of reproductive age experience menstruation each month, of whom an estimated 500 million lack access to adequate menstrual products and sanitation facilities to maintain menstrual health (World Bank, 2024). The WHO and UNICEF (2024) joint report on progress in drinking water, sanitation, and hygiene in schools further notes that only about 39% of schools globally provide menstrual health education, and fewer than 31% of schools equip girls’ toilets with menstrual waste disposal facilities, indicating that school-level menstrual support systems remain severely deficient worldwide. In China, secondary school constitutes a critical period for adolescent girls to establish menstrual health management capabilities, yet current menstrual product supply in secondary schools primarily follows a market-based individual purchasing logic, with schools serving merely as consumption venues rather than supply entities. This model implies three structural contradictions: first, the high initial cost of sustainable menstrual products and the lack of independent income sources among secondary school students create liquidity constraints (Deaton, 1992),<sup>1</sup> meaning that even when long-term economic benefits are significant, insufficient short-term payment capacity prevents students from choosing sustainable options; second, the environmental negative externalities of disposable menstrual products are not internalized in market prices (Pigou, 1920), and the plastic pollution and waste management costs generated during production and disposal are not reflected in market prices, leading to consumption levels above the social optimum; third, existing charitable donation models can temporarily alleviate economic pressure for some students, but are constrained by unstable funding sources, ambiguous boundaries of school management responsibility, and lack of supply chains, making it difficult to form long-term supply systems. Based on the above institutional dilemmas, this paper aims to systematically evaluate supply models for sustainable menstrual products in Chinese secondary schools and cautiously explore the feasibility of the school–social enterprise collaboration model as a long-term institutional arrangement. This paper proposes three core research questions: What structural economic obstacles do Chinese secondary school students face in accessing sustainable menstrual products? How are the environmental costs of traditional disposable menstrual products systematically underestimated under current supply models? Can the social enterprise model become a long-term institutional arrangement for sustainable menstrual product supply in Chinese secondary schools, and what unique constraints does it face in the Chinese context? This paper adopts a comparative institutional analysis method (Aoki, 2001), integrating liquidity constraint theory, environmental externality theory, and transaction cost economics (Williamson, 1985), to construct an “economic–environmental–institutional” three-dimensional evaluation framework for systematic comparison of individual purchasing, charitable donation, and social enterprise models. The theoretical contribution of this paper lies in expanding the analysis of menstrual product supply from a pure public health issue to the realm of institutional economics, and systematically identifying institutional barriers facing the social enterprise model in the Chinese context, including the absence of product standards, ambiguous legal status, and constraints of the public school management system. The practical contribution lies in pointing out that the more realistic current pathway is not immediate widespread promotion of the social enterprise model, but rather gradual accumulation of experience through national standard-setting and small-scale pilots, providing cautious policy references for establishing a more equitable and sustainable menstrual product supply system in Chinese secondary schools.

## 2. Literature Review and Theoretical Framework

### 2.1 Menstrual Poverty Research: From Individual Constraints to Institutional Neglect

Hennegan et al. (2021) redefine menstrual health as a multidimensional state encompassing physical, psychological, and

social well-being, transcending the mere absence of disease. UN Women (2025) further conceptualizes period poverty as a composite of economic constraints, inadequate facilities, and educational deficits, rather than merely insufficient purchasing power. However, existing empirical research remains primarily anchored at the individual level. For example, Babagoli et al. (2022) conducted a randomized controlled trial in rural Kenya measuring the association between household income and absenteeism rates to assess the impact of period poverty. While such research confirms the direct effects of economic resources, it treats the supply mechanism itself as exogenously given, neglecting how governance structures shape access opportunities. Consequently, individualized analytical pathways cannot explain why, under equivalent income levels, different institutional arrangements lead to differential outcomes in menstrual product access.

## **2.2 Sustainable Menstrual Products: Supply-Side Evidence and Demand-Side Blind Spots**

From a supply-side perspective, the economic and environmental advantages of sustainable menstrual products have received ample empirical support. Babagoli et al. (2022) cost-benefit analysis demonstrates that in rural Kenya, menstrual cup projects exhibit significantly superior cost-effectiveness ratios compared to disposable sanitary pad programs; Hait and Powers (2019) comparative life-cycle assessment further indicates that reusable products can substantially reduce per-unit environmental footprints. However, van Eijk et al. (2019), in a systematic review and meta-analysis published in *The Lancet Public Health*, note that actual acceptance of menstrual cups is significantly constrained by washing facilities, privacy conditions, and cultural norms. Existing literature tends to categorize these obstacles as individual-level knowledge gaps or cultural preferences, thereby directing solutions toward health education rather than questioning which institutional arrangements can systematically lower barriers to use. This neglect of demand-side institutional barriers creates a systematic deviation between the optimal conclusions of cost-effectiveness analyses and the failed experiences of field promotion.

## **2.3 School Supply Models: Descriptive Classification Lacking Comparative Theory**

At the school level, menstrual product supply models can be divided into three ideal types: market-based individual purchasing, charitable donation, and institutionalized public supply. The WHO and UNICEF (2024) joint report indicates that institutionalized school engagement is generally deficient globally, with fewer than one-third of schools providing menstrual waste disposal facilities. High-income countries such as Scotland have legislated free school provision,<sup>2</sup> while developing countries rely more on non-institutionalized charitable donations. In the Chinese context, based on available public information, market-based individual purchasing appears to be the dominant form at the secondary school level, though this judgment lacks confirmation from national survey data; non-institutionalized donation forms appearing in some schools can temporarily alleviate demand but are constrained by funding fluctuations and ambiguous management responsibilities. Existing comparative studies largely remain at the level of model classification and case description, failing to provide a systematic theoretical framework for evaluating the relative efficiency of each model, particularly lacking efforts to integrate transaction costs, economies of scale, and institutional legitimacy into a unified analysis.

## **2.4 Social Enterprise Literature: Extrapolation Bias from Developed Country Experience**

Social enterprises, as hybrid organizational forms connecting commercial efficiency with social objectives, have precedents in public health applications. Dees (1998) defines social enterprises as organizations pursuing social missions through business means, while Battilana & Lee (2014) further reveal their inherent social-commercial tensions. Mair & Martí (2006) note that social enterprises demonstrate potential in health services in developing countries through community embeddedness and economies of scale. However, existing literature is almost entirely based on institutional environments in developed countries, where well-established product standards, clear legal status, and autonomous procurement rights for public institutions are treated as default premises. When these premises do not hold in developing countries—for instance, when product standards are absent, legal status of social enterprises is ambiguous, and public schools are strictly constrained by administrative systems—the applicable boundaries and failure conditions of the social enterprise model have not been adequately discussed. This extrapolation bias from developed country experience leads existing research to overly optimistic assessments of the social enterprise model's feasibility.

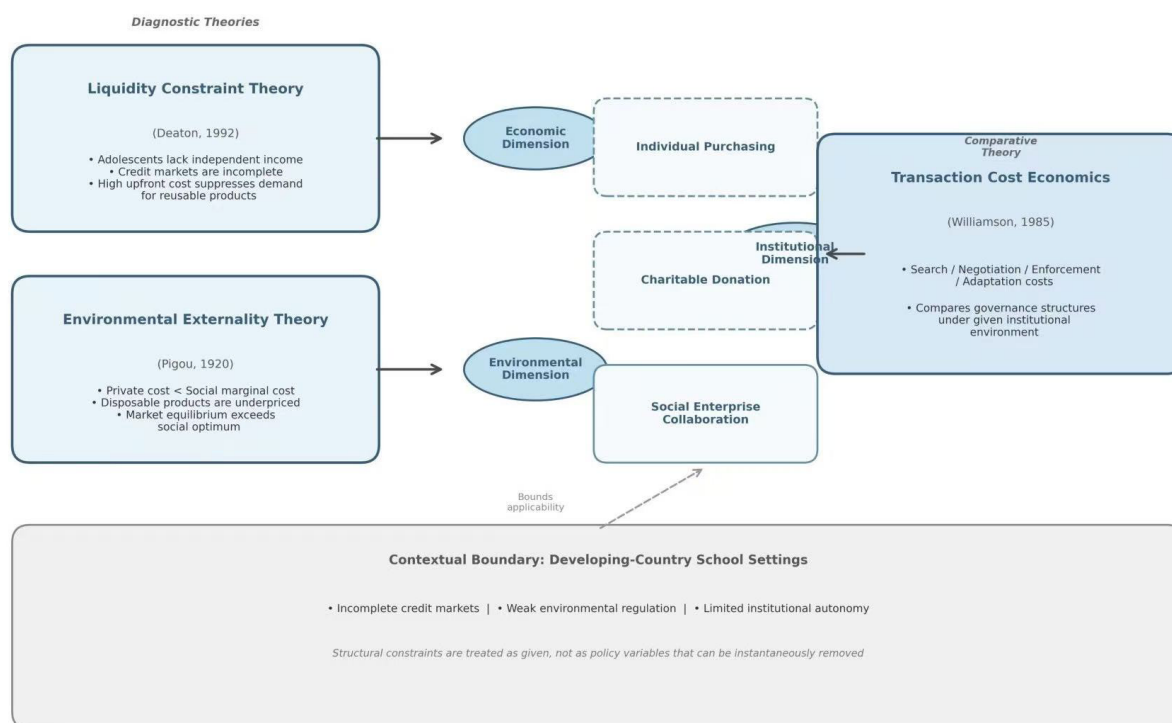
## **2.5 Integrated Theoretical Framework**

The above analysis indicates that existing literature provides important insights from three angles—the multidimensional

attributes of period poverty, the techno-economic characteristics of sustainable products, and the organizational innovation of social enterprises—but these research streams lack systematic dialogue. Specifically, period poverty research identifies demand-side constraints but fails to connect them with the institutional attributes of supply mechanisms; sustainable product research demonstrates supply-side advantages but externalizes demand-side obstacles into educational or cultural issues; social enterprise research proposes the possibility of hybrid governance but neglects the constraining effects of developing country institutional environments. These mutually isolated analytical traditions prevent existing literature from explaining why supply innovations for menstrual products in school settings in developing countries repeatedly fall into dilemmas where efficiency and institutional viability cannot be simultaneously achieved

To address these limitations, this study introduces three complementary theoretical perspectives from institutional economics. Liquidity constraint theory (Deaton, 1992) explains how adolescents, lacking independent income and facing incomplete credit markets, systematically suppress demand for high initial-cost sustainable products even when such products' lifecycle costs are significantly lower. Environmental externality theory (Pigou, 1920) provides a normative benchmark for assessing whether market prices of disposable menstrual products deviate from social marginal costs by excluding waste management and pollution control costs. Transaction cost economics (Williamson, 1985) serves as a comparative institutional tool for evaluating which governance structure—market, charity, or hybrid model—can minimize the sum of search, negotiation, performance, and adaptation costs under specific institutional environments. The three theoretical perspectives present a progressive relationship rather than simple juxtaposition: the first two diagnose dual failures of existing models, while the latter evaluates the efficiency boundaries of alternatives. Their integration enables simultaneous examination of economic affordability, environmental sustainability, and institutional feasibility without sacrificing one dimension to prioritize another. The applicability of this analytical framework is limited by its contextual boundaries. It applies to analysis of school settings in developing countries, where incomplete credit markets, weak environmental regulation, and limited autonomy of public institutions are treated as structural constraints rather than variables that can be instantly eliminated through policy. The following analysis applies this framework to systematic comparison of three ideal types of menstrual product supply in Chinese secondary schools.

Figure 1. Integrated analytical framework



Note. The three theoretical lenses operate sequentially: the first two identify dual failures of existing modes, while the third evaluates the efficiency frontier of alternatives. All three are bounded by the developing-country school context, where incomplete credit markets, weak environmental regulation, and limited institutional autonomy are treated as structural constraints rather than immediately removable policy variables.

### 3. Analysis

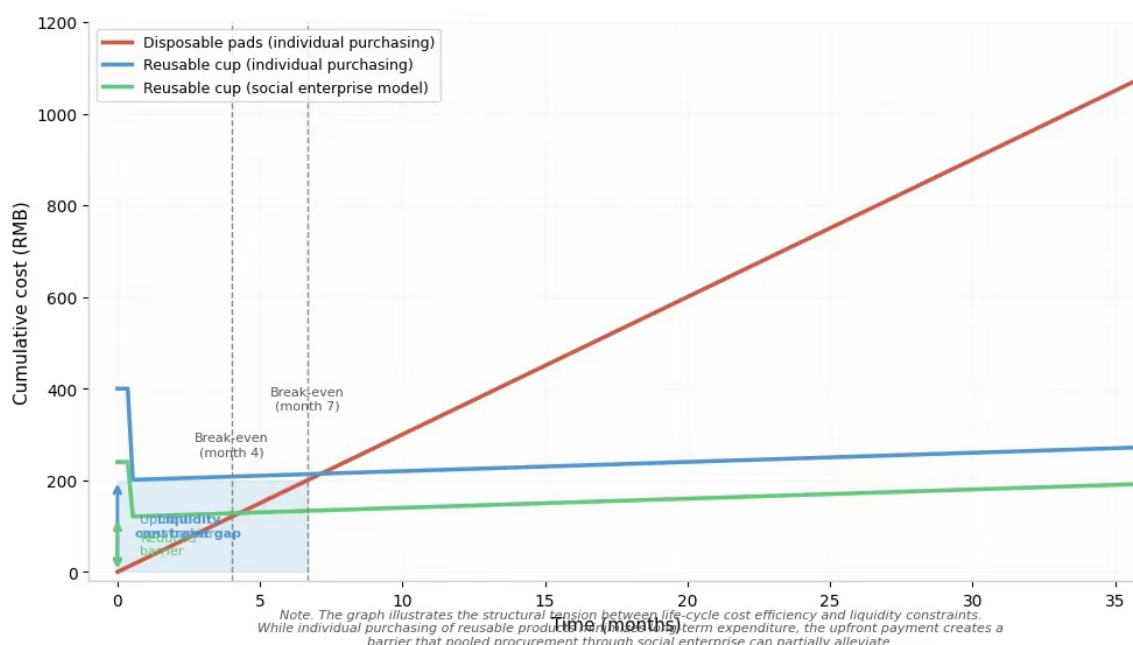
#### 3.1 Economic Dimension: Liquidity Constraints and Demand Suppression

Liquidity constraint theory predicts that when consumers face insufficient current income and incomplete credit markets, they may abandon consumption even when the long-term net present value of that consumption is positive. Secondary school students are a typical sample of this mechanism: they lack independent income sources, consumption decisions depend entirely on family transfers, and they possess no capacity to smooth intertemporal consumption through credit markets. Compared to the periodic expenditure of disposable products, sustainable menstrual products require higher initial costs paid in a lump sum, creating a structural payment threshold for students lacking financial autonomy.

Behavioral economics research further reinforces this judgment. O'Donoghue & Rabin (1999) note that adolescent populations typically exhibit higher present bias, with discount rates for long-term benefits significantly higher than those of adults. This means that even when secondary school students are fully aware of the lifecycle cost advantages of sustainable products, their decision weights still tilt toward short-term payment pressure. Therefore, under the market-based individual purchasing model, the demand curve is not determined by lifecycle costs but jointly shaped by current disposable income and psychological discount rates. This demand suppression has structural characteristics: as long as income acquisition methods and credit constraint conditions remain unchanged, liquidity constraints persist and do not disappear with changes in individual information levels.

Urban-rural disparities further amplify these effects. Data from the China Institute for Educational Finance Research, Peking University (2025) show that rural household education expenditure as a proportion of per capita disposable income reaches as high as 61.7%, significantly higher than the 35.6% for urban households. This means that after paying basic education expenses, rural families have extremely limited residual income available for non-essential durable goods. The individual purchasing model completely privatizes responsibility for menstrual health, directly translating household economic conditions into differential capacity to access sustainable products. The resulting inequality is not randomly distributed across individuals but represents systematic stratification: students from low-income families are locked into high-frequency, low-amount short-term consumption, while only students from high-income families possess the financial flexibility to choose long-term cost-optimal solutions.

Figure 2. Cumulative cost structure of three supply modes for menstrual products over time



#### 3.2 Environmental Dimension: Negative Externalities and Differential Impacts of Governance Structures

Environmental externality theory indicates that when private marginal cost falls below social marginal cost, market

equilibrium output exceeds the social optimum, generating welfare losses. The production and disposal of disposable menstrual products generate social costs including plastic pollution, solid waste treatment, and ecosystem damage, but these costs are not incorporated into market prices. Under the market-based individual purchasing model, consumers bear only the private purchase cost of products, lacking incentive to incorporate environmental damage into their decision functions. Price signals completely fail here: the low price of disposable products does not stem from efficiency advantages but from systematic externalization of environmental costs.

Different governance structures have significantly different impacts on externalities. While charitable donation models may choose sustainable products during procurement, their short-term and non-institutionalized characteristics make environmental benefits difficult to sustain and scale; after project cycles end, supply interruptions may cause users to revert to disposable products, and environmental benefits dissipate. The social enterprise model theoretically possesses organizational capacity to reduce externalities: through long-term procurement contracts, suppliers have incentive to incorporate environmental standards into product specifications; through scaled waste management, per-unit treatment costs can be reduced. However, this environmental advantage is not automatically achieved but depends on whether governance structures possess organizational capacity to incorporate environmental costs into decision horizons. This paper does not advocate complete internalization through Pigouvian taxes in school settings, as such policy tools face extremely high administrative enforcement costs in secondary school environments; the focus of analysis is on evaluating the differential externality reduction capacities of different governance structures.

### **3.3 Institutional Dimension: Transaction Cost Comparison of Three Governance Structures**

Transaction cost economics provides operational tools for comparing the efficiency of different governance structures. Williamson (1985) notes that the efficiency of economic organization depends on minimizing the sum of transaction costs, including search costs, negotiation costs, performance costs, and adaptation costs. In school menstrual product supply, the transaction cost structures of three ideal types differ systematically.

The market-based individual purchasing model disperses transaction costs to the household level. Each family must independently bear search costs for product information, price comparison, and quality verification; because secondary school students lack independent information processing and quality discrimination capabilities, actual transaction costs are borne by parents, but the separation of decision rights and execution rights increases intergenerational coordination costs. More critically, decentralized purchasing cannot generate economies of scale; each family faces retail prices and cannot reduce per-unit costs through bulk procurement. The advantage of this model lies in flexibility, but its cost is the complete exclusion of institutional support from the access process.

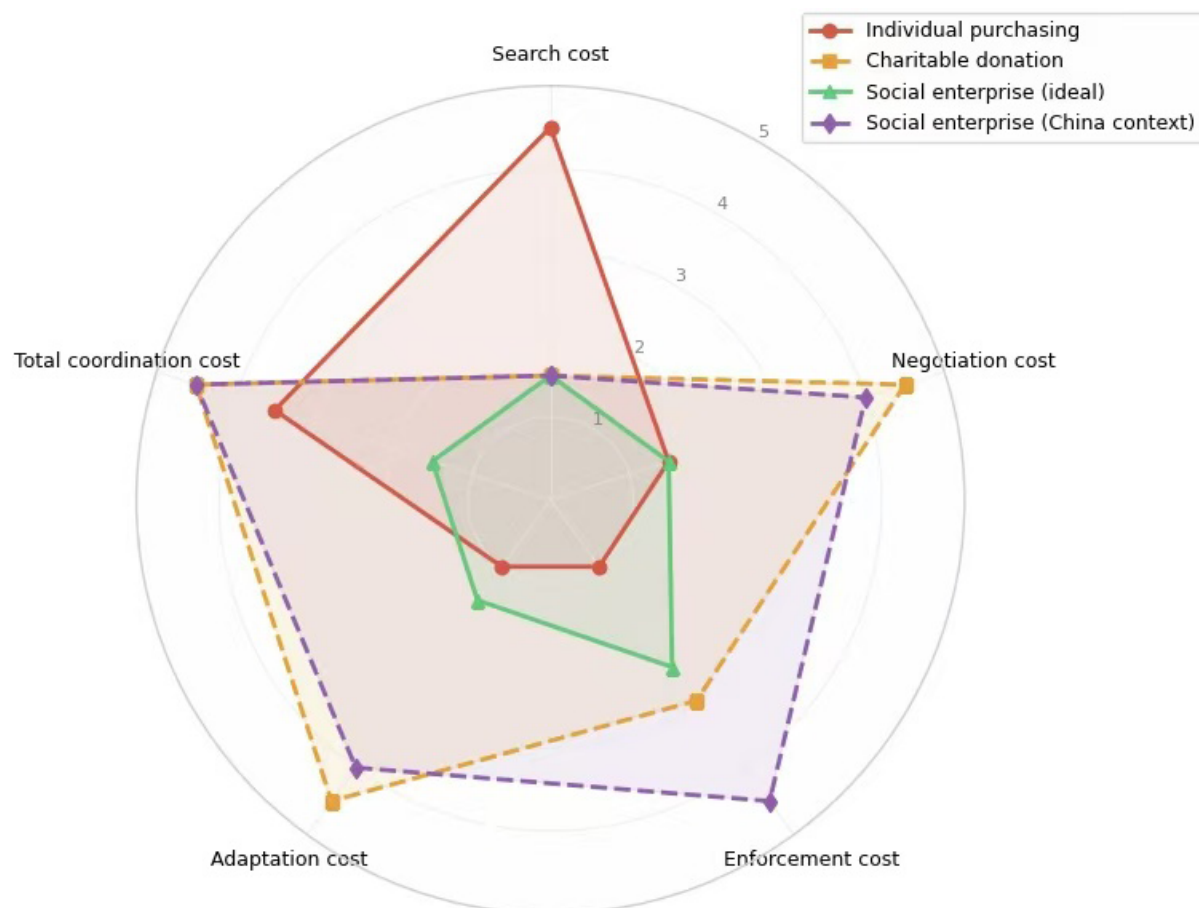
The transaction costs of the charitable donation model are significantly elevated due to funding source instability. Donors and schools must repeatedly negotiate regarding fund usage, product standards, and distribution processes, generating high negotiation costs; as public institutions, schools must conduct compliance documentation and audits of donated funds, generating supervision costs; after project cycles end, new funding sources must be sought, generating adaptation costs. Furthermore, when schools receive donated materials, they face complex requirements regarding safety liability and equitable distribution, while operating entities typically lack authorization and capacity to handle these institutional affairs. In the Chinese context, non-institutionalized donation forms can temporarily alleviate demand, but funding volatility and ambiguous management responsibilities make it difficult to form stable supply chains.

The social enterprise model theoretically possesses potential to reduce transaction costs. Through centralized procurement with schools as institutional channels, social enterprises can achieve economies of scale, reducing per-unit search and distribution costs; long-term service agreements reduce repeated negotiation costs; the stability of commercial revenue lowers adaptation costs arising from funding interruptions. However, this efficiency advantage depends on specific institutional preconditions: schools must possess autonomy to sign long-term service agreements with social enterprises; social enterprises must possess clear legal status to assume contractual responsibility; products must possess national standards to support quality acceptance. When these preconditions do not hold, the social enterprise model may generate higher institutional entry costs and coordination costs than existing alternatives.

Table 1. Comparative Institutional Analysis of Three Supply Modes for Sustainable Menstrual Products in Chinese Secondary Schools

| Dimension                                  | Market-based Individual Purchasing                                                           | Charitable Donation                                                                      | School–Social Enterprise Collaboration                                                                                                                |
|--------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Economic: Liquidity constraint             | High (individual bears all initial cost; no economies of scale)                              | Low (free provision removes user cost)                                                   | Moderate (pooled procurement lowers unit cost, but user fee may apply)                                                                                |
| Environmental: Externality internalization | None (price reflects only private cost)                                                      | Limited (short-term, non-scalable, may revert to disposable products after project ends) | Potential (environmental standards can be written into long-term procurement contracts)                                                               |
| Institutional: Transaction cost structure  | High search/verification costs at household level; high intergenerational coordination costs | High negotiation/adaptation costs due to funding instability; ambiguous accountability   | Potential scale economies in search and negotiation, but contingent on institutional preconditions (product standards, legal status, school autonomy) |
| Key limitation                             | Aggravates socioeconomic inequality across households                                        | Unsustainable supply chain; high administrative burden on schools                        | Applicability bounded by institutional environment; may exhibit higher coordination costs than alternatives when preconditions are absent             |

Figure 3. Transaction cost profiles of three governance structures



Note. Scale: 1 = Low, 5 = High. The radar chart visualizes the comparative institutional advantage of social enterprise mode under ideal conditions versus its degradation when institutional preconditions are absent (China context).

### 3.4 Chinese Context: Institutional Constraints and Applicable Boundaries of the Social Enterprise Model

Table 2. Current National Standards for Menstrual Products in China and Identified Gaps

| Product category                   | Standard number | Standard type                 | Status                   | Implication for institutional procurement                                             |
|------------------------------------|-----------------|-------------------------------|--------------------------|---------------------------------------------------------------------------------------|
| Disposable sanitary pads           | GB/T 8939-2018  | Recommended national standard | Active; revision planned | Schools can verify quality against official benchmarks                                |
| Disposable sanitary pads (hygiene) | GB 15979-2024   | Mandatory national standard   | Active                   | Provides legally enforceable hygiene requirements                                     |
| Tampons                            | GB/T 43585-2023 | Recommended national standard | Active                   | Enables standardized school procurement                                               |
| Menstrual cups                     | —               | None                          | Absent                   | Schools cannot conduct official quality acceptance; liability risk deters procurement |
| Reusable cloth pads                | —               | None                          | Absent                   | No material safety or performance benchmarks exist                                    |
| Period underwear                   | —               | None                          | Absent                   | Product safety claims cannot be officially verified                                   |

Note. Data compiled from National Standards Public Service Platform ([openstd.samr.gov.cn](http://openstd.samr.gov.cn)). The absence of dedicated standards for reusable products constitutes a fundamental institutional barrier to school-based procurement, as public institutions require traceable quality benchmarks to mitigate liability risks.<sup>3</sup>

The above comparative analysis indicates that the social enterprise model does not possess comparative advantage under arbitrary institutional environments. In the Chinese context, its implementation faces at least three structural constraints, which directly correspond to the transaction cost dimensions identified in Section 3.3. First, absence of product standards. In China's current national standards system, disposable sanitary pads are regulated by GB/T 8939-2018 and the mandatory standard GB 15979-2024, while tampons have standard GB/T 43585-2023. However, sustainable products such as menstrual cups and reusable sanitary pads currently lack dedicated national standards. This means that as public institutions, schools face a quality supervision vacuum when introducing these products, unable to conduct procurement acceptance according to national standards and difficult to prove product safety to parents. The absence of standards not only increases performance costs of quality verification but also causes schools to tend toward avoiding institutionalized procurement due to safety liability concerns. Second, ambiguous legal status of social enterprises. China currently lacks a national legal definition or certification system for social enterprises. Only Beijing Municipality issued the Beijing Social Enterprise Certification Measures (Trial) in 2018 (China Development Brief, 2018), defining social enterprises as organizations that “prioritize the pursuit of social benefits as their fundamental goal and continuously provide products or services through commercial means.”<sup>4</sup> In legal practice, social enterprises are typically registered as ordinary commercial enterprises or private non-enterprise units,<sup>5</sup> lacking legal status distinct from purely commercial enterprises. This causes schools and social enterprises to be unable to rely on a specialized legal framework to define mutual rights and obligations when collaborating, increasing negotiation and performance costs of contracts, and limiting social enterprises' capacity to qualify for government procurement. Third, constraints of the public school management system. Chinese public schools are directly governed by education administrative departments,<sup>6</sup> with school funding primarily derived from fiscal allocations and procurement activities subject to the Government Procurement Law and related regulations.<sup>3</sup> Schools introducing external commercial entities to provide menstrual products involves complex administrative approval processes, price regulation, and division of health and safety responsibilities. Under the current management system, schools lack autonomous decision-making power to sign long-term service agreements with social enterprises. This constraint does not stem from schools' subjective will but from the institutional logic of public finance and administrative accountability: the introduction of any external service involving student physical health requires clear responsibility subjects and traceable quality standards. The current

institutional environment fails to provide such legitimacy channels for social enterprises, thereby significantly increasing the institutional entry costs and adaptation costs of this model.

*Table 3. Institutional Constraints on Social Enterprise Mode in China and Corresponding Transaction Cost Implications*

| Constraint type                              | Manifestation                                                                                                                   | Transaction cost dimension affected | Implication for supply mode efficiency                                                                                                    |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Absence of product standards                 | No national standards for reusable cups or cloth pads; schools cannot verify quality against official benchmarks                | Enforcement and verification costs  | Schools avoid institutionalized procurement due to liability risk; social enterprise mode cannot achieve expected scale economies         |
| Ambiguous legal status of social enterprises | No national legal definition; registered as ordinary firms or NGOs without distinct public-service status                       | Negotiation and contracting costs   | Difficulty entering government procurement frameworks; unclear accountability boundaries raise coordination costs                         |
| Public school administrative constraints     | Schools lack autonomy to sign long-term service contracts with external providers under current fiscal and accountability rules | Adaptation and governance costs     | High institutional entry barriers; social enterprise mode may exhibit higher total coordination costs than market or charity alternatives |

Furthermore, special challenges facing rural schools cannot be ignored. For rural boarding schools, washing, disinfection, and drying conditions for sustainable products may be more limited; rural families face more severe economic constraints, potentially exhibiting lower willingness to pay for the social enterprise model. These constraints are not design flaws of the social enterprise model itself but reflect matching problems between organizational models and institutional environments. They define the applicable boundaries of the social enterprise model in the Chinese context: its transaction cost advantages can only be realized when specific institutional preconditions are met; otherwise, this model may generate higher coordination costs than existing alternatives.

## 4. Discussion and Conclusion

### 4.1 Theoretical Contributions

This study's analysis responds to three research gaps identified in Chapter 2. First, addressing the limitation that existing literature lacks institutional economic analysis of menstrual product supply, this study integrates liquidity constraint theory, environmental externality theory, and transaction cost economics to construct a progressive analytical framework. This framework expands period poverty research from individual-level income constraint analysis to governance structure-level efficiency comparison, providing a conceptual tool for understanding menstrual health governance in school settings that transcends single-disciplinary perspectives

Second, addressing the limitation that existing social enterprise research pays insufficient attention to developing country institutional environments, this study identifies three institutional constraints facing the social enterprise model in the Chinese context. Existing literature is mostly based on developed country experience, assuming as default premises well-established product standards, clear legal status, and autonomous procurement rights for public institutions. This study demonstrates that when these preconditions do not hold, the social enterprise model may generate higher institutional entry costs and coordination costs than existing alternatives. This finding corrects the implicit model superiority assumption in existing literature, indicating that the social enterprise model is not a universal solution but a conditional arrangement with strict applicable boundaries.

Third, addressing the limitation that existing research lacks an evaluation framework integrating economic, environmental, and institutional dimensions, this study reveals through comparative institutional analysis how different governance structures shape access opportunities through differentiated transaction cost structures. This perspective shift indicates that period poverty is not merely a resource distribution problem but an institutional design problem; alleviating period poverty requires not only transfer payments or free product distribution but also examination of the governance efficiency of supply

mechanisms themselves.

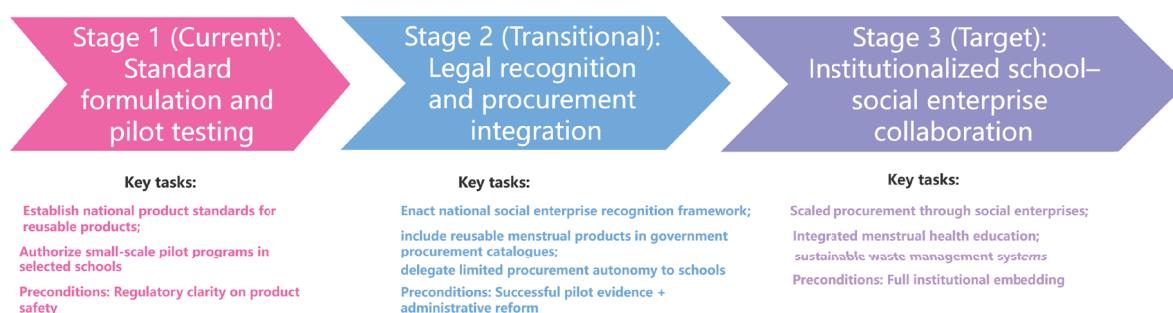
## 4.2 Practical Implications

This study's analysis offers three implications for policy formulation. First, regarding the product standard absence constraint identified in Section 3.4, analysis indicates that the absence of national standards constitutes a prerequisite obstacle to school institutionalized procurement. In the absence of standards, as public institutions schools cannot conduct quality acceptance according to uniform norms, and the resulting performance costs and liability risks cause schools to tend toward avoiding institutionalized procurement. Therefore, product standard-setting may be the first step in reducing transaction costs of the social enterprise model.

Second, regarding the ambiguous legal status constraint of social enterprises, analysis indicates that current legal framework ambiguity increases institutional costs of contract negotiation and execution. Schools face problems including unclear contractual subject qualification, absence of tax incentive policies, and restricted government procurement access when collaborating with social enterprises. Clarifying the legal status of social enterprises in the public service sector may help reduce these transaction costs and expand the applicable boundaries of this model.

Third, regarding public school management system constraints, analysis indicates that under current administrative accountability logic, schools lack decision-making space to autonomously introduce external service entities. This means promotion of the social enterprise model should not begin with comprehensive rollout but may require accumulation of institutional experience through small-scale pilots. Conducting pilots in regions with suitable conditions, establishing strict transaction cost monitoring and evaluation mechanisms, may provide empirical evidence for judging the applicability of this model on a broader scale.

Figure 5. Staged Institutional Development Path for School-based Sustainable Menstrual Product Supply in China



## 4.3 Limitations and Future Research

This study has three limitations. First, as a conceptual study, this paper relies primarily on theoretical derivation and literature comparison, without testing the operational effects of each model in actual school environments through empirical data. Judgments regarding transaction cost structures in the text are based on theoretical deduction rather than direct measurement of actual transaction processes. Future research can compare causal effects of different supply models on student menstrual health outcomes, absenteeism rates, and consumption behavior through randomized controlled trials or quasi-experimental designs.

Second, the particularity of the Chinese context limits the external validity of research conclusions. This paper's analysis is based on specific institutional conditions including strict administrative governance of Chinese public schools, significant urban-rural income gaps, and ambiguous legal status of social enterprises. These conditions may not fully hold in other developing countries and may evolve with changes in Chinese domestic policy. Future research can conduct cross-national comparative analysis to test differences in applicable boundaries of the social enterprise model under different institutional environments.

Third, this paper focuses primarily on static efficiency comparison of supply models, with insufficient attention to dynamic processes of institutional change. China's product quality standards, social enterprise policies, and education management systems are undergoing rapid change. Future research can employ historical institutionalist perspectives to analyze

evolutionary paths and critical institutional turning points of school menstrual product supply models.

#### 4.4 Conclusion

This study systematically evaluates supply models for sustainable menstrual products in Chinese secondary schools by integrating liquidity constraint theory, environmental externality theory, and transaction cost economics. Analysis indicates that the market-based individual purchasing model suppresses demand for sustainable products due to its neglect of liquidity constraints; the charitable donation model struggles to sustain due to high transaction costs; the social enterprise model theoretically possesses comparative advantages but faces institutional obstacles in the Chinese context including absence of product standards, ambiguous legal status, and constraints of the public school management system. Therefore, the social enterprise model is not a ready-made solution for immediate widespread promotion but a conditional arrangement requiring institutional preconditions. Under current institutional environments, gradually accumulating experience through national standard-setting and pilot projects may represent a more realistic pathway. Menstrual health is not merely a physiological hygiene issue but an intersection of educational equity and institutional justice; transitioning menstrual product supply from purely private consumption partially toward public support systems through cautious institutional innovation is a critical step toward achieving sustainable development goals.

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#### Conflict of Interests

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## Footnotes

<sup>1</sup> Liquidity constraints refer to situations where consumers cannot borrow against future income to finance current consumption, even when the investment would yield positive returns over time (Deaton, 1992).

<sup>2</sup> Scotland became the first country to legislate free universal access to menstrual products in public buildings, including schools, through the Period Products (Free Provision) (Scotland) Act 2021.

<sup>3</sup> GB/T denotes a recommended national standard (guobiao tuijian), whereas GB denotes a mandatory national standard (guobiao). Both are issued by the Standardization Administration of the People’s Republic of China (SAMR). The Government Procurement Law of the People’s Republic of China (promulgated in 2002, revised 2014) requires all procurement using fiscal funds by public entities to follow centralized bidding and approval procedures.

<sup>4</sup> As of this writing, no national-level legal definition or certification scheme for social enterprises exists in China; Beijing’s 2018 pilot measures remain the only sub-national regulatory attempt.

<sup>5</sup> In China, “private non-enterprise units” (minban fei qiye danwei) constitute a distinct legal category under Chinese civil law for non-profit organizations that provide non-commercial social services.

<sup>6</sup> Chinese public schools operate as public institutions (shiye danwei) under the direct administrative supervision of local education bureaus, with limited autonomy in financial and contractual decisions.