

GREEN PROCUREMENT ADOPTION IN MALAYSIA VERSUS EMERGING ECONOMIES: A POST-COVID SYSTEMATIC LITERATURE REVIEW

*Rafiuddin Mohd Yunus, Norhana Mohd Aripin, Muhammad Ashraf Fauzi
Malaysia Pahang Al-Sultan Abdullah*

*Abdurrahman Faris Indriya Himawan
School of Economic & Business*

Abstract:

Green procurement has become increasingly important in the post-COVID-19 era as governments and organisations strive to strengthen supply chain resilience while advancing sustainability goals. The purpose of the review was to examine post-COVID procurement trends, describe their drivers and obstacles, analyse their theoretical applicability, and identify sector-specific insights. This study conducted a PRISMA 2020 systematic literature review to examine the post-pandemic adoption of green procurement in Malaysia, benchmarked against India, Indonesia, Brazil, and South Africa, covering the period from 2019 to August 2025. Following rigorous inclusion, screening, and quality assessment procedures, 20 peer-reviewed empirical studies were retained for analysis. The findings show that 55% of the reviewed studies (11/20) directly addressed post-COVID procurement issues, and only 40% (8/20) used theoretical concepts such as Institutional Theory, the Resource-Based View, the Technology Acceptance Model, or ISO 20400. The literature was dominated by sectoral public procurement, education, and manufacturing, and healthcare and logistics have not been well explored. Malaysia is performing moderately, driven by the private sector's dominance in digitalisation and the use of ISO-based practices; however, it is worse off than India and Brazil in applying these in the public sector, in policy consistency, and in institutional cohesion. The thematic analysis identifies six reorganised themes: institutional preparedness and governance capacity, policy and regulatory drivers, technological and digital facilitation, sectoral execution practices, adoption barriers, and post-COVID adaptive competence. This review addresses the main gaps in providing a comparative, post-COVID, theory-informed synthesis of green procurement in the Global South. It also identifies gaps in theoretical synthesis, sectoral balance, and resilience-focused analysis. The research offers practical implications for policy-makers and further develops the academic literature by making the case for more robust behavioural, institutional, and systems-based frameworks in future procurement studies.

Key words: green procurement, sustainable procurement, emerging economies, post-covid recovery, systematic literature review

INTRODUCTION

The COVID-19 outbreak has challenged global procurement systems like never before due to vulnerabilities in supply chains, but has also led to the reevaluation of organisational priorities around resilience and sustainable procurement systems, rather than cost-effectiveness and just-in-time supply chains. The pandemic exposed the inadequacy of conventional procurement strategies, prompting organisations and governments to review their acquisition methods and to give greater attention to sustainabil-

ity and circularity [3]. The developments have made green procurement more applicable, especially in emerging economies, as their supply chains are more susceptible to global shocks and environmental degradation is more intense [4].

Countries like Malaysia have implemented green procurement in their national development strategies because they have recognised its value. It was proposed to create a demand for environmentally friendly products and services by the introduction of the Government Green Procurement (GGP) policy, which was introduced in the Eleventh Malaysia Plan [5]. However, such policies are not uniformly implemented or adopted across the public and private sectors. The shift of the country into the post-pandemic recovery stage implies the necessity of an updated urgency to align the procurement systems with green and sustainable operations that will become favorable to long-term resilience [6].

Despite growing attention to green procurement (GP) globally, a significant knowledge gap remains regarding how Malaysia has adapted its approaches in the post-COVID-19 period. Most research on GP in Malaysia is either outdated or lacks a comparative perspective with other emerging economies. For example [7], investigated aspects affecting GP in Indonesian institutions of higher learning prior to the massive disruptions caused by the COVID-19 pandemic, while [1] examined sustainability in South African transport purchases outside the context of COVID-19. In Malaysia, researchers such as [8] and [9] have discussed e-procurement and feasible supply chain strategies during the pandemic; however, they did not provide cross-country comparisons.

Green procurement, also known as sustainable procurement, is the practice of procuring goods, services, and works with a reduced environmental impact throughout their life cycle compared to goods or services of the same purpose [1]. The method encompasses not only the environmental aspects of the procurement process but also aligns with broader economic and social sustainability agendas [2]. Green procurement is one of the major pillars of sustainability development strategies and plays an important role in the realisation of the United Nations SDGs, particularly SDG 12 (Responsible consumption and production), SDG 13 (Climate action), and SDG 9 (Industry, innovation and infrastructure) [3].

Moreover, the literature reviews in this sphere predominantly adopt a narrative rather than a systematic approach, and a few adopt systematic approaches, such as PRISMA 2020. Consequently, the existing literature provides incomplete information, often limited to individual countries, such as [10] on Indian pharmaceuticals, [2] on South African public procurement, or single-sector studies, including [11] on the Malaysian construction sector. Without comparative, post-COVID, and theory-based synthesis, policy-makers and practitioners are constrained in their ability to benchmark Malaysia's development against peers and to develop policies grounded in evidence.

In the meantime, third-world economies, such as India and Brazil, have made more concerted efforts. India has enshrined Sustainable Public Procurement (SPP) in the recovery strategies, which create quantifiable socio-economic advantages [11], and Brazil has redesigned school food procurement to be sustainable and healthy during the pandemic [12]. Unless adopted systematically, the post-pandemic adoption of GP in Malaysia would put the country at a disadvantage in adhering to procurement practices aligned with its sustainability commitments, including the UN SDGs, compared to other countries.

The purpose of this paper is to synthesise the post-COVID-19 evidence on the adoption of green procurement in Malaysia systematically and compare its development with that of the chosen emerging economies, i.e., India, Brazil, Indonesia, and South Africa. Using a systematic literature review, the study aims to address the drawbacks of atomistic, pre-pandemic, and country-specific research and to identify common and context-specific green procurement drivers, barriers, and policy processes [25]. Regarding the outcomes, the review is likely to show that Malaysia is showing moderate and inconsistent improvement, with better performance in adoption in ISO-certified and digitally enabled organisations, but poorer enforcement and integration at the national policy level compared to other countries, including India and Brazil [8, 9, 11, 12]. It is expected that the results will identify gaps in regulatory implementation, supplier preparedness, and theoretical integration, as well as effective, transferable best practices

and industry-specific strategies that can reinforce the post-pandemic Malaysian green procurement system and long-term sustainability promises [3, 6, 15].

This paper will focus on Malaysia, India, Brazil, and South Africa, as they represent similar emerging economies in the Global South and are undergoing similar sustainability and institutional agendas. The adaptations to procurement made in each country are different. India, with the help of organised Sustainable Public Procurement reforms [4], Brazil, with sustainable school meals policies [12], Indonesia, with readiness models in construction and higher education, based on the sector [5, 13], and South Africa, with pharmaceutical supply resilience and public procurement reforms [2, 14], in its turn, demonstrates the moderate gains, mainly among the ISO-approved commercial enterprises [8, 9] but lower enforcement by the government.

Comparing these cases provides a powerful point of reference for Malaysia, enabling the identification of best practices, sectoral strategies, and transferable lessons to enhance the adoption of green procurement. The specific objectives are to assess post-COVID green procurement adoption in Malaysia across both the public and private sectors.

1. To benchmark Malaysia's progress and sectoral practices against other emerging economies.
2. To examine common and country-specific drivers and barriers influencing green procurement adoption.
3. To identify theoretical and policy gaps and propose recommendations for future strategies.

The study is timely and influential, as the post-pandemic era marks unprecedented changes in buying behaviour and sustainability practices. The comparative analysis complements the understanding of Malaysia's position among other developing economies regarding the uptake of green procurement and provides practical suggestions for implementing the changes later [15]. The proposed study has other practical implications; by identifying sector-level drivers and obstacles, it can offer policymakers evidence-based information to develop enforceable regulations, support procurement specialists in implementing digital technologies and supplier preparedness models, and enable industries to align practices related to ISO certification and e-procurement with their sustainability goals.

In addition to these, the theoretical integration discussed helps advance academic research by encouraging the use of an effective framework to explain the advantages of procurement behaviour and resilience in the Malaysian and emerging economy contexts. The results are applicable to policymakers, procurement professionals, sustainability counselors, and researchers seeking to create more environmentally friendly procurement systems and to convert sustainability pledges into concrete government and corporate actions.

Comparing Malaysia with other emerging economies will facilitate an understanding of the regional trends, the effectiveness of policies, and best practices in Malaysia. A comparison of developments in green procurement across countries such as India, Brazil, Indonesia, and South Africa following the COVID-19 pandemic provides a benchmark for assessing Malaysia's progress. Such forms of comparative analysis play a central role in establishing the influence of contextual conditions, including state or institutional readiness, policy execution, collective cultural beliefs, and donor advocacy, on determining application rates in the Global South.

METHODOLOGY

Research Design

The research design is a systematic literature review (SLR) based on the PRISMA 2020 framework to ensure methodological rigour, transparency, and reproducibility. The design is a qualitative, integrative type and would be based on the systematic identification, examination, and synthesis of available empirical data on green procurement adoption in Malaysia and a few emerging economies during the post-COVID-19 era. The review process is conducted sequentially, including identification of databases, application of predetermined inclusion and exclusion criteria, multi-phased screening, quality evaluation, and thematic synthesis.

Instead of statistical meta-analysis, the thematic analysis method is used to categorize the findings into critical management-driven dimensions, such as institutional preparedness, policy motivators, technological facilitators, and post-pandemic adaptive capacity. This structure is especially appropriate for cross-country comparisons, contextual differences, and changing procurement practices due to COVID-19 disruptions. The research design enables a theory-based synthesis of knowledge to comprehensively shape policy, practice, and future research directions.

PRISMA Framework

The systematic review proposed in the given study was performed on the basis of the Preferred Reporting Items Systematic Reviews and Meta-Analyses (PRISMA) 2020, so that the literature review should be structured and reproducible. The PRISMA framework makes the review process methodologically rigorous and transparent, covering the initial database search through the ultimate selection of articles and their reporting. There is particular relevance to synthesising the existing empirical research on the adoption of green procurement in Malaysia and other emerging economies in the post-COVID-19 era (2019 to 2024) to accomplish the study's objective. The PRISMA methodology was used to validate the inclusion and exclusion criteria, the search strategy, screening of relevant studies, data extraction, and quality assessment of the included articles [16].

Inclusion and Exclusion Criteria

The relevance and quality of the reviewed studies were ensured by the predefined inclusion and exclusion criteria. The inclusion criteria were peer-reviewed journal articles published in 2019 to 2025 and, in particular, empirical research focusing on how green or sustainable procurement was adopted in Malaysia and in selected emerging economies. The articles were required to be written in English and should be consistent with the subject matter of green procurement, particularly in a post-COVID reality. The inclusion and exclusion criteria have been summarised as stated in Table 1 below.

Table 1
Inclusion and Exclusion Criteria

Criteria	Description
Timeframe	Articles published between January 2019 and August 2025
Language	English only
Publication Type	Peer-reviewed journal articles
Document Type	Empirical studies (qualitative, quantitative, mixed-methods)
Geographical Focus	Malaysia and selected emerging economies (e.g., India, Indonesia, Brazil, South Africa)
Thematic Focus	Studies on green procurement, sustainable procurement, or related practices
Sectoral Scope	Public and private sectors, including education, construction, healthcare, etc.

Studies were excluded if they were not peer-reviewed, lacked an empirical basis, focused solely on developed countries, or did not discuss procurement within a sustainability framework.

Table 1 is a summary of the pre-determined inclusion and exclusion criteria applied during the systematic literature review and provides the period of time, language, type of publication, the methodological approach, geographical area, topicality, and covered subject/sector used in making sure that the selected studies are relevant, of quality, and consistent.

Search Strategy

Six major scholarly databases were searched using the search criteria: Scopus, Web of Science, ScienceDirect, Emerald Insight, SpringerLink, and Wiley Online Library. The search strategy included keywords related to the Boolean operator to achieve broad coverage and some narrowness. The main search queries were: ("sustainable procurement") or ("green procurement") and ("COVID-19") or ("pandemic") and ("Malaysia") or ("emerging economies"). These keywords were chosen to represent

discussions of the sustainability of procurement practices, the impact of the pandemic, and comparative views in the context of developing environments. This systematic approach made it easier to identify peer-reviewed, high-quality articles on post-COVID green procurement adoption and policy changes. Additional filters were added to limit the results by publication years (2019 to 2025) and article type. The period chosen was 2019 to 2025 to identify studies that describe the post-COVID-19 procurement environment, as the pandemic significantly altered global and regional supply chain systems. The literature released during this timeframe will be more applicable to recovery strategies post-pandemic, sustainability, and digital transformation trends that impact green procurement practices. Older research, especially that from before 2019, primarily reflects pre-pandemic procurement models that are no longer applicable to current sustainability operations agendas. Thus, any expansion of the review within this six-year period is provided, as it is the only empirical evidence contextualised within the post-COVID resilience and adaptation.

Likewise, it was decided to incorporate peer-reviewed journal articles only to ensure the academic rigor, credibility, and quality of the methodology. Publications in journals are formally peer-reviewed, whereby the results are not only theoretically sound but also empirically tested. The types of other publications, including conference papers, reports, or grey literature, were omitted since they may not provide substantial, detailed methodological information or quality control. By applying journal articles, the systematic review is therefore strengthened in terms of validity and in alignment with the PRISMA 2020 transparency and reliability standards for evidence synthesis. Grey literature, editorials, conference proceedings, and non-peer-reviewed sources were omitted to ensure academic rigor.

Screening Process

Following the initial search, all retrieved records were exported to a reference management software to handle the data systematically. Prior to screening, duplicate records were determined and eliminated. The remaining research was then assessed using the systematic three-stage screening as per the systematic review practices. First, title screening was done to remove articles that were evidently not related to procurement, sustainability, and environmental management. Second, the abstracts were checked to remove studies that were not concerned with the adoption of green or sustainable procurement or that were not related to Malaysia or an emerging economy setting. Lastly, a full-text eligibility assessment was conducted, in which the shortlisted articles were thoroughly reviewed to ensure they met the preset inclusion criteria, research scope, and study objectives. This intensive screening procedure improved the validity, relevance, and transparency of the selected literature.

The screening and selection procedure is presented in a PRISMA flow diagram (Figure 1), which illustrates the total number of records identified, the number screened, those assessed, and those included in the final synthesis.

Figure 1 shows the PRISMA 2020-inspired screening and selection steps, including identification of records available in databases, elimination of duplicates, screening and eligibility, and ultimate inclusion of empirical studies on the adoption of green procurement in emerging economies.

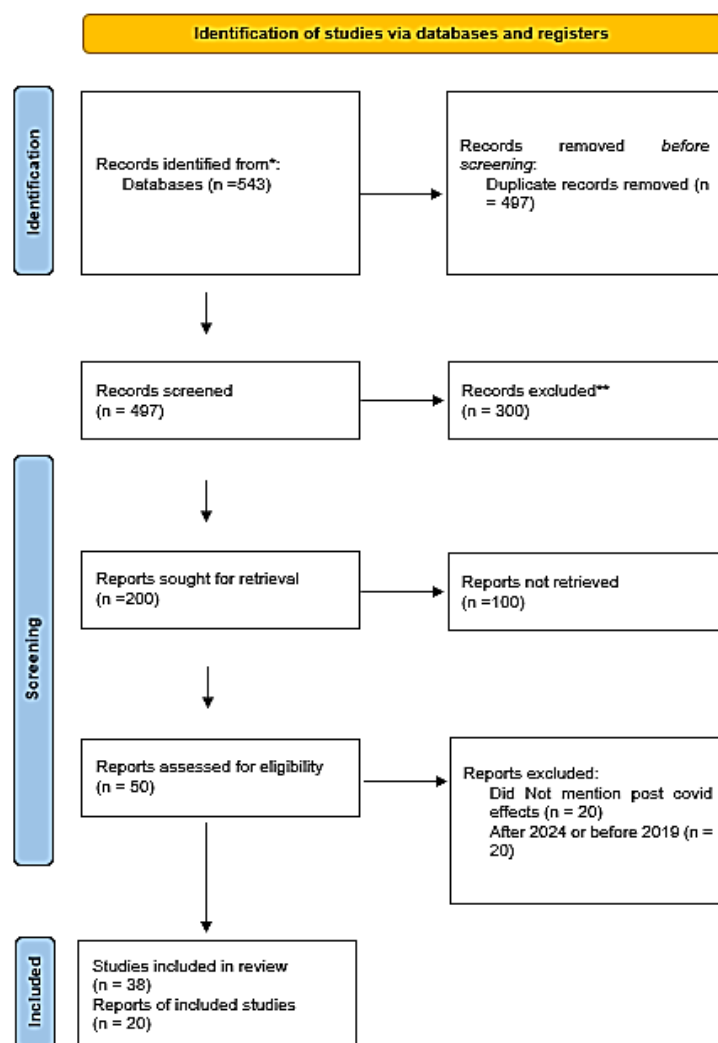


Fig. 1 Representation of PRISMA Flow

Alt text: PRISMA flow diagram showing the study selection process from database identification through duplicate removal, screening, eligibility assessment, and final inclusion of 20 empirical studies on green procurement in emerging economies.

Data Extraction

A structured data-extraction template was developed to ensure consistency across the reviewed studies. The following key data fields were extracted from each article, as summarised in Table 2.

Table 2
Data Extraction

Field	Description
Author(s)	Full citation of the article
Year of Publication	Year in which the article was published
Country/Region	Geographic focus of the study
Sector	Industry or institutional context (e.g., education, construction, public health)
Theoretical Framework	Any theory or model applied (e.g., Institutional Theory, TPB, RBV)
Research Method	Qualitative, quantitative, mixed-methods, or systematic review
Key Findings	Summary of the article's main conclusions
Drivers and Barriers	Identified factors influencing green procurement adoption
Post-COVID Relevance	Whether and how the study addressed COVID-19 impacts or resilience strategies

Table 2 summarises the most relevant variables identified across the chosen articles, including bibliography, geographic and sectoral coverage, theoretical premises, research methodology, main

findings, factors and obstacles identified, and the extent to which the article covered the effects of COVID-19 and the resilience of procurement. Data was entered into Excel for synthesis and further analysis. Sectoral, thematic, and geographical trends were compared across countries and sectors to develop a deeper understanding of adoption patterns and challenges.

Quality Assessment

To ensure the academic rigour, credibility, and relevance of the studies included in this review, a structured quality assessment was conducted. Each retrieved article was assessed using a quality assessment checklist to ensure consistency and transparency. In particular, the studies have been evaluated based on their direct relevance to the research question, with those that targeted green or sustainable procurement in the aftermath of the COVID-19 pandemic. The presence of a clear theoretical framework or an analytical model was considered to establish conceptual strength. Methodological transparency was assessed by evaluating the clarity of the research design, sampling methods, data collection methods, and data analysis methods. Articles that were peer-reviewed and published were only retained to ensure scholarly validity. Last but not least, focus was placed on post-COVID relevance, requiring studies to demonstrate the effects of the COVID-19 pandemic on procurement behaviours, strategies, or policy responses. The strength of this quality assessment process increased the reliability and interpretability of the review's findings. The studies were retained in the final analysis only after meeting a minimum quality threshold (scored positively on at least 4 of the 5 criteria). This confirmed that the synthesised findings were based on sound, reliable, and contextual literature.

RESULTS AND ANALYSIS

Descriptive Analysis of Included Studies

Temporal and Geographic Distribution

This review encompasses 20 empirical studies published between January 2019 and August 2025, distributed across five emerging economies: Malaysia, India, Indonesia, Brazil, and South Africa, as outlined in Table 2. The majority of studies were published between 2022 and August 2025, indicating the current development of green procurement as an essential tool in post-COVID-19 recovery programs.

Sectoral and Methodological Coverage

The study covers a broad spectrum of issues, with manufacturing and education/public procurement ranking first with 4 and 5 articles, respectively. There are government, healthcare, infrastructure, logistics, and transportation sectors that provide a complete picture of green procurement trends in both the private and government sectors. With respect to methodology, 7 studies adopted a qualitative methodology (interviews, focus groups, and document analysis), and 6 studies adopted a quantitative design (structured surveys, PLS-SEM, and AMOS-based analysis). 2 papers employed a mixed-methods approach, combining survey responses with panel data or expert interviews. This diversity in methods enhances the review's ability to encompass both quantitative and contextual themes.

Theoretical Application

Although theoretical advice is relevant in sustainability studies, only 8 out of the 20 studies went to great lengths to use formal models. These were the Technology Acceptance Model (TAM), Resource-Based View (RBV), Institutional Theory, SWOT analysis, and ISO 20400 guidelines. The others were mainly empirical and descriptive, indicating that there has been no theoretical integration in the field of green procurement, particularly in emerging economies. This indicates a larger gap in the use of behavioural, institutional, or resilience-based theories in procurement studies that emerged during and after the COVID-19 pandemic.

Post-COVID-19 Relevance

Of 20 studies, 11 discussions addressed post-COVID procurement problems, either directly or indirectly. Other modalities have directly studied pandemic-induced disruptions of supply chains or procurement motives stimulated by stimulus checks, focusing specifically on a particular slope of the supply chain or a specific impact [5, 9, 14]. Others, such as [7] and [17] were included after the initial pandemic period but were not framed in relation to it. This discrepancy highlights the need for greater purposefulness in future procurement literature, including crisis response frameworks and resilience considerations.

Table 3
Research Studies and Key Findings

Author(s)	Country	Sector	Method	Theory Used	Key Drivers	Key Barriers	Post-COVID Relevance	Key Findings
[8]	Malaysia	ISO 14001 – certified firms	Quantitative (survey, PLS-SEM)	Technology Acceptance Model (TAM)	Perceived usefulness & ease of e-procurement; management support	Limited digital skills; low awareness of green standards	COVID-era digital shift	E-procurement adoption explains ~86% variance in GP, improving supply chain sustainability
[9]	Malaysia	Manufacturing	Quantitative (PLS-SEM)	Resource-Based View (RBV)	Supply chain integration, agility, top mgmt support	Weak sustainability alignment	COVID-19 recovery focus	Viable Supply Chain practices improve sustainability outcomes
[18]	Malaysia	Manufacturing (paper/packaging)	Qualitative (FGDs, SWOT)	SWOT analysis	Supplier partnerships, auditing, and criteria	High cost; limited supplier knowledge	Post-COVID resilience context	Strategic sourcing & audits recommended to strengthen GP
[19]	Malaysia	GGP SME suppliers	Quantitative (survey, t-tests)	None	Environmental gains; corporate image; compliance	High certification cost, knowledge gaps	Post-pandemic GGP push	SMEs see environmental + reputational benefits; cost barrier remains
[10]	India	Pharmaceutical	Survey (PLS-SEM)	Resource Dependence Theory (RDT)	Top management support; regulatory pressure	Weak innovation; low external pressure	Post-pandemic	Top management support strongest predictor of GP adoption
[17]	India	Manufacturing	Quantitative (EFA, CFA, AMOS)	None stated	Internal environmental management; leadership support	Weak recovery systems	Indirect post-COVID context	Environmental practices improve performance

[4]	India	Public sector procurement	Conceptual review, qualitative analysis	Sustainable public procurement framework, value for money, life-cycle thinking	Policy commitment, leadership, mandatory SPP rules, training, expert support, clear criteria, sustainable product availability, and monitoring	Weak policies, poor leadership, lack of incentives, limited green market, higher costs, low information, competing priorities, low training, and weak monitoring	Supports supply chain resilience, self-reliance, and national production focus	SPP is an early stage, needs strong legal frameworks, leadership, professionalisation, data-driven strategy, aligned drivers across levels
[20]	India	Manufacturing (bag sector)	Survey (SEM)	Institutional Theory	GSCM & GP integration; management support	Coordination & cost issues	Post-pandemic competitiveness	GP practices enhance low-carbon performance
[12]	Brazil	Public school food procurement	Longitudinal doc review	None	Local food sourcing policy	Complex bidding; bureaucracy	COVID vs post-COVID comparison	Local food ↑73%; ultra-processed ↓39%
[21]	Brazil	Cross-industry	Quantitative (t-tests)	Institutional Theory	Government pressure; stakeholder norms	Weak industry peer pressure	COVID period	Coercive pressure strongest SPP driver
[12]	Brazil	Public education	Survey	None	Individual commitment	Weak political support	Yes	Individual commitment > organisational & political commitment
[22]	Brazil	Public sector/state apparatus	Qualitative policy report	None	Political will, industrial & climate missions, strong institutions, DPI	Siloed ministries, risk-averse procurement, SOE governance issues, uneven digital capacity	Resilience, health & industrial capacity, DPI lessons from COVID	State transformation via mission-oriented procurement, SOEs & DPI is essential
[5]	Indonesia	Construction (design-build)	Delphi + Experts	None	Supplier quality; regulatory compliance	COVID cost spikes; delays	Explicit COVID disruptions	22-factor readiness model for sustainable procurement

[13]	Indonesia	Higher education	Interviews + docs	None	Leadership; innovation	Weak regulations; limited resources	Post-pandemic	Leadership drives GPP success in HEIs
[7]	Indonesia	Universities	Survey	None	ISO certification; eco-design	Low awareness; weak CSR	Collected after COVID peak	ISO & eco-design ↑ GP; weak CSR had no effect
[23]	Indonesia	Public construction	Survey (EFA)	Resource-Based View (RBV)	Environmental purchasing; management systems	Limited resources	Post-COVID gov priority	Environmental purchasing most influential SPP factor
[1]	South Africa	Rail transport	Policy analysis	None	Localisation & social value	Siloed procurement, poor coordination	Pre-COVID implications	Procurement framework incomplete; need integration & low-carbon public transport
[14]	South Africa	Pharma supply chain	Interviews	None	Forecasting: local production	Global supply dependency	Explicit COVID context	Better planning + local capacity improve resilience
[2]	South Africa	Public sector	Desk review	Institutional Theory	Regulatory drive; cost-saving benefits	Low capacity; resource constraints	Post-COVID	GPP rising but shallow; needs enforcement
[24]	South Africa	Public procurement (government)	Qualitative one-on-one interviews; thematic analysis in ATLAS.ti	Institutional theory- Industry 4.0 lens (IoT & cloud for SPP/SCM)	Efficiency, transparency, and stability in procurement via IoT/cloud;	Legacy/ fragmented systems; biased processes; poor records;	Addresses current (post-COVID) service-delivery and modernisation pressures in the public sector	IoT and cloud can strengthen sustainable public procurement and SCM.

Table 3 is a synthesis of the features and the main conclusions of the 20 empirical studies outlining the characteristics of the systematic review. It provides comparative data on nations, industries, research procedures, theoretical foundations, key drivers and obstacles, and applicability in the aftermath of COVID-19. It highlights cross-country variations in policy maturity, institutional willingness, and sectoral approaches, as well as how the pandemic has affected green procurement planning, environmental outcomes, and resilience-development initiatives in new economies.

Figure 2 shows how the reviewed articles were distributed across journals and publishers, with a focus on sustainability-related publications.

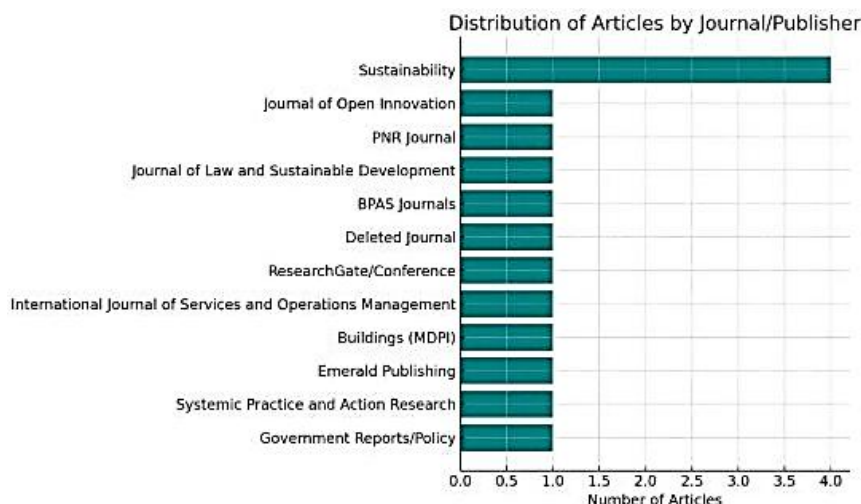


Fig. 2 Distribution of articles by journal/ publisher

Alt text: Bar chart showing the distribution of reviewed articles across journals and publishers with Sustainability Journal contributed the highest number of article.

It reflects the cross-functional character of green procurement research and points to a focus on post-COVID procurement studies, placing them within the range of sustainability, operations management, and policy-oriented journals.

Thematic Analysis/Findings

The analysis of the 20 selected studies on the theme identifies similarities across the 5 emerging economies (Malaysia, India, Indonesia, Brazil, and South Africa). A total of four studies have been selected for each country, as summarised in Table 3 and supported by Figure 2, which lists the journals and the number of articles published. In this section, the findings are synthesised into six themes: policy and regulatory drivers, implementation across industries, adoption barriers, post-COVID, technological enablers, and cultural or institutional preparedness.

Theme 1: Cultural and Institutional Readiness

Organisational culture, institutional values, and leadership emerged with a significant impact. [12] found that, in Brazil, despite a strong individual commitment to sustainable procurement principles, there was a lack of organisational and political-level support, resulting in gaps in implementation. According to [13], leadership vision and internal culture were the decisive factors in the success of GPP in Indonesian universities. [18] observed that in Malaysia, green procurement relied primarily on personal initiative or champions within top management rather than on a uniform procedure. [2] found similar trends in South Africa, noting that the lack of institutional alignment and training for officers managing the public procurement process led to inconsistent implementation, hindering their ability to adequately expand the green procurement process.

Supporting this, [19] demonstrate that in Malaysia, SME suppliers interpret GPP as a cultural and reputational asset that enhances image and competitiveness. Similarly, [24] show that cultural readiness in South Africa is being reframed through digital transformation narratives, where institutional culture is gradually aligning with smart procurement systems. The evidence suggests that collectivistic organisational cultures, the presence of visible leaders, and internal champions significantly enhance readiness and create greater adoption motivation than policy incentives.

Theme 2: Policy and Regulatory Drivers

Green procurement policies and government requirements are key to implementing green procurement practices in emerging economies. Discussion of clear regulations and institutional orientation is mentioned in several studies. [2] noted that the recent regulatory push in South Africa has led to an

increase in environmental awareness in public procurement; however, implementation remains shallow due to institutional limitations.

[21] concluded that in Brazil, the use of coercive institutional pressure (e.g., legislation and requirements) was more effective than normative or mimetic approaches in sustaining sustainability-oriented procurement, especially in situations of SDG adherence. Nevertheless, a gap between individual, organisational, and political commitment has also been identified, as [12] suggested, highlighting the need for increased alignment of leadership. The regulatory drivers in Malaysia appear to be less centralised. Although [18] state that internal company policies favor supplier engagement and audits, wider enforcement or support of green procurement in the public sector remains underutilised. The authority of Indonesia's policy seems to be more industry-related. [5] noted both a great focus on regulatory compliance in construction and the absence of general directives on green procurement. Recent evidence from [19] further suggests that in Malaysia, government green procurement is beginning to yield tangible benefits for SME suppliers, including improvements in environmental performance and enhanced competitiveness, although high initial costs remain a policy challenge. Similarly, [24] argue that in South Africa, regulatory ambitions are increasingly tied to digital transformation tools, such as IoT and cloud systems, positioning technology as a regulatory enabler.

Theme 3: Technological Enablers

Technology has played a critical role in facilitating green procurement, particularly in environments with robust digital infrastructure or established certification systems. [8] In Malaysia, it was demonstrated that the implementation of e-procurement systems (e.g., e-sourcing, e-tendering) played a crucial role in ISO-certified companies. It was established that these systems had important positive impacts on stakeholder involvement and environmental performance. In India, [17] have identified collective links between improved environmental outcomes, effective internal environmental management systems, and investment recovery mechanisms in the manufacturing sector. In a similar vein, [14] emphasised the importance of analytics and data visibility as key components in building resilience in pharmaceutical supply chains in South Africa.

Despite these developments, digital innovation remains limited to certain countries, such as Indonesia [13] and Brazil [12], indicating an existing digital disparity in the adoption of sustainability-enabling technologies. Building on this technological dimension, [24] demonstrates that IoT and cloud computing are emerging enablers in South Africa, not only enhancing efficiency and transparency but also directly supporting sustainable public procurement reforms. The results show that life-cycle costing systems, e-procurement tools, and analytics must be mainstreamed through both the public and private sectors to fast-track the adoption of green procurement.

Theme 4: Sectoral and Organisational Implementation

The adoption of green procurement is significantly influenced by sectoral dynamics. High-priority areas of focus include education, manufacturing, and healthcare. [13] demonstrated in Indonesia how green public procurement (GPP) was introduced by higher educational institutions (HEIs) as green campus initiatives, the success of which depended on the empowering vision of leaders and the institution's culture. Similarly, the research studies by [12] in Brazil, meal procurement in public schools has been promoted to improve nutritional quality and utilise local sources, following post-COVID regulatory reforms. The Malaysia-based studies by [8] and [9] focused on ISO-certified companies and production firms. It is notable that these firms had a higher rate of green procurement uptake due to digital procurement integration and top management support, highlighting the roles of certification and internal systems.

Complementing this, [19] highlight that Malaysian SMEs engaged in government green procurement schemes recognise improvements in environmental compliance and corporate image, reflecting sectoral benefits that go beyond ISO-certified firms. In India, [20] provide evidence from the manufacturing

sector that green purchasing practices and GSCM integration directly enhance management and low-carbon performance, showing sectoral alignment of GPP with industrial competitiveness. All of these cases reinforce the view that sectoral maturity, institutional culture, and leadership involvement are key to the successful implementation of green procurement.

Theme 5: Barriers to Adoption

The barriers are uniform across most countries, and Barriers Inhibiting the Scalability of Green Procurement initiatives tend to be set. One of the challenges is the high cost of green materials, which has been reported in Malaysia [18]. Moreover, insufficient awareness, training, and preparedness of suppliers were common obstacles in the literature on Malaysia, India, and South Africa. For instance, [8] noted low levels of digital competence among personnel working in procurement departments, whereas [17] identified policy gaps and underdeveloped support systems within the Indian manufacturing sector. In South Africa, [1] and [2] identified structural obstacles, including siloed institutions, inadequate coordination mechanisms, and low-status agency capacity. In Brazil, an environment with comparatively higher regulatory drivers slowed the pace due to bureaucratic procurement regulations and weak political commitment [12]. More recent studies confirm these patterns. [19] note that Malaysian SMEs face knowledge and certification-related barriers despite recognising the benefits of GPP, while [22] emphasises that Brazilian municipalities lack the technical capacity and resources to operationalise green procurement policies, resulting in fragmented implementation.

Theme 6: Post-COVID Acceleration and Setbacks

The COVID-19 pandemic served as both a catalyst and an obstacle to the green procurement trend. A total of eleven of the examined studies were either directly or indirectly COVID-relevant, providing insight into the crisis-driven evolution of sustainability agendas. The pandemic led firms in Malaysia to adopt an agile approach to procurement, utilising digital solutions [9], in line with the Viable Supply Chain Management (VSCM) model. [8] established that the use of e-procurement increased in response to the pressure of COVID-induced operations. Additionally, in the case of India, [4] framed SPP as an instrument of resilient economic transformation, linking procurement to climate ambitions and green jobs.

[5] from Indonesia clearly outlined the presence of COVID-related price shocks (a ~30 percent rise in iron costs), labor problems, and delays in achievable procurement. Based on the insights generated, they devised a 22-factor readiness model. In South Africa, [14] positioned pharmaceutical supply resilience as a direct outcome of demand prediction and domestic production.

Extending this, [23] confirm that Indonesia's public construction sector post-COVID prioritises environmental purchasing and management systems as top factors for readiness, while [20] stress that India's green procurement practices are closely tied to low-carbon competitiveness in the post-pandemic recovery. Conversely, articles like [7] and [17] that although written during the post-pandemic settlement and recession, the report lacked clear framing in the context of COVID-19, offering an opportunity to incorporate resilience thinking into research on procurement activities. Table 4 presents a comparative synthesis of green procurement adoption across Malaysia, India, Indonesia, Brazil, and South Africa, highlighting similarities and differences in institutional readiness, policy drivers, technological enablers, sectoral implementation, adoption barriers, and post-COVID-19 responses in emerging economies.

Table 4
Cross-country Thematic Comparison Table

Theme	Malaysia	India	Indonesia	Brazil	South Africa
1. Institutional Readiness	Driven by leadership & certification [18], [9]. SMEs value reputation [19].	Strong in regulated sectors [10]. Leadership is critical [20].	Strong in HEIs but weak nationally [13]. Govt shows readiness [23].	Org commitment > political buy-in [12]. Limited municipal maturity [22].	Fragmented systems [2], [1]. Digital culture rising [24].
2. Policy & Regulatory Drivers	Weak enforcement; ISO standards help [18], [8]. SMEs see GGP benefits but face cost/certification barriers [19].	Strong pressure in pharma/ infrastructure [10]. Green purchasing boosts low-carbon outcomes [20].	Sectoral compliance in construction [5]. The readiness model reveals gaps post-COVID [23].	SDG-linked policies support GPP [21]. Municipalities lack technical capacity [22].	A push exists, but it is shallow [2]. IoT/cloud is framed as a regulatory enabler [24].
3. Technological Enablers	E-procurement vital [8]. Digital tools help SMEs [19].	Analytics & ISO systems [17]. Data for GPP [20].	Tech gaps in HEIs [13]. Better integration is needed [23].	Process reform emphasis [25], [12]. Tech gaps in cities [22].	Data forecasting in pharma [14]. IoT/cloud boost transparency [24].
4. Sectoral Implementation	Manufacturing & packaging [8], [18], [9] SMEs gain image & compliance [19].	Pharma, healthcare, infrastructure [10]. Manufacturing competitiveness via GSCM [20].	GGP in HEIs/logistics [13]. Construction prioritises environmental purchasing [23].	School meals & education [12], [25]. Uneven local capacity [22].	Public transport & pharma [1], [14], [2]. IoT/cloud transforming procurement [24].
5. Barriers to Adoption	Limited materials, low awareness & training [18], [8]. SMEs face cost issues [19].	Policy gaps, vendor unpreparedness [17]. Coordination & cost barriers [20].	High costs, weak infrastructure [7]. Implementation complexity [23].	Bureaucracy & political misalignment [12], [25]. Tender capacity gaps [22].	Institutional siloes, poor coordination [2], [1]. Compliance gaps [24].
6. Post-COVID Relevance	Digital procurement & viable supply chain recovery [8], [9]. SMEs see GGP as a recovery tool [19].	SPP for green recovery. Low-carbon recovery [20].	COVID shocks shaped readiness [5]. Construction priorities shifted [23].	School meal reform for food security [25]. Municipal capacity strain [22].	Supply resilience via local capacity [14], [24], [2]. IoT/cloud adoption [24].

DISCUSSION

Malaysia vs Emerging Economies: Comparative Insights

Green procurement in Malaysia has been characterised by both positive and negative factors, including industry development and institutional inertia. The transition to green procurement practices in the private sector, especially the companies with the ISO 14001 certificates and producers, has been enabled by the digital transformation and strong internal leadership [8, 9]. Nonetheless, the same level of gain will not be matched by the same level of attention to the population sector where the Government Green Procurement (GGP) model is not implemented, and there is no control system. This falls short of integrating sustainability into national programs, such as India's Sustainable Public Procurement (SPP) initiative and Brazil's policies on PNAE school meals [12].

Green procurement is also becoming a resilience tool across sectors in emerging economies, such as Indonesia and South Africa. In one example, governmental construction projects and higher education facilities in Indonesia have experienced mixed success in implementing sustainability principles in procurement, with this practice often resulting from institutional leadership, rather than directed policy [5, 13]. Similarly, the public procurement policies in South Africa have demonstrated an increased awareness and adoption of practices in response to high institutional capacity shortages [2]. Alternatively, Malaysia remains confined to ISO compliance and voluntary adoption, which may not sustain continued motivation unless integrated into the systems of a wide range of public and social sectors.

Policy Implications

The SPP plan, implemented in India, includes the education of procurement officers, the development of vendors, and quantifiable, sustainable effects, providing a scalable approach aligned with the recovery plans planned after the COVID-19 event [4]. The combined procurement, food security, and nutritional outcomes in Brazil during the pandemic serve as an excellent example of how procurement policies can serve both environmental and social purposes [12].

To be more effective, Malaysia should implement a national green procurement policy to augment its legal standing (i.e., making the requirements legally binding with public sector organisations). At the same time, it is necessary to invest in capacity-building by sector, particularly within the spheres of logistics, education, and healthcare, which continue to evolve considerably in relation to sustainability standards [18]. Sustainable procurement rules, including lifecycle costing and vendor readiness tests, must be integrated into regular procurement procedures.

Theoretical Implications

The lack of use of theoretical frameworks, particularly in Malaysian studies, is one of the most common gaps in the reviewed literature. A few of them employed a specific framework, such as the Technology Acceptance Model [8] or the Resource-Based View [9]. To the contrary, Institutional Theory and ISO frameworks have enabled nations such as India and Brazil to integrate procurement within the broader framework of sustainability [26].

Including underutilised frameworks, such as the Theory of Planned Behaviour (to understand the motivation of procurement agents), Institutional Theory (to determine the similarity with policy), or Resilience Theory (to reflect changes in post-crisis procurement processes), could be useful in future research on the Malaysian case. These theories possess the ability to provide both explanatory power and generalisability to findings across diverse institutional contexts.

Research Gaps and Future Directions

During this review, various research gaps were identified. To begin with, the aspects of Malaysian public healthcare, logistics, and tertiary education are under-researched yet integral to sustainability transitions. Second, the existing body of literature employs very little longitudinal design or panel data, which prevents understanding the development of procurement behaviour over time in response to policy or market shifts [13, 17].

Third, studies on why to adopt green procurement focused less on what and how, and more on behavioural aspects and the crisis perspective. Malaysian studies should increasingly incorporate post-COVID management models, such as the Viable Supply Chain Model, Circular Procurement, and Crisis-Responsive Procurement, which have been developed in India and South Africa [9, 14]. The shifts will play a crucial role in developing a future-ready, policy-gearred, and impact-driven procurement ecosystem in Malaysia.

CONCLUSION AND SUGGESTIONS FOR FUTURE STUDIES

Although there is growing scholarly interest in green procurement, gaps remain, particularly in the Malaysian context. The absence of local theoretical integration in research is one of the greatest gaps. Numerous studies in Malaysia are atheoretical and do not attempt to apply any theory; instead, they merely describe policy or interview stakeholders. This dilutes the interpretive and predictive power of such studies and confines their value to policy and practice.

The other emerging pattern with a gap is the inadequate application of post-COVID-specific theories. Although the pandemic has led to significant transformations in procurement procedures, there are limited works that explicitly refer to resilience theory, frameworks on crisis management, or adaptive governance in the procurement context [11]. This is an important omission, considering that these frameworks are specifically useful for characterising the evolution of procurement systems under stress and for understanding the future of sustainability objectives, maintenance, and progress during times of disruption.

Enhancing the theoretical foundation of green procurement research would benefit both academic research and real-world practice. The development of testable hypotheses, sound methodology, and 2 ideas that can be implemented in different situations is enabled by a healthy theory. Multidimensional theories such as the Triple Bottom Line TBL and sustainable supply chain management (SSCM) frameworks allow researchers to study the elements of green procurement in three directions simultaneously, i. e. environmental, economic, and social [27].

Malaysia can improve its studies by placing greater emphasis on cross-sectoral and comparative research, learning from regional counterparts, and aligning research with new global trends, among other measures. A tighter theoretical framework will also enable researchers to conduct more rigorous methodological research that can inform evidence-based policy-making. The significance of the problem cannot be overstated in the context of a post-COVID world, where procurement leaders should be not only cost-effective but also strong, sustainable, and environmentally friendly. The growing interest in ESG (Environmental, Social, and Governance) standards worldwide underscores the importance of conceptually sound, especially applicable research [28].

The systematic review comprised an in-depth analysis of 20 empirical research publications on green procurement adoption in Malaysia and other emerging economies published between August 2019 and August 2025. The result illustrates that, although some industries are making progress, including ISO-certified businesses and manufacturing, Malaysian procurement has not adopted stringent regulations that cut across industries. The Malaysian system, by comparison, is fairly voluntary and decentralised compared to those in its counterparts, like India and Brazil, which have implemented structurally designed Sustainable Public Procurement (SPP) policies and sector-level policies.

The review has also highlighted the importance of leadership, digital tools, and institutional preparedness in driving green procurement. However, the lack of theoretical grounding in most studies, including Malaysian studies, is an opportunity that has been missed to enrich theory and facilitate inter-case comparison. Theories from Institutional Theory, Theory of Planned Behaviour, and Resilience Theory should be integrated in future research to demonstrate behavioural, organisational, and systemic change more effectively.

To establish the field, urgent longitudinal, industry-specific, and post-COVID-oriented empirical studies are required, particularly in the healthcare, education, and public procurement industries in Malaysia. There is also a need for scholars to investigate regional comparisons and cross-practice approaches to sustainability, resilience, and innovation in procurement policy and practice, with an emphasis on the Global South.

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Rafiuddin Mohd Yunus

Universiti Malaysia Pahang Al-Sultan Abdullah
Faculty of Industrial Management
26300 Gambang, Kuantan, Pahang, Malaysia
e-mail: rafiuddin.mohdyunus@gmail.com

Norhana Mohd Aripin

Universiti Malaysia Pahang Al-Sultan Abdullah
Faculty of Industrial Management
26300 Gambang, Kuantan, Pahang, Malaysia
e-mail: norhanama@umpsa.edu.my

Muhammad Ashraf Fauzi

Universiti Malaysia Pahang Al-Sultan Abdullah
Faculty of Industrial Management
26300 Gambang, Kuantan, Pahang, Malaysia

Abdurrahman Faris Indriya Himawan

(corresponding author)
Department of Management
School of Economic & Business
Telkom University, Jl.
Telekomunikasi No.1 Terusan Buahbatu, West Java,
40257 Bandung, Indonesia
e-mail: farislike@telkomuniversity.ac.id