



RESEARCH ARTICLE

Navigating Sustainability: The Role of Green Purchasing and E-Sourcing in Transforming Supplier Relationships for Environmental Performance in SMEs of developing country

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ABSTRACT

This paper aims to explore the relationships of Green Purchasing (GP), E-sourcing (ES) and Greening Supplier (GS) with Environmental Performance (EP), particularly in terms of small and medium enterprises (SMEs) which belong to the manufacturing sector. Data have been gathered through a structured survey distributed to employees of SME manufacturing companies via quantitative research. A total of 279 samples were considered in this study. The study used structural equation modelling (SEM) to test these hypotheses and investigate direct and indirect effects. Results of direct effects confirmed that the GP, GS and ES have been found to affect EP where the direct path is positive. In addition, both GS and ES revealed a partial mediation effect between GP and EP. These research insights reinforce the importance of sustainability in procurement plans, explaining how E-sourcing can improve operational efficiency and contribute to stronger links with environmentally proactive suppliers. The dominant theoretical impact of this research is that it extends the Resource-Based View (RBV) to sustainable practices as resources capable of improving competitive advantage. This research highlights some capabilities, such as ES and GS, which magnify the effects of GP. In practice, the findings imply that leaders in SMEs put sustainable procurement practices ahead and invest in E-sourcing technology to work closely with environmental supplier partners to achieve better eco-performance goals and improve brand image.

INTRODUCTION

EP refers to how well a company manages its environmental impact based on the compliance and infractions recorded for resource efficiency, waste management, and emissions control (Gu & Xie, 2022). EP is significant for small and medium-sized enterprises (SMEs) in manufacturing sectors because SMEs have additional challenges that large companies may need help with, such as limited resources and regulatory pressure. On the other hand, GP refers to products and services that result in minimal or no environmental harm while aiding resource conservation across the entire supply chain (Amoako et al., 2020). Through GP practices, SMEs can improve their EP and relate their operational strategies to broader environmental objectives. The relationship between GP and EP should be examined because it provides an opportunity to

gain insight into how strategic procurement decisions can result in enhanced environmental outcomes, enhancing a sustainable manufacturing context.

GS is a sustainable solution that introduces ecological solutions into the company's logistics processes (Fallahpour et al., 2021). That means sourcing suppliers that have the same dedication to social and environmental justness as the company itself, which includes evaluating potential partners based on their impact on climate and society, as well as supporting and training suppliers in crafting their sustainability programs (e.g., reducing waste, minimizing energy consumption, working with responsible materials). Since suppliers affect a firm's EP across the life cycle of products from raw material extraction to manufacturing and distribution - greening them is essential in improving its total EP (Shah & Soomro, 2021). If organizations prioritize GP, then they tend to seek suppliers that are in line with their sustainability goals as well. Buying green products may only sometimes result in improved environmental outcomes if suppliers are also environmentally responsible. Research has shown that companies benefit greatly from involving their suppliers in green programs, lowering their carbon output and resource use (Mahapatra et al., 2021). It can inculcate a culture of collaboration and support from suppliers to bring about a cascading effect of improving EP throughout the entire supply chain. Furthermore, incorporating green suppliers into greening can result in compliance with regulatory anonymity, brand reputation, and customer loyalty (Afum et al., 2020).

ES uses digital tools and platforms to improve and streamline procurement processes, allowing a company to quickly identify potential suppliers and drive the most value from its sourcing efforts (Alhabatah et al., 2023). This could be everything from online methods such as e-auctions and supplier portals to using procurement software to manage tenders and view a broader spectrum of potential suppliers. Regarding EP, ES also provides improved decision-making to help firms identify suppliers that engage in sustainable practices and produce environmentally friendly products. Moreover, this digital transformation is, in turn, enhancing the efficiency of procurement and aiding firms to diminish their environmental footprint by partnering and collaborating with sustainability-focused suppliers (Beltagui et al., 2022). The results reveal that ES mediates between GP and EP. Academic research has found that firms using ES tools can better identify more environmentally preferable suppliers that meet strict environmental criteria and improve the effectiveness of their GP practices. Using data analytics and a 360-degree view of suppliers, companies can make better decisions in line with their sustainability objectives and have positive impacts on environmental outcomes (Raj et al., 2023).

Three research questions can be addressed in this study.

RQ1: Does GP matter for EP in SME manufacturing firms in a developing country?

RQ2: Does GS mediate relationship between GP and EP in SME manufacturing firms in a developing country?

RQ3: Does ES mediate relationship between GP and EP in SME manufacturing firms in a developing country?

This study is conducted to improve our understanding of sustainability practices at small and medium enterprises (SMEs) in developing countries, particularly on how GP affects EP and the mediating effects of GS and ES. Therefore, the study will add to the knowledge of what seems better approaches for smaller and medium-sized firms (SMEs) in the manufacturing sector by examining whether GP has at least a Central or a more considerable influence over EP among SME manufacturing companies in less developed nations. In doing so, this investigation will emphasize the urgency of embedding environmentally responsible procurement practices in the operational frameworks of SMEs and provide informed arguments on how firms can advance their sustainability agenda and develop a competitive advantage within an eco-sensitive market. Next, the study will consider the mediating role of GS which aims to explain how involving suppliers in environmentally sustainable behaviours can render GP advantages more beneficial. This study will provide a set of best practices, lessons learned, and strategies to adopt when considering supplier

collaboration success in SMEs related to environmental management that can guide SME managers as they seek to redesign their suppliers' operations. Last but not least, studying ES as a mediating result in the association between GP and EP will also contribute to the literature on digital evolution. There is no better way to appreciate the ability of ES tools to improve supplier selection and increase visibility than this voyage that showcases the possibilities of technology in fostering procurement sustainability. This study will add to the literature as a comprehensive theoretical framework that links GP, supplier engagement, and technological advancement in procurement through EP within the context of SME manufacturing firms in developing countries. By exploring these research questions, the study aimed to offer theoretical contributions and managerial implications pertinent to policymakers, business leaders, and scholars interested in advancing sustainability issues in the manufacturing sector.

LITERATURE REVIEW AND THEORETICAL FOUNDATION

Resource-Based View theory

The RBV implies that a firm's unique resources and capabilities provide its basis for sustainable competitive advantage as they are valuable, rare, inimitable, and non-substitutable (Zvarimwa & Zimuto, 2022). The current theory in GP, GS, ES and EP is supply chain management, which argues for using internal resources and external links to achieve sustainability goals. In this framework, GP is an ideological resource and independent variable for firms that pertain to the particular structure of strategic assets that businesses can mobilize to improve their EP (Yan et al., 2021). GS is a mediating variable that reveals how creating partnerships with suppliers can further the benefits of GP by enforcing sustainability across the supply chain. A second mediating construct is ES, which improves the procurement process with electronic devices to improve supplier selection and transparency in purchasing, which helps enhance GP. Accounting for RBV orientations behind each variable, this framework accentuates how SMEs can leverage GP from strategies and supplier relationships to achieve their long-term competitiveness, facilitating an environmentally superior outcome.

Hypothesis development arguments

GP

The sustainable procurement practices serve as a vital resource for firms striving to improve their sustainability outcomes (Khan et al., 2023). It is about purchasing goods and services that have a reduced environmental impact compared to similar products and services; this leads to minimal waste and greenhouse gas emissions for the companies. This aligns with the RBV, which suggests that a firm can gain a competitive advantage by using unique resources (i.e., environmentally friendly procurement practices) to improve its overall performance. Many studies have demonstrated a clear positive relationship between GP and EP, making the case that firms can reduce substantial proportions of their ecological footprint by doing their jobs well without compromising purchasing objectives (Chanda et al., 2024), (A. Al-Swidi & Saleh, 2021). Nevertheless, other research provides mixed evidence of the effect of GP on EP, implying that either industry or firm size might be a contingency factor. These inconsistencies underscore the intricacy of this association and also warrant further investigation. Thus, following hypotheses are suggested:

H1: GP positively related to EP.

H2: GP positively related to GS.

H3: GP positively related to ES.

Mediating role GS

The Resource-Based View (RBV) theory, is also proposed where firms can attain sustainable competitive advantages by bundling valuable resource competencies (El Nemar et al., 2022). In this regard, GP is the first strategic function necessary for aligning procurement practices in an organization with sustainability goals (Sönnichsen & Clement, 2020). Taking suppliers for greening as a mediating variable is significant

because it includes the cooperation and assistance of suppliers to embrace environmentally responsible initiatives, which will further increase the global success of the GP programme (A. Al-Swidi & Saleh, 2021). This example further illustrates how an organization's leverage over and care of its supply chain actors can resound in EP outputs. The existing research indicates that supplier engagement is associated with EP as mediated by operational among a typical sample of firms. However, the results are not unanimous, and neither accepted that mediator leads to a significant or robust mediation behaviour between supplier engagement and EP. Some studies suggest that GS might vary in terms of benefits, depending on the context (i.e., industry) and some specific practices (Gera et al., 2022). These discrepant findings suggest avenues for future investigation. As a result, scholars have suggested that GP, GS, and EP should be explored to reveal insight into the relationships among these constructs and achieve sustainable outcomes in organizations. Such an integrated approach can contribute to clarifying how GP initiatives impact EP and, as such, further develop both theoretical and practical knowledge of sustainability in procurement. Therefore, following hypotheses have been proposed:

H4: GS is positively related to EP.

H6: GS mediates the relationship between GP and EP.

Mediating role ES

Resource Based View (RBV) describes a firm's resources and capabilities as core pillars in building competitive advantage. Green procurement is a significant strategic tool allowing organizations to obtain environmentally sustainable products and services (Bohari et al., 2020). The next challenge lies in identifying mediating variables such as (i) ES, which helps to enhance the effectiveness and efficiency of green procurement by using digital tools and platforms to assist in the initial selection of suppliers, increase transparency and improve data management (Singh & Chan, 2022). Firms can make better decisions that reflect their sustainability goals, which will increase a firm's EP (Kordsachia et al., 2022). However, the results of some studies present an ambiguity as to whether, depending on certain factors such as organizational readiness or market conditions, the effectiveness of ES helps in greener purchasing (Bhat et al., 2024), (Chavez et al., 2021). As a result, researchers have called for integrating the effects of GP, ES and EP metrics to obtain more encompassing views on how digital procurement can be used to improve sustainable outcomes. This integrated perspective can benefit from shedding light on how ES enhances the relationship between green procurement and EP, yielding significant contributions to sustainable purchasing research. Therefore, following hypotheses have been proposed:

H5: ES is positively related to EP.

H7: ES mediates the relationship between GP and EP.

METHODOLOGY

Data collection

This study's focus is a quantitative research design, which adopts a deductive approach to test the proposed hypotheses regarding GP, GS, ES, and EP. Most primary data was collected using a structured questionnaire to extract useful information from employees engaged in manufacturing SME firms. A face-to-face survey tool is used to maximize response rates. The sample of 279 SME employees working in various SMEs in significant cities of Pakistan was selected using the convenience sampling strategy for easy access to respondents. The data was collected, analyzed, and entered into SPSS version 25 for analysis without error or bias. The privacy of all participants will be kept confidential during the research, and only honest responses are needed. Purpose: The methodological framework for the present study has been developed to gain in-depth knowledge about the relationships between variables used in this broader theoretical environment related to the Pakistan manufacturing environment.

Measurement

GP is a concept whereby more environmentally friendly products and services are purchased from suppliers who lessen the impact on our environment during the production to disposal life-cycle of those goods. This may mean choosing suppliers with solid sustainability principles, focusing on green materials, and considering the resource and energy efficiency of products (Münch et al., 2022). GP aims to reduce environmental harm and encourage sustainable consumption. Six research items were adopted from the study (Green Jr et al., 2012). Sample it was considered as “Providing design specification to suppliers that include environmental requirements for purchased item”.

Supplier greening includes the policies and practices organizations pursue to induce their suppliers toward environmentally sound operations. Measures include working with suppliers to help them enhance their EP, training and supporting them, integrating sustainability parameters into procurement processes for supplier selection/evaluation. Six research items were adopted from the study (Chiou et al., 2011). Sample it was considered as “Providing environmental technical advice to suppliers and contractors in order to help suppliers to meet environmental criteria”.

ES is defined as using internet-based tools to manage all procurement process stages. It reduces the time required for sourcing and receiving responses from suppliers, reducing the cost involved in finally identifying a supplier and decision-making on selection (Wangari & Charles, 2022). This comprises ES tools like e-auctions, supplier databases, and digital procurement systems. Using ES for purchasing helps organizations simplify their buying processes, communicate better with suppliers, and ensure that more sustainable suppliers can be accessed. It is a necessity in trying to increase GP. Five research items were adopted from the study (Maina, 2023). Sample it was considered as “Buyers and sellers have open environment where they can compare true values of their products”.

EP an organization's environmental management results are measured against objectives. environmental initiatives and spending, as well as activities designed to further proactive environmental management, are included (Al-Swidi et al., 2021). These activities include information gathering, research investments in new products, facilities, or processes, and hierarchy. These include reductions in resource use (e.g., energy and water), waste outputs, GHGs, and increases in sustainable practices. Five research items were adopted from the study (Rahman et al., 2023). Sample it was considered as “We have significantly reduced the use of harmful materials in the manufacturing of our products”.

Software

SmartPLS is an SEM tool which is very useful for analyzing complex variable relationships, especially in small and medium enterprises (Manley et al., 2024). The primary strength of SEM is its aptitude to deal with several relationships simultaneously, which makes it appropriate for testing complex models composed of numerous independent, dependent and mediating variables. Most can use all observable variables outside of any latent variable (e.g., EP or GP). Moreover, it is non-parametric and can be applied to different data types, like the ones atypical of traditional statistical research in social sciences. With the help of SmartPLS and its user-friendly graphical interface, researchers can build their models quickly and change them at some point. In addition, it offers bootstrapping methods for the estimation of standard errors, which allows the use of path coefficients and enables obtaining correct results of significance tests (Alfons et al., 2022).

RESULTS AND DISCUSSION

Reliability and Validity

Four key variables are GP, GS, ES, and EP (Table Below). The reliability and validity of these variables are evaluated by outer loadings, Cronbach's alpha, composite reliability, and AVE. The outer loadings of items associated with the variables demonstrate a high relation, ranging from 0.757 to 0.884, with their corresponding latent constructs. This robust relationship, with all items meeting the threshold, provides a strong foundation for our study, assuring the reliability and validity of each item as a good indicator of its construct. Often, a close measure of internal consistency often >0.7 indicated good reliability. It has demonstrated that the items within each construct reliably measure the same concept, and Cronbach's

alpha values for three remaining constructs: GP (0.892), GS (0.907), ES (0.885), and EP (0.926) are also above the acceptable limit. Like Cronbach's alpha, composite reliability measures the internal consistency of the constructs. An acceptable value is more significant than 0.7. The reported values for all constructs support this acceptable reliability: GP (0.917), GS (0.928), ES (0.915), and EP (0.944). (See Table 1 and Figure 1). AVE measures the discrepancy observed by a factor compared to the one of measurement error. It is suggested that a score above 0.5 is typically considered an acceptable number for AVE (Shrestha, 2021). The AVE values of the constructs range from 0.648 (GP) to 0.773 (EP), respectively, and that means the construct validity of all constructs fits well with a predefined threshold value, so these constructs fulfil discriminant validity of samples in this study approach. (See Table 1)

In conclusion, all the constructs have demonstrated strong outer loadings, Cronbach alpha values greater than 0.70, strong composite reliabilities, and acceptable AVE values. This robust evidence of reliability and validity means that the measurement items of the four constructs in this research (GP, GS, ES, and EP) are reliable and can be empirically tested for validity in further research. Researchers can confidently apply these variables, as they have met the criterion of being strong and adequately developed measures of socio-environmental and economic sustainability in purchasing practices.

Table 1. Reliability and Validity

Key variable	SPSS coding	Outer loading	Cronbach alpha	Composite Reliability	Average Variance Extraction (AVE)
Green Purchasing	GP1	0.801	0.892	0.917	0.648
	GP2	0.817			
	GP3	0.808			
	GP4	0.820			
	GP5	0.797			
	GP6	0.786			
Greening supplier	GS1	0.826	0.907	0.928	0.684
	GS2	0.799			
	GS3	0.847			
	GS4	0.870			
	GS5	0.857			
	GS6	0.757			
E-Sourcing	ES1	0.884	0.885	0.915	0.684
	ES2	0.776			
	ES3	0.820			
	ES4	0.851			
	ES5	0.802			
EP	EP1	0.900	0.926	0.944	0.773
	EP2	0.867			

	EP3	0.890			
	EP4	0.856			
	EP5	0.881			

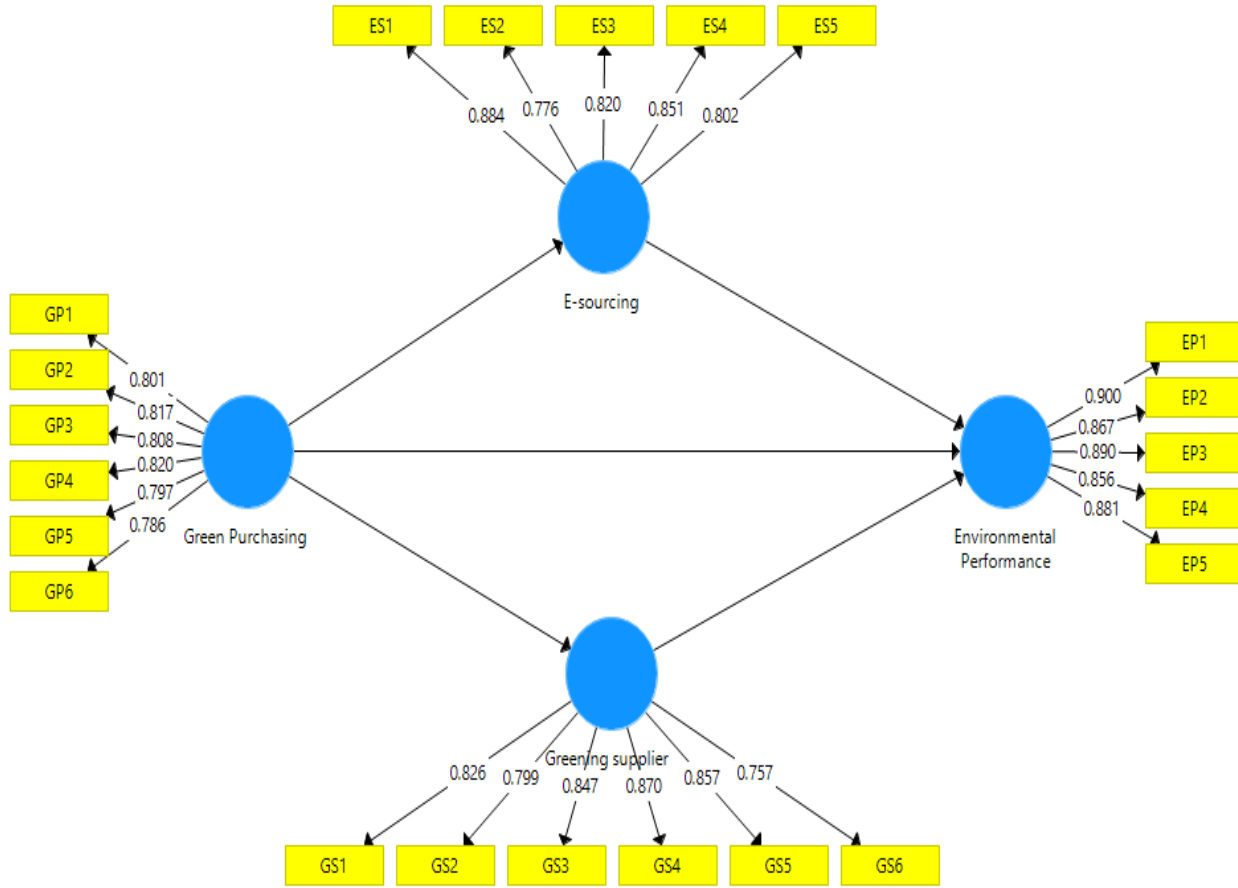


Figure 1. Measurement Model

Direct Effects

Table results of Hypothesis Testing on the Relationships between GP, ES, GS and EP. The strength and significance of the relationships are evaluated through the beta values and T-values for each hypothesis.

H1: GP -> EP ($\beta = 0.349$, $t\text{-value}=6.721$), it means there is a positive significant relationship between GP and EP. The result is consistent with previous studies that showed GP have a direct positive impact on environmental outcomes (Cahyadi et al., 2023), (Abdallah & Al-Ghwayeen, 2020), which has been reported in studies like the findings by emphasized the importance of a more environmentally sustainable form of procurement processes. Firms with sustainable procurement strategies realized better EP scores as the strategic choice of a supplier is linked to overall performance metrics (AlNuaimi et al., 2021). (See Table 2 and Figure 2)

H2: GP -> ES: A strong relationship between the variables of 0.669 with beta value less than zero belonging t-value of 23.698- which depicts that GP significantly will have a significant impact on the ES practices was confirmed achieved by the high value you t-value Table 2. This is consistent with investigations which suggest that the adoption of ES technologies results from implementing sustainable purchasing strategies, leading to more effective procurement outcomes (Fallahpour et al., 2021), (Anyonje & Malenya, 2020). The

use of ES platforms, often a result of GP initiatives, allows organizations to increase procurement efficiencies while remaining focused on sustainability. (See Table 2 and Figure 2)

H3: GP -> GS, the beta value of 0.661 and a T-value of 21.279 indicates a strong relationship in predicting the positive beliefs of suppliers about GP practices. It means the engagement with (using) and selection of greener suppliers increases while GP practices grow (Sheykhizadeh et al., 2024). Past studies established a robust connection regarding green buying and acquisition of environmentally-conscious suppliers, saying that sustainability-oriented companies typically do business with like-minded solution providers (Ghosh et al., 2021). (See Table 2 and Figure 2)

H4: ES → EP beta coefficient: 0.229 (T=4.384) The results of the hypothesized model in relation to the hypotheses proposed are as follows Table 2 and also demonstrates important contribution for procurement performance variables interactions with ES on environmental outcomes, reveals that ES significantly influences EP together other relationships. The result supported the research of positing that using ES can improve EP as a consequence of better resource allocation (Chukwuemeka & Poi, 2023). Among these alternatively there was evidence that ES tools can drive influence suppliers about their relative importance to a buyer's procurement needs and performance relatively few companies were pursuing efficiently sustainable outcomes (Meena et al., 2023). (See Table 2 and Figure 2)

Table 2. Direct Effects (SEM)

Paths	Value of Beta	T-Value	Remarks
GP -> EP	0.349	6.721	Supported
GP -> ES	0.669	23.698	Supported
GP -> GS	0.661	21.279	Supported
ES -> EP	0.229	4.384	Supported
GS-> EP	0.312	5.481	Supported

Indirect Effects

Table Indirect effects of GP on EP through ES and GS for H6 and H7 In other words, the direct path between GP and EP is non-significant concerning both Hypotheses 2 and 3, which suggests partial mediation effect, meaning that these constructs are mediating GP influence over EP.

H6: GP -> ES -> EP. As shown in Table 4, the beta value for this path is 0.153, with a T-value of 4.311, indicating a significant partial mediation effect. This is in line with the findings of which demonstrate that ES tools not only enhance procurement operations but also bolster the positive effects on EP associated with purchase decisions. Similarly, noted that ES can enhance supplier engagement and resource allocation, leading to improved EP (Chavez et al., 2021). Our study further revealed that GP practices in organizations increase the likelihood of doing business with suppliers who prioritize sustainability in their supply chain, thereby enhancing EP.

H7: GP -> GS -> EP; this path has a significant partial mediation where the beta is 0.206 with a T-value of 5.360, so H7 is supported under partial mediating effects. This suggests that GP develops linkages with greener suppliers, leading to EP. This confirms the results that sustainable procurement practices foster highly cooperative relationships with eco-friendly suppliers, which drives environmental outcomes (Andalib Ardakani et al., 2023). Moreover, () pointed out that the organizations can also benefit from activating with green suppliers because these organizations seek environmental policies due to appearing in their sustainability (Alam & Islam, 2021).

Table 3. Indirect Effects (SEM)

Paths	Value of Beta	T-Value	Remarks
GP -> ES -> EP	0.153	4.311	Partial Mediation Effect
GP -> GS -> EP	0.206	5.360	Partial Mediation Effect

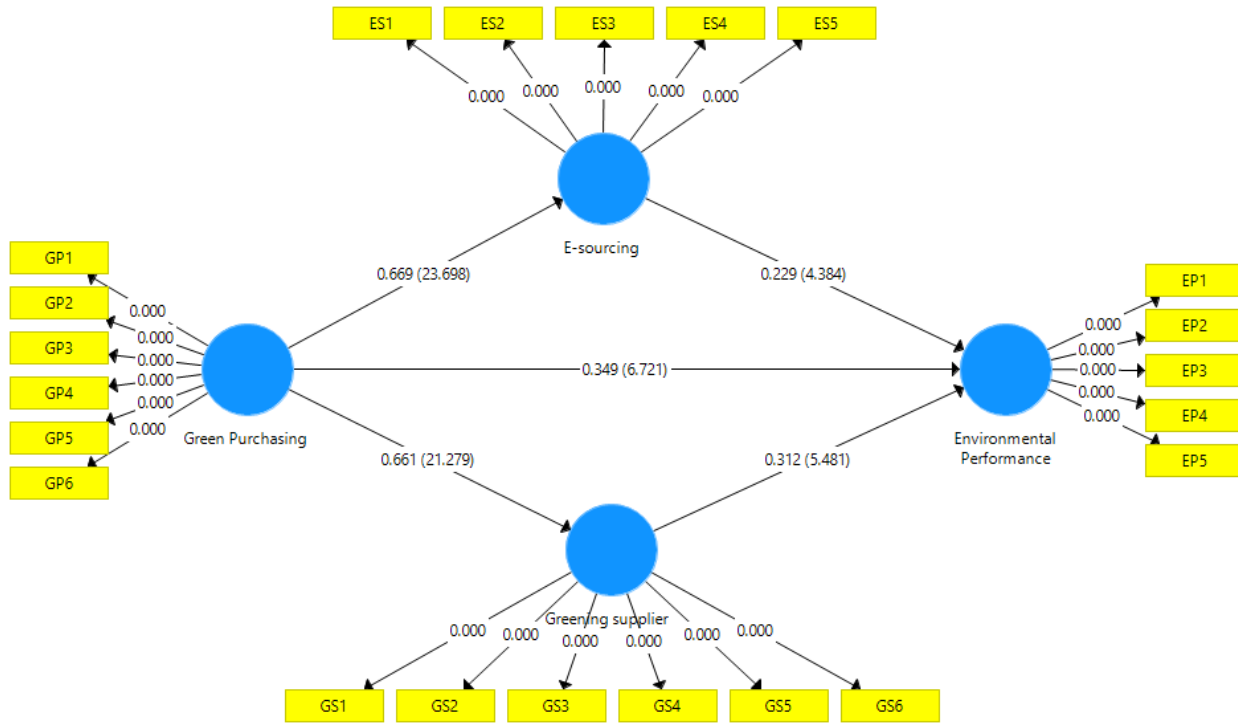


Figure 2. Hypotheses Testing

CONCLUSION

The study revealed the complex connections between GP, ES, GS, and EP. These results confirm that GP significantly affects EP and are supported by all direct hypotheses (H1–H5). Notably, GP is found to influence not only Trans Onkos directly but also indirectly through ES (H6) and GS (H7), indicating that these two mediating constructs are necessary for the full impact of GP.

This study has uncovered a unique aspect in the field, demonstrating simultaneous multiple partial mediation effects among the variables. This finding significantly enhances our understanding of how sustainability impacts procurement practices. As an external reality, you can readily adjust processes and procedures to build internal capacity. The strong link between Greenness Supplier and EP serves as a powerful driver towards achieving environmental sustainability goals. Furthermore, the dual mediation effect highlights the equal importance of integrating technology-led restructuring and supplier empowerment to effectively apply GP strategies. These practical implications empower organizations to take concrete steps towards sustainability.

Moreover, the magnitude of beta values and T-values indicates that organizations can potentially gain significant network benefits through sustainability actions. This finding not only supports previous research but also extends the concept that environmental considerations in purchasing can positively impact not only operational efficiency but also overall EP. This revelation should inspire organizations to embrace sustainability as a means to achieve wider environmental goals.

Therefore, the results suggest that organizations pursuing sustainability should maintain relationships with green suppliers and utilize ES tools as two critical strategies. Continued research on the implications of these relationships may provide a basis for further integrating sustainability into procurement practices and, hence, help achieve broader environmental goals.

Theoretical contribution

The study has made an essential contribution to the literature on Sustainable procurement practices (RBV) by empirically examining sustainable procurement and its impact on innovation. It indicates that GP is not just a compliance-based system but an enabler of good EP. Including an eco-friendly purchase norm might help organizations differentiate themselves in the market, leading to competitive advantage as resources that are valuable, rare, and non-replicable, as per RBV, are necessary for competitive advantage. Besides, this study also examines ES and GS as mediating capabilities to improve the effectiveness of GP. ES tools help procurement processes and enhance supplier selection alongside green suppliers, delivering sustainable practices and innovations. The model provides an extension to the RBV framework, which helps show how capabilities can enhance or amplify value out of core resources for a more homogenized view on resource representation in a broader level approach.

One of the strengths of this study is that it allows the RBV to be tested with a focus on organizational sustainability in supply chains, which enhances its ability to respond to current environmental challenges. Managing resources concerning green practices should be equally important for an industry where sustainability is increasingly at the forefront of every strategic plan. Operationalizing prior theorizing in the sustainable SCM literature that argues that sustainability-related resources and capabilities are fundamental to improve EP, research findings provide empirical support for an extended RBV of the firm with sustainability as a central domain within resource management. Moreover, demonstrating the interrelationships between GP and ES creates a unified approach with Greening Supplier, aiming at improving organizations' sustainability practices. As such, this framework enhances analysis in the RBV literature and provides many practical guiding principles for managers seeking to execute successful sustainable procurement strategies.

Practical Implications

This study provides useful implications for top management and managers in manufacturing small—and medium-sized enterprises (SMEs) regarding how sustainability practices can be absorbed and applied while operating.

GP in the EP and GP enhances both axes. This comes by choosing suppliers who comply with environmental norms and integrating sustainability into procurement strategies for managers, empowering them to make a positive impact. Not only does this better the company from an eco-perspective, but in communicating these initiatives they are playing to a consumer movement who increasingly turns to sustainability with their buying decisions.

Two, the study highlights the significance of ES tools prevailing. With these technologies, small-scale businesses can ease procurement processes, cut costs, and increase supplier collaboration. With this level of intelligence, businesses can now be more selective with the products they buy to ensure that those purchases are in line with their sustainability purpose and help maximize operational productivity.

The third trend is to develop closer relationships with greener suppliers. This is promoted to managers as a need for them to come together in their appreciation of ecological approaches and innovation that can achieve empirical benefits. Moreover, efforts can also be undertaken to enhance supply chain resilience and flexibility by evolving partnerships with suppliers as regulatory requirements change or when market demands shift.

Finally, SMEs should talk about the sustainable activities they have implemented to their stakeholders such as customers, investors and community. Reporting transparently on EP and sustainable business practices not only improves brand image and fosters customer loyalty, but also demonstrates respect and trust towards stakeholders, thereby strengthening market competitiveness.

Limitations and future research directions

Revisiting current research and searching for future directions in the field of sustainable procurement and EP. Second, by using longitudinal studies to determine the short-term and long-term effects of GP and ES on

organizational EP, it will be possible to determine the course that sustainability in SMEs takes. This understanding will challenge us to develop customized strategies that cater to the unique issues and benefits specific to different sectors of manufacturing. Furthermore, discipline-specific analyses could examine the adoption of sustainable procurement practices, offering a chance to create strategies that are not just sustainable, but also tailored to the needs of each sector.

The way the adoption of GP/ES practices is affected by regulatory frameworks should be further explored. An analysis could also be done on the government policies and incentives that lead to sustainability among the SMEs. Also, investigating the decision-making behaviour in sustainable procurement can provide insights into obstacles and drivers to support the implementation of sustainability actions by becoming aware of the attitudes and beliefs held by top management and employees.

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