SUSTAINABLE SCHOOL TECHNOLOGY PROCUREMENT THROUGH SIPLAH: A CASE STUDY OF CV MASTOR COMPUTINDO IN SOLO RAYA INDONESIA

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Abstract

This research seeks to understand how small and medium enterprises (SMEs) work with government led e-procurement systems to implement sustainable practices, focusing on CV Mastor Computindo a SIPLah – registered school technology vendor in Solo Raya, Indonesia. As public e-procurement continues to expand globally, there is much confidence growing in platforms like SIPLah that their operational structures have the ability to enhance transparency, cost efficiency and accountability in public service delivery. Although less is known about their contribution in promoting Environmental, Social and Governance (ESG) goals especially in developing countries. Using a qualitative case study method, data were collected through semi-structured interviews, document analysis and platform observations. Findings show that though SIPLah enhances transactional accountability and vendor traceability, it has no standard sustainability criteria. CV-Mastor Compuntido has got non -formalized ESG integrated elements such as ethical sourcing and selling of energy efficient products, despite hampered by inadequate financial and institutional capacity. The research concludes that despite the fact that SIPLah provides a good structure for digital procurement innovation, its capacity to implement sustainable practices among SMEs relies on structural improvements. Such as ESG – based vendor assessments, incentives and targeted capacity building. These findings contribute to the efforts on digital transformation and sustainable innovation in public procurement

Keywords: Digital transformation, CV Mastor Computindo, ESG, SIPLah, Sustainable Procurement

Introduction

With the digital world at our hands, sweeping changes have occurred in the public sector particularly the education sector that is pertinent to everybody regardless of one's status. In the public sector arena accountability, transparency and trust should not be seen but felt by the administrators and the tax payers (Rejeb et al, 2023). With digitalization taking centre stage, the public sector has not been left out. Here our main focus will the education sector where accountability, transparency and efficiency are not only key to administrators but also the entire public because education is necessity to every citizen (Walker and Brammer, 2012, Rejeb et al, 2023).

The Indonesian government being committed to the cause, in that vain in 2019, the government unveiled the digital space called Sistem Informasi Pengadaan di Sekolah (SIPLah) where procurement of educational goods and services would be conducted using public funds. (Susanto et al, 2024). The main objective of the government is to encourage transparent transactions and lure Small Medium Enterprises, in line with Sustainable Development Goals (SDGs) to utilize the digital platform (Salsabila et al, 2024, Rejeb et al, 2023). Recent literature has proved that world over sustainable public procurement is gaining momentum as strategic policy instrument that aligns economic decision making as well as social affairs (Benameur et al ,2023, Scroufe & Melnyk,2017).

It is now believed that digital procurement systems can support the sustainability ideology which enables governments, institutions and businesses to meet ESG objectives (Utami et, 2025; Sroufe& Stevenson 2018). In line with that notion SIPLah is making procurement easier than before and has the potential to instill sustainability ideals into school supply chains. Despite yielding high gains, empirical assessments of SIPLah's effectiveness in achieving sustainability at local level remain limited. (Susanti et al). Available research is more on the system usability and compliance (Setyawan et al, 2022), little is known about how digital procurement systems influence sustainable practices among small medium enterprises. More understanding is needed t to find out how small medium enterprises using SIPLah can adopt sustainable business practices in service delivery, after sales services and technological adaptation. (Cortes et al, 2021).

The study provides solution to the prevailing situation by investigating the operating CV Mastor Computindo digital school supplier trading in Solo Raya region, that is already registered with SIPLah system, to find out how SMEs contribute to sustainable procurement in education. Through exploring its procurement mechanisms, customer engagement practices and matching them with sustainability efforts, this paper

contributes to the discourse on digital-on-digital innovation and sustainable management in education sector procurement (Stutz et al ,2023; and Hart2019).

This study aims to explore how CV Master Computindo implements sustainable procurement practices through the SIPLah platform, particularly within the context of school-level technology procurement. It seeks to examine the challenges and opportunities faced by SIPLah vendors in aligning their business operations with Environmental, Social, and Governance (ESG) principles within a digital procurement system. Furthermore, this study intends to understand the extent to which the SIPLah system supports sustainable innovation and contributes to advancing sustainability goals in the education sector. In order to achieve these objectives, the study addresses the following key research questions: How does CV Master Computindo implement sustainable procurement practices? What challenges and opportunities do vendors encounter when aligning with ESG goals in a digital procurement environment? And to what extent does the SIPLah system enable and promote sustainable innovation in school-level procurement?

Implementation of sustainable procurement practices through SIPLah

The Sistem Informasi Pengadaan di Sekolah (SIPLah) was introduced by the ministry of education in 2019 purposely to facilitate and digitalize school procurement processes via online spaces (Susanto el, 2024). Its main objective is to facilitate transparency, efficiency and accountability not only in the education sector but also the entire public sector (Walker and Brammer, 2012). Recent research has shown digital procurement systems such as SIPLAH enable immediate reporting, recording of transactions and straight deductions of various commitments on every transaction as it occurs which promotes transparency, efficiency and accountability (Rejeb et al, 2023, Susanto et al, 2024).

Sustainable procurement entails building an ecosystem that aligns Environmental, Social and Governance issues with purchasing decisions (Appolloni et al, 2014). Officially SIPLah vendors are not required to meet ESG standards but they got an opportunity to envisage sustainability in their offerings such as the energy efficient products and ethical sourcing (Benameur et al, 2023, Sroufe and Melnyk, 2017). Also, in agreement with Utami et al (2025), the platform's digital permits sustainability through product tracing and data transparency.

It is also worth to note that the real ecosystem of sustainability in the vendor's daily activities in most of the times is informal especially in situations that do not have mandatory green criteria (Cortes et al, 2021). Additionally, to say is SIPLaH has the ability to promote sustainable procurement but it is also worth to consider that its success rests on vendor capabilities and policy incentives (OECD 2022).

Challenges And Opportunities in Aligning with Esg Goals.

Practicing ESG ideals has always been difficult for SMEs because they work with less funds amidst highly competitive business environments (Appoloni et al , 2014, Setyawan et al , 2022) . CV Mastor Computindo same as other SIPLah vendors works without structured ESG guide lines. This is the same as Rajeb et al (2023) discovered that the absence of regulatory guidance incapacitates ESG performance in public procurement networks.

Resource shortages such as limited capital, training and sustainable product access have been also major obstacles for SMEs to maneuver on with ESG goals (Cortes et al, 2021). Furthermore, they experience information asymmetries which makes it difficult for them to evaluate and grade themself on sustainability (Srouse& Stevenson, 2018). Inspite of the challenges, SIPLah still gives room for visibility and client expansion which can motivate vendors to modify on their sustainability practices.

Governments should promote sustainability efforts through support policies such as sustainability – oriented scoring or green procurement incentives (Hoque & Parker, 2021; Benameur et al, 2023). If not, sustainability efforts will remain split and vendor led rather than institutionalized.

SIPLAH's Support for Sustainable Innovation in School Procurement

Digital spaces like SIPLah can create meaningful change when aligned with strategic goals (Venkatesh et al, 2022). It facilitates automated procurement, record keeping and supplier monitoring, which are key factors in aligning ESG indicators and enabling systematic updating and efficiency. (OECD,2022, Susanto et al ,2024). Although SIPLaH in its current form does not have reward systems for sustainability, such as green certification or preferred vendor status (Walker & Brammer,2012).

Utami et al. (2025) advised that digital education procurement must be embedded in the broader spectrum of digital literacy and stakeholder capacity. Inadequate training and lack of enough regulatory tools discourages digital platform innovation in line with sustainable practices.

Therefore, the SIPLaH mechanism is two-way model that supports procurement innovation, but its sustainability performance rests on vendor readiness and the presence of enabling ESG -oriented policies (Scroufe et al, 2019, Rejeb et al 2023).

Methods

CV Mastor Computindo, purposive sampling was used. It was chosen because of the following reasons. CV Mastor Computindo is registered vendor of the SIPLah platform. Its main clients are schools in the Solo Raya region. It has got proven record in digital procurement operations and ability to advance sustainability in its daily operations. CV Mastor Computindo is very good practical case enabling us to get insightful information on digital and sustainable innovation in SME public procurement.

Data was obtained from multiple sources to ensure triangulation and trustworthiness. Semi-structured interviews were conducted with four company directors and procurement staff at CV Mastor Computindo, four school procurement officials using SIPLah, and three officials from the Ministry of Education's procurement department. The discussions covered topics such as procurement procedures, sustainability practices, ESG compliance, and challenges encountered in the process. Document analysis was carried out through a critical examination of SIPLah transaction records and vendor performance reports, company reports, marketing instruments, and sustainability statements, as well as government policy documents related to SIPLah and sustainable procurement. In addition, platform observation was conducted by examining the SIPLah procurement interface, product listings, order logs, and vendor profiles to assess their alignment with sustainable features.

The data analyzed using thematic content analysis (Braun and Clarke, 2006), guided by three main research questions: how sustainable procurement practices are implemented through SIPLah, what challenges and opportunities exist in integrating ESG goals, and how SIPLah supports innovation in school-level technology procurement. A coding framework was developed based on both pre-defined themes—such as transparency, cost efficiency, and after-sales services—and emerging codes including local supplier empowerment and environmental awareness. To ensure trustworthiness, data validity was maintained through cross-checking among team members in relation to interviewees' responses, transferability was supported by providing detailed contextual explanations, and dependability was ensured by maintaining a complete audit trail of data collection and analysis.

Results and Discussions

Implementation of sustainable procurement practices through SIPLaH

CV Mastor has taken on many practices that involve goals of sustainable procurement despite some challenges they come with.

Digital transparency and traceability

The firm utilises SIPLah's system -incorporated features to facilitate real-time transparency, product traceability and proof of delivery. interviewees found out that schools were happy with the price standardization and invoicing system which minimises the chances of fraud and budget misuse.

Environmentally friendly offerings.

The company has started the selling of energy -efficient devices (for example LED projectors, low energy laptops), however these are only 30% of its catalog. According to a procurement officer, "some schools demand for green products despite the fact that most of them center on price and function."

Vendor commitment to ethical sourcing.

CV Mastor Computindo is publicly accepted not to use vendors linked with un ethical behaviour nevertheless it does not have formal structure. The owner said "we know our local suppliers on the personal basis; they are from the community and follow good working methods."

Challenges and opportunities in integrating ESG goals.

Although its commitment to sustainability cannot go unnoticed, CV Mastor Computindo experiences several problems in integrating fully with ESG goals. Lack of clear ESG guidelines on SIPLah. Absence of mandatory checklist or sustainability scoring for vendors. As noted by one staff member, "SIPLah demands for legality and delivery performance. ESG is not always a concern.

Inadequate resources for innovation. The company does not have enough money for research and development that is to say improving on its eco- product development or digital reporting grades. Though there are new developments on some green practices, a lot of work is still informal and uncovered.

Opportunity through market visibility.

Despite the above challenges, SIPLah has expanded the company's market base and customer trust which has enabled it establish strong relationships with many schools across Solo Raya. In the end sustainability efforts improve which makes the firm more competitive.

SIPLah 's support for sustainable innovation.

The SIplah platform positively and negatively affects sustainable motivation,

Positive: E- catalog and automated reporting

SIPLah allows alignment with ARKAS, facilitating schools and vendors to upload procurement reports. CV Mastor Computindo has helped in reducing paper- based bureaucracy.

Negative: Absence of reward system sustainability.

There are no benefits such as priority listing, green vendor badges for sustainable suppliers. As one manager explained, "schools will carry out a price search and compare prices regardless of which kind of products offered for sale whether standardised or recycled"

Table 1 Summary findings

Theme	Evidence highlights
Digital traceability	Schools benefit from automated receipts and delivery tracking.
Green product inclusion	< 30% catalog contains energy- efficient tech
ESG alignment	No clear ESG frame work, funding challenges and informal practices.
SIPLah enablers	Broader school reach, platform trust and reduced paper work.
SIPLAH limitations	No sustainability progress report
Opportunities	CV Mastor plans differentiate via sustainability if policies align accordingly.

Digital Procurement as Vehicle for Transparency and Efficiency

Same as already said in global literature (Walker & Brammer, 2012; Rejeb et al 2023), SIPLah's digitalization of procurement has increased transactional transparency, reduced bureaucratic delays and standardized vendor accountability. CV Mastor has used SIPLah's system features such as e- invoicing and product tracking to promote operational credibility and improve institutional trust among schools.

Informal sustainability: intentions without institutional incentives

Though CV Mastor Computindo has got informal sustainability traits, for example ethical sourcing and limited green product offerings, these do not reflect in SIPlah's regulatory frame work. This was already said by Setiadi et al (2022) and Utami et al (2025) that lack of ESG – integrated procurement criteria incapacitate the transformative change of public e- procurement systems. The phenomenon also supports findings from Sroufe & Stevenson (2018), who propose sustainable supply chain practices often remain informal unless when incorporated in assessment criteria.

Moreover, SMEs like CV Mastor Compuntindo experience unfamiliar challenges such as financial, technological and information challenges that inhibit their efforts to capitalise in ESG -aligned innovation (Appolloni et al, 2014; Cortes et al 2021). Without a well-defined budget from the government, sustainability remains out reach for most vendors.

SIPlah's double edged role: Enabler and Limiter of innovation.

This case study shows SIPlah's role, it is both facilitator of efficient procurement and structural limiter of sustainability innovation. Though its alignment with ARKAS and other monitoring systems helps in reducing costs and enabling accountability, it is still unable to support value – based procurement such as green certifications and social impact scores. These realities incorporate with the recent short falls of digital procurement tools as compliance – centric rather transformation oriented (OECD, 2022, Venkatesh et al., 2022). If SIPLah's objective is to promote systematic sustainability, it must transform from a procurement "market place "into governance tool that rewards sustainability performance, majorly in SMEs. The present structures look at legality and delivery promptness without using procurement to enhance broader ESG outcomes, as advanced by scholars for example Hoque & Parker (2021) and Scroufe & Melnyk (2017).

Toward Strategic Procurement Policy.

This research advocates for the current demand of the strategic public procurement reform in Indonesia. The data has made it clear that SMEs are ready to incorporate sustainable practices but still have less capabilities. Enhancing these capabilities will require: Spearheaded government sustainability efforts incorporated into SIPLAH. Technical and financial funding for vendors. Rewarding structures such as vendor rankings or badges for sustainability. Such changes are helped by frameworks from Rejeb et al (2023) and the UN Environment Programme, which enhance capacity-building and policy coherence as important components of green public procurement. **T**he findings approve the research model of sustainable e-procurement ecosystems, (Scroufe et al, 2019) where digital tools are delivery tools of goods and services but also facilitate governance mechanisms. CV Mastor Computindo represents how digitalized active SME work as an agent as well as phenomenon with in sustainability – oriented procurement network if the organisational structure transforms accordingly.

Although this research provides valuable insights into the implementation of sustainable procurement practices within the SIPLah system by CV Mastor Computindo, several limitations must be acknowledged. First, the study employed a single-case design by focusing only on CV Mastor Computindo, an SME based in Solo Raya. While this approach allowed for an in-depth contextual analysis, it limited the generalizability of the findings to other vendors, regions, or procurement contexts, since the unique organizational setup, customer base, and market positioning of the company may not accurately represent the diverse nature of SIPLah vendors across Indonesia. Second, the scope of sustainability assessment relied largely on qualitative measures, with

greater emphasis on self-reported data and document analysis rather than quantitative metrics such as carbon footprint calculations, life cycle cost analyses, or third-party ESG audit results. As a result, the sustainability performance discussed remains more perceptual and descriptive than empirically verified.

Third, due to limited access, the study did not include direct interviews with SIPLah system developers or Ministry of Education officials responsible for policy and platform design, which restricted the ability to examine institutional motivations, system limitations, or the regulatory framework underlying the SIPLah architecture. Fourth, the research was conducted at a single point in time, even though digital platforms and procurement policies in Indonesia evolve rapidly.

Future system upgrades, policy reforms, and market shifts may significantly influence how vendors integrate sustainability goals, rendering the current findings potentially time-bound. Finally, potential bias in self-reporting must be considered, as reliance on the company's own data could lead to conflicts in reporting. Respondents may have exaggerated their sustainability efforts to present an impression of steady progress rather than reflecting the actual situation on the ground. To address these limitations and enhance trustworthiness, several strategies were applied. Triangulation was used by analyzing data from interviews, procurement documents, and the SIPLah platform interface. Member checking was conducted to validate interpretations, while thick description was employed to support transferability of the findings to similar procurement environments.

Conclusion

This research has examined how a local technology supplier - CV Mastor Computindo works with the SIPLah procurement system to offer education goods and services in a manner that calls to incorporate them with sustainable procurement principles. Using case of qualitative approach, the study analysed the implementation of sustainability practices, challenges and opportunities in integrating them with ESG goals and the ability of SIPLah embed in sustainable innovation with school -level procurement.

The results prove that SIPLah has positively increased transactional, transparency, traceability and vendor accountability practices which are in line with broader global trends in digital public procurement. CV Mastor has got some informal sustainability practices such as offering more energy efficient products and ethical sourcing. Although the absence of formal sustainability incentives, inadequate SME resources and the lack of ESG grading system with in the SIPLah platform have hampered further progress.

SIPlah's current form represents a compliance -oriented platform, majorly emphasising legality, delivery performance and pricing – rather than value- based or sustainability centred method. To upgrade into full capacity as tool for sustainable innovation, SIPLah must involve into strategic governance mechanism that strengthens and incentivizes vendors who practice genuine ESG aligned practices. In conclusion, this research contributes to academic and policy initiatives by expressing that though digital platforms such as SIPLah can facilitate sustainability, their success mainly hinges on government support, performance models and vendor capability development. The absence of these factors means that sustainability progress of digital procurement may be minimal or just mere show off.

References

Appolloni, A., Sun, H., Jia, F., & Li, X. (2014). Green procurement in the private sector. *Journal of Purchasing and Supply Management*, 20(4), 230–242. https://doi.org/10.1016/j.pursup.2014.02.001

Benameur, K. B., Mostafa, M. M., Hassanein, A., & Shariff, M. Z. (2023). Sustainability reporting scholarly research: A bibliometric review. *Management Review Quarterly*, 74, 823–866. https://doi.org/10.1007/s11301-023-00319-7

Cortes, J. D., Guix, M., & Bohle Carbonell, K. (2021). Innovation for sustainability in the Global South. arXiv preprint arXiv:2104.07543

Hoque, Z., & Parker, L. (2021). Performance measurement, governance and accountability. *Journal of Accounting & Organizational Change.*

OECD. (2022). Public Procurement: Shaping Digital Education Ecosystems. https://www.oecd.org/education/digital-education-outlook-2023

Rejeb, A., Rejeb, K., Kayikci, Y., Appolloni, A., & Treiblmaier, H. (2023). Mapping the knowledge domain of green procurement. *Environment, Development and Sustainability*. https://doi.org/10.1007/s10668-023-03948-w

Setyawan, N. A., Utami, H., Nugroho, B. S., Ayuwardani, M., & Suharmanto. (2022). Drivers of green supply chain adoption in Indonesian SMEs. arXiv preprint arXiv:2212.12891

Sroufe, R. P., & Melnyk, S. A. (2017). Developing Sustainable Supply Chains: Volume I. Business Expert Press

Sroufe, R. P., & Stevenson, C. (2018). Integrated Management: How Sustainability Creates Value. *Emerald Publishing*

Sroufe, R., Hart, S., & Lovins, H. (2019). Transforming Business Education. *Journal of Management Education*, 43(1), 3–23. https://doi.org/10.1177/1052562918817918

Sroufe, R.P. (2020). Organizational Strategies for sustainable development.

Stütz, J.-D., Karras, O., Oelen, A., & Auer, S. (2023). Digital procurement workspaces. arXiv preprint arXiv:2303.03882

Susanto, H., Martono, T., Wardani, D. K., Sangka, K. B., & Wahyono, B. (2024). SIPLah system quality and user acceptance. Data in Brief, 55, 110613. https://doi.org/10.1016/j.dib.2024.110613

Utami, A., Sujarwo, Fauziah, P. Y., & Trisnani, N. (2025). Digital transformation in curriculum delivery. *International Journal on Studies in Education* (IJonSE), 7(2), 331–349. https://doi.org/10.46328/ijonse.343

Venkatesh, V., Thong, J. Y., & Xu, X. (2022). Public digital innovation: Models and measurements. Government Information Quarterly, 39(2), 101684. https://doi.org/10.1016/j.giq.2022.101684

Walker, H., & Brammer, S. (2012). Sustainable procurement and e-procurement integration. International *Journal of Production Economics*, 140(1), 256–268. https://doi.org/10.1016/j.ijpe.2012.01.008

Setiadi, R. et al. (2022) E-procurement performance in Indonesian Public Sector Management

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101

Stake, R. E. (2005). The art of case study research. Sage

Yin, R. K. (2018). Case Study Research and Applications: Design and Methods (6th ed.). Sage Publications.

Salsabila, A., Arum, W. S. A., & Karnati, N. (2024). Effectiveness of the School Procurement Information System (SIPLah) in procurement of goods and services in public schools. *Journal of Counselling and Educational Research*, 1(1), 11–21. https://doi.org/10.63203/jcerch.v1i1.12