

analyze the significance of the barriers. The resulting model offers valuable industry insights into barriers hindering the adoption of blockchain for enhancing transparency in the procurement process in apparel supply chains. The outcome of the ISM analysis reveals that the most significant challenges in implementing blockchain in sourcing and procurement in the apparel supply chain include underdeveloped technology to adopt blockchain, and lack of technological literacy & expertise on blockchain, followed by security & privacy concerns associated with the integration of blockchain. As independent drivers, focused attention on mitigating these barriers is imperative for successful blockchain implementation within the industry.

Post-analysis discussions with industry have yielded valuable insights into managerial implications, focusing on addressing root cause barriers that could lead to develop decision support tools for strategic planning of blockchain implementation in apparel companies. The study proposes addressing each barrier systematically, starting from the bottom-level barriers, by developing appropriate Key Performance Indicators (KPIs). Insights are provided on how to use these findings as a decision support tool during the initial stage of blockchain implementation. However, further research is deemed essential to validate and explore the identified barriers more comprehensively. Methodologies such as Structural Equation Modeling (SEM) could be leveraged to enhance the validity of the data. Future studies should aim to develop strategies and frameworks for effectively implementing blockchain in the sourcing and procurement process in the apparel supply chain. These efforts should also extend to other supply chain functions, contributing to the advancement of the industry's technological landscape.

6. REFERENCES

- Agrawal, T.K., Koehl, L., Campagne, C., 2018. A secured tag for implementation of traceability in textile and clothing supply chain. *International Journal of Advanced Manufacturing Technology* 99, 2563–2577. <https://doi.org/10.1007/s00170-018-2638-x>
- Agrawal, T.K., Kumar, V., Pal, R., Wang, L., Chen, Y., 2021. Blockchain-based framework for supply chain traceability: A case example of textile and clothing industry. *Comput Ind Eng* 154. <https://doi.org/10.1016/j.cie.2021.107130>

- Agrawal, T.K., Pal, R., 2019. Traceability in textile and clothing supply chains: Classifying implementation factors and information sets via Delphi study. *Sustainability* (Switzerland) 11. <https://doi.org/10.3390/su11061698>
- Ahmed, W.A.H., Maccarthy, B.L., 2021. Blockchain-enabled supply chain traceability in the textile and apparel supply chain: A case study of the fiber producer, lenzing. *Sustainability* (Switzerland) 13. <https://doi.org/10.3390/su131910496>
- Alves, L., Ferreira Cruz, E., Lopes, S.I., Faria, P.M., Rosado da Cruz, A.M., 2022. Towards circular economy in the textiles and clothing value chain through blockchain technology and IoT: A review. *Waste Management and Research* 40, 3–23. <https://doi.org/10.1177/0734242X211052858>
- Amos, A., Taylor, K., Johnson, K., Comitz, E., Adams, R., Tracton, G., Chera, B., Marks, L., Mazur, L., 2017. Assessing the quality of the A3 thinking tool for problem solving, in: *Advances in Intelligent Systems and Computing*. Springer Verlag, pp. 49–61. https://doi.org/10.1007/978-3-319-41947-3_6
- Anand, A., Seetharaman, A., Maddulety, K., 2022. Implementing Blockchain Technology in Supply Chain Management. *Academy and Industry Research Collaboration Center (AIRCC)*, pp. 147–160. <https://doi.org/10.5121/csit.2022.120713>
- Bassuk, J.A., Washington, I.M., 2013. The a3 problem solving report: a 10-step scientific method to execute performance improvements in an academic research vivarium. *PLoS One* 8. <https://doi.org/10.1371/journal.pone.0076833>
- Benstead, A. V, Mwesiumo, D., Moradlou, H., Boffelli, A., 2022. Entering the world behind the clothes that we wear: practical applications of blockchain technology. *Production Planning and Control*. <https://doi.org/10.1080/09537287.2022.2063173>
- Bhaduri, G., Ha-Brookshire, J.E., 2015. Gender differences in information processing and transparency: Cases of apparel brands' social responsibility claims. *Journal of Product and Brand Management* 24, 504–517. <https://doi.org/10.1108/JPBM-08-2014-0683>
- Bhaduri, G., Ha-Brookshire, J.E., 2011. Do transparent business practices pay? Exploration of transparency and consumer purchase intention. *Clothing and Textiles Research Journal* 29, 135–149. <https://doi.org/10.1177/0887302X11407910>
- Blaschke, S., O, C.C., Schofield, P., 2017. Identifying opportunities for nature engagement in

- cancer care practice and design: protocol for four-round modified electronic Delphi. *BMJ Open* 7, 13527. <https://doi.org/10.1136/bmjopen-2016>
- Brandão, A., Gadekar, M., Cardoso, F., 2018. The impact of a firm's transparent manufacturing practices on women fashion shoppers. *Journal of Global Fashion Marketing* 9, 322–342. <https://doi.org/10.1080/20932685.2018.1503555>
- Brun, A., Karaosman, H., Barresi, T., 2020. Supply chain collaboration for transparency. *Sustainability (Switzerland)* 12. <https://doi.org/10.3390/su12114429>
- Bukola A. Odulaja, Kelechi Chidiebere Ihemereze, Ololade Gilbert Fakeyede, Adekunle Abiola Abdul, Damilola Emmanuel Ogedengbe, Chibuike Daraojimba, 2023. HARNESSING BLOCKCHAIN FOR SUSTAINABLE PROCUREMENT: OPPORTUNITIES AND CHALLENGES. *Computer Science & IT Research Journal* 4, 158–184. <https://doi.org/10.51594/csitrj.v4i3.619>
- Caldarelli, G., Zardini, A., Rossignoli, C., 2021. Blockchain adoption in the fashion sustainable supply chain: Pragmatically addressing barriers. *Journal of Organizational Change Management* 34, 507–524. <https://doi.org/10.1108/JOCM-09-2020-0299>
- Carrières, V., Lemieux, A.A., Margni, M., Pellerin, R., Cariou, S., 2022. Measuring the Value of Blockchain Traceability in Supporting LCA for Textile Products. *Sustainability (Switzerland)* 14. <https://doi.org/10.3390/su14042109>
- Carter, C.R., Rogers, D.S., 2008. A framework of sustainable supply chain management: Moving toward new theory. *International Journal of Physical Distribution and Logistics Management*. <https://doi.org/10.1108/09600030810882816>
- Central Bank of Sri Lanka, 2022. [press_20221206_external_sector_performance_2022_october_e1](https://www.csl.gov.lk/press/20221206_external_sector_performance_2022_october_e1).
- Chen, C.-L., Shang, X., Tsaur, W.-J., Weng, W., Deng, Y.-Y., Wu, C.-M., Cui, J., 2021. An anti-counterfeit and traceable management system for brand clothing with hyperledger fabric framework. *Symmetry (Basel)* 13. <https://doi.org/10.3390/sym13112048>
- Cheng, Z., Xiao, J., Xie, K., Huang, X., 2013. Optimal product quality of supply chain based on information traceability in fashion and textiles industry: An adverse logistics perspective. *Math Probl Eng* 2013. <https://doi.org/10.1155/2013/629363>
- Cianfanelli, E., Goretti, G., 2017. TXD. From Traceability to Experience Design in Fashion

- Accessories Production. *Design Journal* 20, S4132–S4145.
<https://doi.org/10.1080/14606925.2017.1352912>
- Cimino, M.G.C.A., Marcelloni, F., 2011. Autonomic tracing of production processes with mobile and agent-based computing. *Inf Sci (N Y)* 181, 935–953.
<https://doi.org/10.1016/j.ins.2010.11.015>
- Conti, M., Kumar, E.S., Lal, C., Ruj, S., 2018. A Survey on Security and Privacy Issues of Bitcoin. *IEEE Communications Surveys & Tutorials* 20, 3416–3452.
<https://doi.org/10.1109/COMST.2018.2842460>
- Corsini, F., Gusmerotti, N.M., Frey, M., 2023. Fostering the Circular Economy with Blockchain Technology: Insights from a Bibliometric Approach. *Circular Economy and Sustainability* 3, 1819–1839. <https://doi.org/10.1007/s43615-023-00250-9>
- Davarzani, H., Fahimnia, B., Bell, M., Sarkis, J., 2016. Greening ports and maritime logistics: A review. *Transp Res D Transp Environ* 48, 473–487.
<https://doi.org/10.1016/j.trd.2015.07.007>
- Dubey, R., Gunasekaran, A., Bryde, D.J., Dwivedi, Y.K., Papadopoulos, T., 2020. Blockchain technology for enhancing swift-trust, collaboration and resilience within a humanitarian supply chain setting. *Int J Prod Res* 58, 3381–3398.
<https://doi.org/10.1080/00207543.2020.1722860>
- Egels-Zandén, N., Hansson, N., 2016. Supply Chain Transparency as a Consumer or Corporate Tool: The Case of Nudie Jeans Co. *J Consum Policy (Dordr)* 39, 377–395.
<https://doi.org/10.1007/s10603-015-9283-7>
- Egels-Zandén, N., Hulthén, K., Wulff, G., 2015. Trade-offs in supply chain transparency: The case of Nudie Jeans Co. *J Clean Prod* 107, 95–104.
<https://doi.org/10.1016/j.jclepro.2014.04.074>
- Fraser, E., van der Ven, H., 2022. Increasing Transparency in Global Supply Chains: The Case of the Fast Fashion Industry. *Sustainability (Switzerland)* 14.
<https://doi.org/10.3390/su141811520>
- Garcia-Torres, S., Albareda, L., Rey-Garcia, M., Seuring, S., 2019. Traceability for sustainability – literature review and conceptual framework. *Supply Chain Management* 24, 85–106. <https://doi.org/10.1108/SCM-04-2018-0152>

- Garcia-Torres, S., Rey-Garcia, M., Sáenz, J., Seuring, S., 2022. Traceability and transparency for sustainable fashion-apparel supply chains. *Journal of Fashion Marketing and Management* 26, 344–364. <https://doi.org/10.1108/JFMM-07-2020-0125>
- Gayialis, S.P., Kechagias, E.P., Papadopoulos, G.A., Masouras, D., 2022. A Review and Classification Framework of Traceability Approaches for Identifying Product Supply Chain Counterfeiting. *Sustainability (Switzerland)* 14. <https://doi.org/10.3390/su14116666>
- Gonçalves, A., Silva, C., 2021. Looking for sustainability scoring in apparel: A review on environmental footprint, social impacts and transparency. *Energies (Basel)*. <https://doi.org/10.3390/en14113032>
- Grant, M.J., Booth, A., 2009. A typology of reviews: An analysis of 14 review types and associated methodologies. *Health Info Libr J*. <https://doi.org/10.1111/j.1471-1842.2009.00848.x>
- Guercini, S., Runfola, A., 2009. The integration between marketing and purchasing in the traceability process. *Industrial Marketing Management* 38, 883–891. <https://doi.org/10.1016/j.indmarman.2009.03.016>
- Guo, S., Sun, X., Lam, H.K.S., 2020. Applications of Blockchain Technology in Sustainable Fashion Supply Chains: Operational Transparency and Environmental Efforts. *IEEE Trans Eng Manag*. <https://doi.org/10.1109/TEM.2020.3034216>
- Hader, M., Tchoffa, D., Mhamedi, A.E., Ghodous, P., Dolgui, A., Abouabdellah, A., 2022. Applying integrated Blockchain and Big Data technologies to improve supply chain traceability and information sharing in the textile sector. *J Ind Inf Integr* 28. <https://doi.org/10.1016/j.jii.2022.100345>
- Hastig, G.M., Sodhi, M.M.S., 2020. Blockchain for Supply Chain Traceability: Business Requirements and Critical Success Factors. *Prod Oper Manag* 29, 935–954. <https://doi.org/10.1111/poms.13147>
- Hazel, D., Kang, J., 2018. The Contributions of Perceived CSR Information Substantiality Toward Consumers' Cognitive, Affective, and Conative Responses: The Hierarchy of Effects Model Approach. *Clothing and Textiles Research Journal* 36, 62–77. <https://doi.org/10.1177/0887302X17750747>

- Hughes, L., Dwivedi, Y.K., Misra, S.K., Rana, N.P., Raghavan, V., Akella, V., 2019. Blockchain research, practice and policy: Applications, benefits, limitations, emerging research themes and research agenda. *Int J Inf Manage* 49, 114–129. <https://doi.org/https://doi.org/10.1016/j.ijinfomgt.2019.02.005>
- Jakhar, S.K., Barua, M.K., 2014. An integrated model of supply chain performance evaluation and decision-making using structural equation modelling and fuzzy AHP. *Production Planning and Control* 25, 938–957. <https://doi.org/10.1080/09537287.2013.782616>
- James, A.M., Montgomery, B., 2017. Engaging the fashion consumer in a transparent business model. *International Journal of Fashion Design, Technology and Education* 10, 287–299. <https://doi.org/10.1080/17543266.2017.1378730>
- Jestratijevic, I., Rudd, N.A., Uanhoro, J., 2020. Transparency of sustainability disclosures among luxury and mass-market fashion brands. *Journal of Global Fashion Marketing* 11, 99–116. <https://doi.org/10.1080/20932685.2019.1708774>
- Kamann, D.-J.F., Alfaro, J.A., Sebrek, S.S., 2019. 28 years of traceability management: Trends, bottlenecks and opportunities. *International Journal of Procurement Management* 12, 56–87. <https://doi.org/10.1504/IJPM.2019.096997>
- Kamble, S.S., Gunasekaran, A., Sharma, R., 2020. Modeling the blockchain enabled traceability in agriculture supply chain. *Int J Inf Manage* 52, 101967. <https://doi.org/https://doi.org/10.1016/j.ijinfomgt.2019.05.023>
- Kapse, C.P., Kumar, A., Dash, M.K., Zavadskas, E.K., Luthra, S., 2018. Developing textile entrepreneurial inclination model by integrating experts mining and ISM-MICMAC. *Int J Prod Res* 56, 4709–4728. <https://doi.org/10.1080/00207543.2018.1443523>
- Kashmanian, R.M., 2018. Supplier codes of conduct: Company authorization of subcontractors. *Environmental Quality Management* 27, 9–27. <https://doi.org/10.1002/tqem.21559>
- Kaur, G., Gandhi, C., 2020. Chapter 15 - Scalability in Blockchain: Challenges and Solutions, in: Krishnan, S., Balas, V.E., Julie, E.G., Robinson, Y.H., Balaji, S., Kumar, R. (Eds.), *Handbook of Research on Blockchain Technology*. Academic Press, pp. 373–406. <https://doi.org/https://doi.org/10.1016/B978-0-12-819816-2.00015-0>
- Kim, M., Park, K., Yu, S., Lee, J., Park, Y., Lee, S.W., Chung, B., 2019. A secure charging

- system for electric vehicles based on blockchain. *Sensors (Switzerland)* 19. <https://doi.org/10.3390/s19133028>
- Kim, N.L., Kim, G., Rothenberg, L., 2020. Is honesty the best policy? Examining the role of price and production transparency in fashion marketing. *Sustainability (Switzerland)* 12. <https://doi.org/10.3390/SU12176800>
- Kirkire, M.S., Rane, S.B., Jadhav, J.R., 2015. Risk management in medical product development process using traditional FMEA and fuzzy linguistic approach: a case study. *Journal of Industrial Engineering International* 11, 595–611. <https://doi.org/10.1007/s40092-015-0113-y>
- Kumar, V., Hallqvist, C., Ekwall, D., 2017. Developing a framework for traceability implementation in the textile supply chain. *Systems* 5. <https://doi.org/10.3390/systems5020033>
- Lam, O.W.A., Lei, Z., 2019. Textile and apparel supply chain with distributed ledger technology (DLT), in: *Proceedings - IEEE International Conference on Mobile Data Management*. Institute of Electrical and Electronics Engineers Inc., pp. 447–451. <https://doi.org/10.1109/MDM.2019.000-4>
- Luthra, S., Govindan, K., Kannan, D., Mangla, S.K., Garg, C.P., 2017. An integrated framework for sustainable supplier selection and evaluation in supply chains. *J Clean Prod* 140, 1686–1698. <https://doi.org/10.1016/j.jclepro.2016.09.078>
- Ma, Y.J., Lee, H.-H., Goerlitz, K., 2016. Transparency of Global Apparel Supply Chains: Quantitative Analysis of Corporate Disclosures. *Corp Soc Responsib Environ Manag* 23, 308–318. <https://doi.org/10.1002/csr.1378>
- Madumali, S., Weerasinghe, B.A., Thibbotuwawa, A., Perera, H.N., 2023. Transparency in textile & apparel supply chains: a systematic review. *Journal of South Asian Logistics and Transport* 3, 71–101. <https://doi.org/10.4038/jsalt.v3i2.71>
- Mahmoudi, A., Mi, X., Liao, H., Feylizadeh, M.R., Turskis, Z., 2020. Grey Best-Worst Method for Multiple Experts Multiple Criteria Decision Making under Uncertainty. *Informatica (Netherlands)* 31, 331–357. <https://doi.org/10.15388/20-INFOR409>
- Malterud, K., Siersma, V.D., Guassora, A.D., 2016. Sample Size in Qualitative Interview Studies: Guided by Information Power. *Qual Health Res* 26, 1753–1760.

<https://doi.org/10.1177/1049732315617444>

Mangla, S.K., Luthra, S., Mishra, N., Singh, A., Rana, N.P., Dora, M., Dwivedi, Y., 2018.

Barriers to effective circular supply chain management in a developing country context. *Production Planning and Control* 29, 551–569.

<https://doi.org/10.1080/09537287.2018.1449265>

Mathiyazhagan, K., Govindan, K., NoorulHaq, A., Geng, Y., 2013. An ISM approach for the

barrier analysis in implementing green supply chain management. *J Clean Prod* 47, 283–297. <https://doi.org/10.1016/j.jclepro.2012.10.042>

Mejías, A.M., Bellas, R., Pardo, J.E., Paz, E., 2019. Traceability management systems and

capacity building as new approaches for improving sustainability in the fashion multi-tier supply chain. *Int J Prod Econ* 217, 143–158. <https://doi.org/10.1016/j.ijpe.2019.03.022>

Modi, D., Zhao, L., 2020. Social media analysis of consumer opinion on apparel supply chain

transparency. *Journal of Fashion Marketing and Management* 25, 465–481.

<https://doi.org/10.1108/JFMM-09-2019-0220>

Moretto, A., Macchion, L., 2022. Drivers, barriers and supply chain variables influencing the

adoption of the blockchain to support traceability along fashion supply chains.

Operations Management Research. <https://doi.org/10.1007/s12063-022-00262-y>

Mothersell, William M, Moore, Michael L, Reinerth, Michael W, Mothersell, W M, Moore, M

L, Reinerth, M W, 2008. Hoshin Kanri planning: the system of five alignments behind the Toyota Production System, *Int. J. Business Innovation and Research*.

Munir, M.A., Habib, M.S., Hussain, A., Shahbaz, M.A., Qamar, A., Masood, T., Sultan, M.,

Mujtaba, M.A., Imran, S., Hasan, M., Akhtar, M.S., Uzair Ayub, H.M., Salman, C.A.,

2022. Blockchain Adoption for Sustainable Supply Chain Management: Economic, Environmental, and Social Perspectives. *Front Energy Res* 10.

<https://doi.org/10.3389/fenrg.2022.899632>

Nazam, M., Hashim, M., Marcel Nută, F., Yao, L., Azam Zia, M., Yousaf Malik, M., Usman,

M., Dimen, L., 2022. Devising a Mechanism for Analyzing the Barriers of Blockchain Adoption in the Textile Supply Chain: A Sustainable Business Perspective.

<https://doi.org/10.3390/su>

Obser, S., 2015. Transparency and Traceability in the Textile and Clothing Supply Chain.

<https://doi.org/10.13140/RG.2.2.16892.74883>

Ølnes, S., Ubacht, J., Janssen, M., 2017. Blockchain in government: Benefits and implications of distributed ledger technology for information sharing. *Gov Inf Q*.

<https://doi.org/10.1016/j.giq.2017.09.007>

Palas, M.J.U., Bunduchi, R., 2021. Exploring interpretations of blockchain's value in healthcare: a multi-stakeholder approach. *Information Technology and People* 34, 453–495. <https://doi.org/10.1108/ITP-01-2019-0008>

Parker, G., Kastner, M., Born, K., Berta, W., 2021. Development of an Implementation Process Model: a Delphi study. *BMC Health Serv Res* 21.

<https://doi.org/10.1186/s12913-021-06501-5>

Pereira, C.R., Christopher, M., Lago Da Silva, A., 2014. Achieving supply chain resilience: the role of procurement. *Supply Chain Management* 19, 626–642.

<https://doi.org/10.1108/SCM-09-2013-0346>

Perera, H.N., Fahimnia, B., Tokar, T., 2020. Inventory and ordering decisions: a systematic review on research driven through behavioral experiments. *International Journal of Operations and Production Management* 40, 997–1039.

Perera, H.N., Hurley, J., Fahimnia, B., Reisi, M., 2019. The human factor in supply chain forecasting: A systematic review. *Eur J Oper Res* 274, 574–600.

<https://doi.org/10.1016/j.ejor.2018.10.028>

Pérez, J.J.B., Queiruga-Dios, A., Martínez, V.G., del Rey, Á.M., 2020. Traceability of ready-to-wear clothing through blockchain technology. *Sustainability (Switzerland)* 12.

<https://doi.org/10.3390/su12187491>

Piya, S., Shamsuzzoha, A., Khadem, M., 2020. An approach for analysing supply chain complexity drivers through interpretive structural modelling. *International Journal of Logistics Research and Applications* 23, 311–336.

<https://doi.org/10.1080/13675567.2019.1691514>

Rahman, Z., Yi, X., Tanzir Mehedi, S., Islam, R., Kelarev, A., 2022. Blockchain Applicability for the Internet of Things: Performance and Scalability Challenges and Solutions.

Electronics (Switzerland) 11. <https://doi.org/10.3390/electronics11091416>

Raj, T., Shankar, R., Suhaib, M., 2010. GTA-based framework for evaluating the feasibility of

- transition to FMS. *Journal of Manufacturing Technology Management* 21, 160–187.
<https://doi.org/10.1108/17410381011014350>
- Raja Santhi, A., Muthuswamy, P., 2022. Influence of Blockchain Technology in Manufacturing Supply Chain and Logistics. *Logistics*.
<https://doi.org/10.3390/logistics6010015>
- Rana, N.P., Dwivedi, Y.K., Hughes, D.L., 2021a. Analysis of Challenges for Blockchain Adoption within the Indian Public Sector: An Interpretive Structural Modelling Approach.
- Rana, N.P., Dwivedi, Y.K., Hughes, D.L., 2021b. Analysis of Challenges for Blockchain Adoption within the Indian Public Sector: An Interpretive Structural Modelling Approach.
- Rane, S.B., Thakker, S.V., 2020. Green procurement process model based on blockchain–IoT integrated architecture for a sustainable business. *Management of Environmental Quality: An International Journal* 31, 741–763. <https://doi.org/10.1108/MEQ-06-2019-0136>
- Reck, R., Castagna, A.C., Shuqair, S., Costa Pinto, D., 2022. The transparency paradox: When transparency cues helps or backfires for brands? *J Clean Prod* 372.
<https://doi.org/10.1016/j.jclepro.2022.133381>
- Richards, H., 2022. Risk, Reporting and Responsibility: Modern Slavery, Colonial Power and Fashion’s Transparency Industry. *International Journal for Crime, Justice and Social Democracy* 11, 47–60. <https://doi.org/10.5204/ijcjsd.2378>
- Richards, H., 2021. Rethinking value: ‘radical transparency’ in fashion. *Continuum (N Y)* 35, 914–929. <https://doi.org/10.1080/10304312.2021.1993575>
- Rinaldi, F.R., Di Bernardino, C., Cram-Martos, V., Pisani, M.T., 2022. Traceability and transparency: enhancing sustainability and circularity in garment and footwear. *Sustainability: Science, Practice, and Policy* 18, 132–141.
<https://doi.org/10.1080/15487733.2022.2028454>
- Rushton, Alan., Croucher, P., Baker, P., 2010. *The handbook of logistics and distribution management : understanding the supply chain*.
- Saberi, S., Kouhizadeh, M., Sarkis, J., Shen, L., 2019. Blockchain technology and its

- relationships to sustainable supply chain management. *Int J Prod Res* 57, 2117–2135.
<https://doi.org/10.1080/00207543.2018.1533261>
- Sadjadi, S.J., Karimi, M., 2018. Best-worst multi-criteria decision-making method: A robust approach. *Decision Science Letters* 7, 323–340. <https://doi.org/10.5267/j.dsl.2018.3.003>
- Shayganmehr, M., Kumar, A., Luthra, S., Garza-Reyes, J.A., 2021. A framework for assessing sustainability in multi-tier supply chains using empirical evidence and fuzzy expert system. *J Clean Prod* 317. <https://doi.org/10.1016/j.jclepro.2021.128302>
- Si, S.L., You, X.Y., Liu, H.C., Zhang, P., 2018. DEMATEL Technique: A Systematic Review of the State-of-the-Art Literature on Methodologies and Applications. *Math Probl Eng.*
<https://doi.org/10.1155/2018/3696457>
- Soepardi, A., Pratikto, Santoso, P.B., Tama, I.P., 2018. Interpretive structural modeling for technology-related barriers to energy efficiency improvement in Indonesia steel industry, in: *MATEC Web of Conferences*. EDP Sciences.
<https://doi.org/10.1051/mateconf/201815401057>
- Statista, 2024. value-of-the-global-apparel-market [WWW Document]. URL
<https://www.statista.com/outlook/cmo/apparel/worldwide#revenue> (accessed 4.27.24).
- Stevenson, M., Cole, R., 2018. Modern slavery in supply chains: a secondary data analysis of detection, remediation and disclosure. *Supply Chain Management* 23, 81–99.
<https://doi.org/10.1108/SCM-11-2017-0382>
- Sugathadasa, P.T.Ranil.S., Senadheera, S.W., Thibbotuwawa, A., 2021. A Study of Supply Chain Risk Factors of the Large- Scale Apparel Manufacturing Companies – Sri Lanka. *Engineer: Journal of the Institution of Engineers, Sri Lanka* 54, 49.
<https://doi.org/10.4038/engineer.v54i3.7459>
- Svensson, G., 2009. The transparency of SCM ethics: Conceptual framework and empirical illustrations. *Supply Chain Management* 14, 259–269.
<https://doi.org/10.1108/13598540910970090>
- Taber, K.S., 2018. The Use of Cronbach’s Alpha When Developing and Reporting Research Instruments in Science Education. *Res Sci Educ* 48, 1273–1296.
<https://doi.org/10.1007/s11165-016-9602-2>
- Tahriri, F., Mousavi, M., Hozhabri Haghighi, S., Zawiah Md Dawal, S., 2014. The application

- of fuzzy Delphi and fuzzy inference system in supplier ranking and selection. *Journal of Industrial Engineering International* 10, 66. <https://doi.org/10.1007/s40092-014-0066-6>
- Tate, W.L., Ellram, L.M., Dooley, K.J., 2012. Environmental purchasing and supplier management (EPSM): Theory and practice. *Journal of Purchasing and Supply Management* 18, 173–188. <https://doi.org/10.1016/j.pursup.2012.07.001>
- Thomas, D., Khanduja, D., 2022. ISM–ANP hybrid approach to prioritize the barriers in green lean Six Sigma implementation in construction sector. *International Journal of Lean Six Sigma* 13, 502–520. <https://doi.org/10.1108/IJLSS-09-2020-0140>
- Tong, X., Su, J., 2022. An empirical investigation into the effectiveness of cost transparency: Evidence from apparel brands. *Journal of Marketing Communications*. <https://doi.org/10.1080/13527266.2022.2086285>
- Tortorella, G., Cauchick-Miguel, P.A., Gaiardelli, P., 2019. Hoshin Kanri and A3: a proposal for integrating variability into the policy deployment process. *TQM Journal* 31, 118–135. <https://doi.org/10.1108/TQM-06-2018-0076>
- van-Eck, N. J., Waltman, L., 2014. Measuring Scholarly Impact. *Measuring Scholarly Impact*.
- Vranken, H., 2017. Sustainability of bitcoin and blockchains. *Curr Opin Environ Sustain* 28, 1–9. <https://doi.org/https://doi.org/10.1016/j.cosust.2017.04.011>
- Wagner, S.M., Neshat, N., 2010. Assessing the vulnerability of supply chains using graph theory. *Int J Prod Econ* 126, 121–129. <https://doi.org/10.1016/j.ijpe.2009.10.007>
- Weerasinghe, B.A., Perera, H.N., Bai, X., 2023. Optimizing container terminal operations: a systematic review of operations research applications. *Maritime Economics and Logistics*. <https://doi.org/10.1057/s41278-023-00254-0>
- Weston, R., Gore, P.A., 2006. A Brief Guide to Structural Equation Modeling. *Couns Psychol* 34, 719–751. <https://doi.org/10.1177/0011000006286345>
- Wu, Y., Sheng, Q.Z., Ranasinghe, D.C., 2011. Facilitating efficient object tracking in large-scale traceability networks. *Computer Journal* 54, 2053–2071. <https://doi.org/10.1093/comjnl/bxr105>
- Yadav, S., Singh, S.P., 2020. Blockchain critical success factors for sustainable supply chain. *Resour Conserv Recycl* 152, 104505.

<https://doi.org/https://doi.org/10.1016/j.resconrec.2019.104505>

Yli-Huumo, J., Ko, D., Choi, S., Park, S., Smolander, K., 2016. Where is current research on Blockchain technology? - A systematic review. PLoS One 11.

<https://doi.org/10.1371/journal.pone.0163477>

7 APPENDIX

7.1 Appendix A: Industry survey