

THE EFFECTS OF ENERGY MANAGEMENT  
PRACTICES ON ECOLOGICAL  
PERFORMANCE: MEDIATING ROLE OF  
RENEWABLE ENERGY SUPPLY CHAIN

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We hereby declare that We have checked this thesis, and, in our opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Doctor of Philosophy.

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I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

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## ABSTRAK

Penggunaan amalan pengurusan tenaga untuk mencapai prestasi ekologi tetap menjadi keutamaan bagi firma perkilangan. Terdapat beberapa kajian yang memberi tumpuan kepada prestasi ekologi dari sudut pengurusan, dan bidang penyelidikan ini perlu diberi keutamaan. The Ekologi kemampanan pembuatan Firma telah menjadi Kontemporari kebimbangan di seluruh dunia. Kemakmuran Industri pembuatan Malaysia ialah Kritikalbergantung kepada kecekapan penggunaan sumber, penglihatan ekonomi, dan perlindungan alam sekitar. Matlamat kajian ini adalah untuk membangun dan menguji rangka kerja integratif yang menghubungkan Malaysia' insentif kerajaan dan amalan pengurusan tenaga firma pembuatan (EMPs) kepada prestasi ekologi melalui peranan pengantara rangkaian bekalan tenaga boleh diperbaharui, berdasarkan perspektif pandangan berasaskan sumber dan teori pandangan berasaskan sumber semula jadi. The statistik deskriptif telah dilakukan menggunakan perisian SPSS. Smart PLS versi 3.0 ialah Bekerja Untuk menguji hipotesis dan kebolehpercayaan dan kesahihan pembinaan. Menurut hasil kaji selidik 129 responden pembuatan Malaysia, insentif kerajaan mempunyai kesan yang signifikan terhadap amalan pengurusan tenaga. Hanya pengauditan tenaga mempunyai kesan ke atas rangkaian bekalan tenaga boleh diperbaharui di kalangan amalan pengurusan tenaga. Ia juga mendapati bahawa rangkaian bekalan tenaga boleh diperbaharui menjadi pengantara hubungan antara EMP dan prestasi ekologi, yang disokong oleh pengauditan tenaga. Tambahan pula, rangkaian bekalan tenaga boleh diperbaharui mempunyai kesan ke atas prestasi ekologi. Lebih banyak penyelidikan diperlukan untuk menentukan bagaimana rangkaian bekalan tenaga boleh diperbaharui dapat membantu pengeluar dalam meningkatkan prestasi ekologi mereka. Akhir sekali, perusahaan pembuatan Malaysia perlu meningkatkan usaha mereka ke arah kemampanan untuk kekal relevan dalam pasaran masa depan. Kajian ini menyumbang kepada pengenalanpastian arah penyelidikan baru untuk mengewangkan konsep ekologi seperti kecekapan tenaga dan insentif kerajaan yang membawa kepada prestasi ekologi yang lebih tinggi daripada firma pembuatan.

## ABSTRACT

The adoption of energy management practices to achieve ecological performance remains a top priority for manufacturing firms. There are few studies that focus on ecological performance from a management standpoint, and this research area needs to be prioritized. The ecological sustainability of manufacturing firm has become a contemporary concern around the world. The prosperity of Malaysia's manufacturing industry is critically dependent on the efficiency of resource utilization, economic visibility, and environment protection. The study's goal is to develop and test an integrative framework linking Malaysia' government incentives and manufacturing firms' energy management practices (EMPs) to ecological performance via the mediating role of the renewable energy supply chain, based on the perspective of resource-based view and natural resource-based view theory. The descriptive statistics was performed using SPSS software. Smart PLS version 3.0 was employed to test the hypothesis and dependability and validity of constructs. According to the findings of a survey of 129 Malaysian manufacturing respondents, government incentives have a significant impact on energy management practices. Only energy auditing has an impact on the renewable energy supply chain among energy management practices. It was also discovered that the renewable energy supply chain mediates the relationship between EMPs and ecological performance, which is bolstered by energy auditing. Furthermore, the renewable energy supply chain had an impact on the ecological performance. More research is needed to determine how renewable energy supply chains can assist manufacturers in improving their ecological performance. Finally, Malaysian manufacturing enterprises should improve their efforts toward sustainability to remain relevant in future markets. The study contributes to the identification of new research directions for monetizing ecological concepts such as energy efficiency and government incentives leading to higher ecological performance of manufacturing firms. Policymakers are advised to align energy policy with environment policy to encourage renewable energy adoption, environment protection, energy security and long-term economic growth.

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## REFERENCES

- Abdelaziz, E. A., Saidur, R., & Mekhilef, S. (2011). A review on energy saving strategies in industrial sector. *Renewable and Sustainable Energy Reviews*, 15(1), 150–168. <https://doi.org/https://doi.org/10.1016/j.rser.2010.09.003>
- Abdul-Rashid, S. H., Sakundarini, N., Ghazilla, R. A. R., & Thurasamy, R. (2017). The impact of sustainable manufacturing practices on sustainability performance: Empirical evidence from Malaysia. *International Journal of Operations & Production Management*.
- Aboelmaged, M., Administration, B., & Emirates, U. A. (2018). The drivers of sustainable manufacturing practices in Egyptian SMEs and their impact on competitive capabilities : A PLS-SEM model. *Journal of Cleaner Production*, 175, 207–221. <https://doi.org/10.1016/j.jclepro.2017.12.053>
- AEC. (2016). *ASEAN economic community*.
- Afum, E., Osei-Ahenkan, V. Y., Agyabeng-Mensah, Y., Amponsah Owusu, J., Kusi, L. Y., & Ankomah, J. (2020). Green manufacturing practices and sustainable performance among Ghanaian manufacturing SMEs: the explanatory link of green supply chain integration. *Management of Environmental Quality: An International Journal*, 31(6), 1457–1475. <https://doi.org/10.1108/MEQ-01-2020-0019>
- Aguinis, H., Edwards, J. R., & Bradley, K. J. (2016). Improving Our Understanding of Mediation and Moderation in Strategic Management Reaserch. *Organizational Research Methods*, 1–21.
- Agyei-Owusu, B., Asamoah, D., Nuerter, D., & Acquah, I. N. (2022). Examining the relationship between dimensions of supply chain integration, operational performance and firm performance: evidence from Ghana. *Management Research Review*.
- Ahmad, S., Zainal, M., Ab, A., & Shafie, S. (2011). Current perspective of the renewable energy development in Malaysia. *Renewable and Sustainable Energy Reviews*, 15(2), 897–904. <https://doi.org/10.1016/j.rser.2010.11.009>
- Ahmadi-Gh, Z., & Bello-Pintado, A. (2022). Why is manufacturing not more sustainable? The effects of different sustainability practices on sustainability outcomes and competitive advantage. *Journal of Cleaner Production*, 337, 130392. <https://doi.org/10.1016/j.jclepro.2022.130392>
- Ahmed, Z., Wang, Z., Mahmood, F., Hafeez, M., & Ali, N. (2019). Does globalization increase the ecological footprint? Empirical evidence from Malaysia. *Environmental Science and Pollution Research*, 26(18), 18565–18582. <https://doi.org/10.1007/s11356-019-05224-9>
- Ahmed, Z., Zhang, B., & Cary, M. (2021). Linking economic globalization, economic growth, financial development, and ecological footprint: Evidence from symmetric and asymmetric ARDL. *Ecological Indicators*, 121, 107060.

- Aized, T., Shahid, M., Bhatti, A. A., Saleem, M., & Anandarajah, G. (2018). Energy security and renewable energy policy analysis of Pakistan. *Renewable and Sustainable Energy Reviews*, *84*, 155–169.
- Aktar, M., Alam, M., & Harun, M. (2022). Energy Efficiency Policies in Malaysia: A Critical Evaluation from the Sustainable Development Perspective. *Environmental Science and Pollution Research*, 1–20.
- Al-Mofleh, A., Taib, S., Mujeebu, M. A., & Salah, W. (2009). Analysis of sectoral energy conservation in Malaysia. *Energy*, *34*(6), 733–739. <https://doi.org/10.1016/j.energy.2008.10.005>
- Al-Sheyadi, A., Muyldermans, L., & Kauppi, K. (2019). The complementarity of green supply chain management practices and the impact on environmental performance. *Journal of Environmental Management*, *242*, 186–198.
- Albloushi, B., Alharmoodi, A., Jabeen, F., Mehmood, K., & Farouk, S. (2022). Total quality management practices and corporate sustainable development in manufacturing companies: the mediating role of green innovation. *Management Research Review*, *ahead-of-p*(ahead-of-print). <https://doi.org/10.1108/MRR-03-2021-0194>
- Ali, S. S., Ersöz, F., Kaur, R., Altaf, B., & Weber, G. W. (2021). A quantitative analysis of low carbon performance in industrial sectors of developing world. *Journal of Cleaner Production*, *284*. <https://doi.org/10.1016/j.jclepro.2020.125268>
- AlNuaimi, B. K., Khan, M., & Ajmal, M. M. (2021). The role of big data analytics capabilities in greening e-procurement: A higher order PLS-SEM analysis. *Technological Forecasting and Social Change*, *169*(May), 120808. <https://doi.org/10.1016/j.techfore.2021.120808>
- Altıntaş, H., & Kassouri, Y. (2020). Is the environmental Kuznets Curve in Europe related to the per-capita ecological footprint or CO2 emissions? *Ecological Indicators*, *113*, 106187.
- Álvarez Jaramillo, J., Zарtha Sossa, J. W., & Orozco Mendoza, G. L. (2019). Barriers to sustainability for small and medium enterprises in the framework of sustainable development—L iterature review. *Business Strategy and the Environment*, *28*(4), 512–524.
- Amir, M., Abdur Rehman, S., & Khan, M. I. (2020). Mediating Role of Environmental Management Accounting and Control System between Top Management Commitment and Environmental Performance: A Legitimacy Theory. *Journal of Management and Research*, *7*(1), 132–160. <https://doi.org/10.29145//jmr/71/070106>
- Amorós, J. E., Felzensztein, C., & Gimmon, E. (2013). Entrepreneurial opportunities in peripheral versus core regions in Chile. *Small Business Economics*, *40*(1), 119–139. <https://doi.org/10.1007/s11187-011-9349-0>

- Andrei, M., Thollander, P., Pierre, I., Gindroz, B., & Rohdin, P. (2021). Decarbonization of industry: Guidelines towards a harmonized energy efficiency policy program impact evaluation methodology. *Energy Reports*, 7, 1385–1395. <https://doi.org/10.1016/j.egy.2021.02.067>
- Aoun, A., Ilinca, A., Ghandour, M., & Ibrahim, H. (2021). A review of Industry 4.0 characteristics and challenges, with potential improvements using blockchain technology. *Computers & Industrial Engineering*, 162, 107746.
- Araújo F. (2013). *No 主観的健康感を中心とした在宅高齢者における健康関連指標に関する共分散構造分析*Title. February.
- Arbolino, R., De Simone, L., Carlucci, F., Yigitcanlar, T., & Ioppolo, G. (2018). Towards a sustainable industrial ecology: implementation of a novel approach in the performance evaluation of Italian regions. *Journal of Cleaner Production*, 178, 220–236.
- Arham, A. F., Norizan, N. S., Norizan, M. N., Arham, A. F., & Ibrahim, S. N. (2021). A SmartPLS visiting to knowledge retention: A study among SMEs in Peninsular Malaysia. *Journal of Educational and Social Research*, 11(4), 84–96. <https://doi.org/10.36941/jesr-2021-0079>
- Ashraf, S., Ahmed, T., Saleem, S., & Aslam, Z. (2020). Diverging Mysterious in Green Supply Chain Management. *Oriental Journal of Computer Science and Technology*, 13(1), 22–28. <https://doi.org/10.13005/ojst13.01.02>
- Asyraf, W. M., & Afthanorhan, B. W. (2013). A comparison of partial least square structural equation modeling (PLS-SEM) and covariance based structural equation modeling (CB-SEM) for confirmatory factor analysis. *International Journal of Engineering Science and Innovative Technology (IJESIT)*, 2(5), 198–205.
- Ates, S. A., & Durakbasa, N. M. (2012). Evaluation of corporate energy management practices of energy intensive industries in Turkey. *Energy*, 45(1), 81–91. <https://doi.org/https://doi.org/10.1016/j.energy.2012.03.032>
- Austin, O. C., & Baharuddin, A. H. (2012). RISK IN MALAYSIAN AGRICULTURE: THE NEED FOR A STRATEGIC APPROACH AND A POLICY REFOCUS. *Kajian Malaysia: Journal of Malaysian Studies*, 30(1).
- Babatunde, K. A., Said, F. F., Md Nor, N. G., Begum, R. A., & Mahmoud, M. A. (2021). Coherent or conflicting? Assessing natural gas subsidy and energy efficiency policy interactions amid CO2 emissions reduction in Malaysia electricity sector. *Journal of Cleaner Production*, 279, 123374. <https://doi.org/10.1016/j.jclepro.2020.123374>
- Backlund, S., Thollander, P., Palm, J., & Ottosson, M. (2012). Extending the energy efficiency gap. *Energy Policy*, 51, 392–396. <https://doi.org/https://doi.org/10.1016/j.enpol.2012.08.042>
- Bagorogoza, J. K., & Nakasule, I. (2022). The mediating effect of knowledge management on talent management and firm performance in small and medium enterprise in Uganda. *Journal of Management Development*, ahead-of-print.



- Ballo, U. M. D., & Ballo David, U. M. (2014). Positivist and non-Positivist Paradigm in Social Sciences Research. *Journal of Management and Sustainability*, Vol.4, No.3, 79–95.
- Bekhet, H. A., & Othman, N. S. (2018a). The role of renewable energy to validate dynamic interaction between CO2 emissions and GDP toward sustainable development in Malaysia. *Energy Economics*, 72, 47–61. <https://doi.org/10.1016/j.eneco.2018.03.028>
- Bekhet, H. A., & Othman, N. S. (2018b). The role of renewable energy to validate dynamic interaction between CO2 emissions and GDP toward sustainable development in Malaysia. *Energy Economics*, 72, 47–61. <https://doi.org/https://doi.org/10.1016/j.eneco.2018.03.028>
- Benedetti, M., Cesarotti, V., & Introna, V. (2017). From energy targets setting to energy-aware operations control and back: An advanced methodology for energy efficient manufacturing. *Journal of Cleaner Production*, 167, 1518–1533.
- Benitez, J., Henseler, J., Castillo, A., & Schuberth, F. (2020). How to perform and report an impactful analysis using partial least squares: Guidelines for confirmatory and explanatory IS research. *Information and Management*, 57(2), 0–1. <https://doi.org/10.1016/j.im.2019.05.003>
- Bhattacharya, M., Paramati, S. R., Ozturk, I., & Bhattacharya, S. (2016). The effect of renewable energy consumption on economic growth: Evidence from top 38 countries. *Applied Energy*, 162, 733–741. <https://doi.org/10.1016/j.apenergy.2015.10.104>
- Bisman. (2010). Postpositivism and Accounting Research: A (Personal) Primer on Critical Realism. *Australasian Accounting, Business and Finance Journal*, 4(4), 3–25.
- Blaxter, L. (2010). *How to research*. McGraw-Hill Education (UK).
- Boons, F., & Wagner, M. (2009). Assessing the relationship between economic and ecological performance: Distinguishing system levels and the role of innovation. *Ecological Economics*, 68(7), 1908–1914. <https://doi.org/10.1016/j.ecolecon.2009.02.012>
- Boret Cordoba, D., Veshagh, A., Nee, A. Y. C., Song, B., & Ong, S.-K. (2013). *Managing Eco Design and Sustainable Manufacturing*. 59–67.
- Böttcher, C., & Müller, M. (2016). Insights on the impact of energy management systems on carbon and corporate performance. An empirical analysis with data from German automotive suppliers. *Journal of Cleaner Production*, 137, 1449–1457. <https://doi.org/https://doi.org/10.1016/j.jclepro.2014.06.013>
- Bouckaert, S., Pales, A. F., McGlade, C., Remme, U., Wanner, B., Varro, L., D'Ambrosio, D., & Spencer, T. (2021). *Net Zero by 2050: A Roadmap for the Global Energy Sector*.

- Bracken, S. (2014). Discussing the importance of ontology and epistemology awareness in practitioner research. *Worcester Journal of Learning and Teaching, Issue 4*, 281–297.
- Braun, A. T., Kleine-Moellhoff, P., Reichenberger, V., & Seiter, S. (2018). Case study analysing potentials to improve material efficiency in manufacturing supply chains, considering circular economy aspects. *Sustainability (Switzerland)*, *10*(3). <https://doi.org/10.3390/su10030880>
- Brenk, S., Lüttgens, D., Diener, K., & Piller, F. (2019). Learning from failures in business model innovation: solving decision-making logic conflicts through intrapreneurial effectuation. *Journal of Business Economics*, *89*(8), 1097–1147.
- Bryman, A., & Bell, E. (2011). Ethics in business research. *Business Research Methods*.
- Bunse, K., Vodicka, M., Schönsleben, P., Brühlhart, M., & Ernst, F. O. (2011). Integrating energy efficiency performance in production management – gap analysis between industrial needs and scientific literature. *Journal of Cleaner Production*, *19*(6), 667–679. <https://doi.org/https://doi.org/10.1016/j.jclepro.2010.11.011>
- Caldera, H. T. S., Desha, C., & Dawes, L. (2018). Exploring the characteristics of sustainable business practice in small and medium-sized enterprises : Experiences from the Australian manufacturing industry. *Journal of Cleaner Production*, *177*, 338–349. <https://doi.org/10.1016/j.jclepro.2017.12.265>
- Campbell, D. E., Parks, C., & Wells, J. D. (2015). Understanding the role of theory on instrument development: An examination of strengths and weaknesses of discriminant validity analysis techniques. *JITTA: Journal of Information Technology Theory and Application*, *16*(1), 25.
- Cantore, N., Clara, M., Lavopa, A., & Soare, C. (2017). Manufacturing as an engine of growth : Which is the best fuel ? *Structural Change and Economic Dynamics*, *42*, 56–66. <https://doi.org/10.1016/j.strueco.2017.04.004>
- Cao, G., Duan, Y., & Cadden, T. (2019). The link between information processing capability and competitive advantage mediated through decision-making effectiveness. *International Journal of Information Management*, *44*(October 2018), 121–131. <https://doi.org/10.1016/j.ijinfomgt.2018.10.003>
- Caragliu, A. (2021). Energy efficiency-enhancing policies and firm performance: Evidence from the paper and glass industries in Italy. *Energy Policy*, *156*(May), 112415. <https://doi.org/10.1016/j.enpol.2021.112415>
- Carr, W. (2006). Philosophy, Methodology and Action Research. *Journal of Philosophy of Education* , *Volume 51, Issue 1*, 421–435.
- Carvalho, N., Chaim, O., Cazarini, E., & Gerolamo, M. (2018). Manufacturing in the fourth industrial revolution: A positive prospect in Sustainable Manufacturing. *Procedia Manufacturing*, *21*, 671–678. <https://doi.org/10.1016/j.promfg.2018.02.170>

- Chachuli, F. S. M., Ludin, N. A., Jedi, M. A. M., & Hamid, N. H. (2021). Transition of renewable energy policies in Malaysia: Benchmarking with data envelopment analysis. *Renewable and Sustainable Energy Reviews*, *150*, 111456.
- Chembessi, C., Beaurain, C., & Cloutier, G. (2021). Understanding the scaling-up of a Circular Economy (CE) through a strategic niche management (SNM) theory: a socio-political perspective from Quebec. *Environmental Challenges*, *5*, 100362.
- Chikán, A., Czakó, E., Kiss-Dobronyi, B., & Losonci, D. (2022). Firm competitiveness: A general model and a manufacturing application. *International Journal of Production Economics*, *243*. <https://doi.org/10.1016/j.ijpe.2021.108316>
- Churchill, G. A. (1979). A Paradigm for Developing Better Measures of Marketing Constructs. *Journal of Marketing Research*, *16*(1), 64–73. <https://doi.org/10.2307/3150876>
- Cooremans, C., & Schönenberger, A. (2019). Energy management: A key driver of energy-efficiency investment? *Journal of Cleaner Production*, *230*, 264–275. <https://doi.org/10.1016/j.jclepro.2019.04.333>
- Cornelis, E. (2019). History and prospect of voluntary agreements on industrial energy efficiency in Europe. *Energy Policy*, *132*, 567–582.
- Creswell, J. W. (1999). Mixed-method research: Introduction and application. In *Handbook of educational policy* (pp. 455–472). Elsevier.
- Croasmun, J. T., & Ostrom, L. (2011). Using Likert-Type Scales in the Social Sciences. *Journal of Adult Education*, *40*(1), 19–22.
- Cui, W., Li, L., & Lu, Z. (2019). Energy-efficient scheduling for sustainable manufacturing systems with renewable energy resources. *Naval Research Logistics*, *66*(2), 154–173. <https://doi.org/10.1002/nav.21830>
- Cuzovic, S., & Mladenovic, S. S. (2013). Trade in Terms of Ecological Economics. In *Challenges for the Trade of Central and Southeast Europe* (pp. 37–53). Emerald Group Publishing Limited.
- Danielb, R. M., Webei, M., Hermand, J., & Witty, J. V. (2010). Findings on Facebook in higher education: A comparison of college faculty and student uses and perceptions of social networking sites. *The Internet and Higher Education Volume 13, Issue 3*, 134–140.
- Dash, G., & Paul, J. (2021). CB-SEM vs PLS-SEM methods for research in social sciences and technology forecasting. *Technological Forecasting and Social Change*, *173*(August), 121092. <https://doi.org/10.1016/j.techfore.2021.121092>
- Dilley, P. (2004). Interviews and the Philosophy of Qualitative Research. *The Journal of Higher Education*, 127–132.

- Dilling, P. F. A. (2010). Sustainability reporting in a global context: What are the characteristics of corporations that provide high quality sustainability reports an empirical analysis. *International Business & Economics Research Journal (IBER)*, 9(1).
- Dixon-O'Mara, C., & Ryan, L. (2018). Energy efficiency in the food retail sector: barriers, drivers and acceptable policies. *Energy Efficiency*, 11(2), 445–464.
- Dogan, E., Ulucak, R., Kocak, E., & Isik, C. (2020). The use of ecological footprint in estimating the environmental Kuznets curve hypothesis for BRICST by considering cross-section dependence and heterogeneity. *Science of the Total Environment*, 723, 138063.
- Doshi, T. K., & Zahur, N. B. (2021). Singapore's Energy Sustainability Policies: Balance Between Market and Government. *Sustainability and Environmental Decision Making*, 311–375.
- Dubey, R., Gunasekaran, A., Childe, S. J., Blome, C., & Papadopoulos, T. (2019). Big Data and Predictive Analytics and Manufacturing Performance: Integrating Institutional Theory, Resource-Based View and Big Data Culture. *British Journal of Management*, 30(2), 341–361. <https://doi.org/10.1111/1467-8551.12355>
- Egert, R., Daubert, J., Marsh, S., & Mühlhäuser, M. (2021). Exploring energy grid resilience: The impact of data, prosumer awareness, and action. *Patterns*, 2(6). <https://doi.org/10.1016/j.patter.2021.100258>
- Eichhammer, W. (2004). *Industrial Energy Efficiency* (C. J. B. T.-E. of E. Cleveland (ed.); pp. 383–393). Elsevier. <https://doi.org/https://doi.org/10.1016/B0-12-176480-X/00197-2>
- Elavarasan, R. M., Selvamanohar, L., Raju, K., Vijayaraghavan, R. R., Subburaj, R., Nurunnabi, M., Khan, I. A., Afridhis, S., Hariharan, A., Pugazhendhi, R., Subramaniam, U., & Das, N. (2020). A Holistic Review Of The Present And Future Drivers Of The Renewable Energy Mix in Maharashtra, state of India. *Sustainability (Switzerland)*, 12(16). <https://doi.org/10.3390/su12166596>
- Energy Commission Malaysia. (2016). *Malaysia energy statistics handbook* . <http://www.st.gov.my/index.php/en/>
- Esch, P. van, & Esch, L. J. van. (2013). Justification of a Qualitative Methodology to Investigate the Emerging Concept: The Dimensions of Religion as Underpinning Constructs for Mass Media Social Marketing Campaigns. *Journal of Business Theory and Practice, Vol. 1, No. 2*, 214–244.
- Esposito, J. L., & Rothgeb, J. M. (1997). *Evaluating Survey Data: Making the Transition from Pretesting to Quality Assessment*. <https://doi.org/10.1002/9781118490013.ch24>
- Evans, J. D., & Baker, D. (1977). No Title. *Sch. Sci. Rev.*, 58(null), 771.
- Evermann, J. (2021). *Recent Developments in PLS*. 44(March). <https://doi.org/10.17705/1CAIS.044XX>

- Ezici, B., Eğılmez, G., & Gedik, R. (2020). Assessing the eco-efficiency of U.S. manufacturing industries with a focus on renewable vs. non-renewable energy use: An integrated time series MRIO and DEA approach. *Journal of Cleaner Production*, 253. <https://doi.org/10.1016/j.jclepro.2019.119630>
- Fernando, Y., Bee, P. S., Jabbour, C. J. C., & Thomé, A. M. T. (2018a). Understanding the effects of energy management practices on renewable energy supply chains: Implications for energy policy in emerging economies. *Energy Policy*, 118(February), 418–428. <https://doi.org/https://doi.org/10.1016/j.enpol.2018.03.043>
- Fernando, Y., Bee, P. S., Jabbour, C. J. C., & Thomé, A. M. T. (2018b). Understanding the effects of energy management practices on renewable energy supply chains: Implications for energy policy in emerging economies. *Energy Policy*, 118(February), 418–428. <https://doi.org/10.1016/j.enpol.2018.03.043>
- Fernando, Y., & Hor, W. L. (2017). Impacts of energy management practices on energy efficiency and carbon emissions reduction: A survey of malaysian manufacturing firms. *Resources, Conservation and Recycling*, 126(Supplement C), 62–73. <https://doi.org/10.1016/j.resconrec.2017.07.023>
- Fernando, Y., Tseng, M., Aziz, N., Bramulya, R., & Wahyuni-td, I. S. (2022). Waste-to-energy supply chain management on circular economy capability: An empirical study. *Sustainable Production and Consumption*, 31, 26–38. <https://doi.org/10.1016/j.spc.2022.01.032>
- Ferreira, A., Pinheiro, M. D., de Brito, J., & Mateus, R. (2019). Decarbonizing strategies of the retail sector following the Paris Agreement. *Energy Policy*, 135. <https://doi.org/10.1016/j.enpol.2019.110999>
- Fornell, C., & Larcker, D. F. (2016). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research This*, 18(1), 39–50.
- Fraley, C., Hudson, N. W., Fraley, R. C., & Hudson, N. W. (2014). Review of Intensive Longitudinal Methods: An Introduction to Diary and Experience Sampling Research. *Journal The Journal of Social Psychology Volume 154, Issue 1*, 89–99.
- Gahm, C., Denz, F., Dirr, M., & Tuma, A. (2016). Energy-efficient scheduling in manufacturing companies: A review and research framework. *European Journal of Operational Research*, 248(3), 744–757. <https://doi.org/https://doi.org/10.1016/j.ejor.2015.07.017>
- Gaitán, J. J., Bran, D., Oliva, G., Ciari, G., Nakamatsu, V., Salomone, J., Ferrante, D., Buono, G., Massara, V., Humano, G., Celdrán, D., Opazo, W., & Maestre, F. T. (2013). Evaluating the performance of multiple remote sensing indices to predict the spatial variability of ecosystem structure and functioning in Patagonian steppes. *Ecological Indicators*, 34, 181–191. <https://doi.org/10.1016/j.ecolind.2013.05.007>

- Ganesh, A. H., & Xu, B. (2022). A review of reinforcement learning based energy management systems for electrified powertrains: Progress, challenge, and potential solution. *Renewable and Sustainable Energy Reviews*, *154*, 111833. <https://doi.org/https://doi.org/10.1016/j.rser.2021.111833>
- García Alcaraz, J. L., Díaz Reza, J. R., Arredondo Soto, K. C., Hernández Escobedo, G., Happonen, A., Puig I Vidal, R., & Jiménez Macías, E. (2022). Effect of Green Supply Chain Management Practices on Environmental Performance: Case of Mexican Manufacturing Companies. *Mathematics*, *10*(11), 1877.
- Garza-Reyes, J. A., Kumar, V., Chaikittisilp, S., & Tan, K. H. (2018). The effect of lean methods and tools on the environmental performance of manufacturing organisations. *International Journal of Production Economics*, *200*(March), 170–180. <https://doi.org/10.1016/j.ijpe.2018.03.030>
- Gaur, J., Mani, V., Banerjee, P., Amini, M., & Gupta, R. (2018). Towards building circular economy: a cross-cultural study of consumers' purchase intentions for reconstructed products. *Management Decision*.
- Genovese, A., Acquaye, A. A., Figueroa, A., & Koh, S. C. L. (2017). Sustainable supply chain management and the transition towards a circular economy: Evidence and some applications. *Omega (United Kingdom)*, *66*, 344–357. <https://doi.org/10.1016/j.omega.2015.05.015>
- Geske, A. M., & Novoszel, L. (2022). Definition and Development of Supply Chain Resilience. In *Supply Chain Resilience* (pp. 3–23). Springer.
- Ghasemaghahi, M. (2021). Understanding the impact of big data on firm performance: The necessity of conceptually differentiating among big data characteristics. *International Journal of Information Management*, *57*, 102055.
- Giampietro, M., & Bukkens, S. G. F. (2022). Knowledge claims in European Union energy policies: Unknown knowns and uncomfortable awareness. *Energy Research & Social Science*, *91*, 102739. <https://doi.org/https://doi.org/10.1016/j.erss.2022.102739>
- Govindan, K. (2022). Tunneling the barriers of blockchain technology in remanufacturing for achieving sustainable development goals: A circular manufacturing perspective. *Business Strategy and the Environment*.
- Govindan, K., Rajeev, A., Padhi, S. S., & Pati, R. K. (2020). Supply chain sustainability and performance of firms: A meta-analysis of the literature. *Transportation Research Part E: Logistics and Transportation Review*, *137*, 101923.
- Goyal, S., Esposito, M., & Kapoor, A. (2018). Circular economy business models in developing economies: lessons from India on reduce, recycle, and reuse paradigms. *Thunderbird International Business Review*, *60*(5), 729–740.
- Green, K. W., Zelbst, P. J., Meacham, J., & Bhadauria, V. S. (2012). Green supply chain management practices: impact on performance. *Supply Chain Management: An International Journal*.

- Gregson, N., Crang, M., Fuller, S., & Holmes, H. (2015). Interrogating the circular economy: the moral economy of resource recovery in the EU. *Economy and Society*, 44(2), 218–243. <https://doi.org/10.1080/03085147.2015.1013353>
- Gunarathne, N., & Lee, K. H. (2021). The link between corporate energy management and environmental strategy implementation: Efficiency, sufficiency and consistency strategy perspectives. *Journal of Cleaner Production*, 293, 126082. <https://doi.org/10.1016/j.jclepro.2021.126082>
- Gunasekaran, A., & Spalanzani, A. (2012). Sustainability of manufacturing and services: Investigations for research and applications. *International Journal of Production Economics*, 140(1), 35–47.
- Gupta, H., Kumar, A., & Wasan, P. (2021). Industry 4.0, cleaner production and circular economy: An integrative framework for evaluating ethical and sustainable business performance of manufacturing organizations. *Journal of Cleaner Production*, 295, 126253.
- Gustafsson, M.-T., Rodriguez-Morales, J. E., & Dellmuth, L. M. (2022). Private adaptation to climate risks: Evidence from the world's largest mining companies. *Climate Risk Management*, 35, 100386.
- Hache, E. (2018). Do renewable energies improve energy security in the long run? *International Economics*, 156, 127–135.
- Hair Jr., J. F., Matthews, L. M., Matthews, R. L., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: updated guidelines on which method to use. *International Journal of Multivariate Data Analysis*, 1(2), 107. <https://doi.org/10.1504/ijmda.2017.10008574>
- Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications.
- Hameed Kamran, Arshed, N., Yazdani, N., & Munir, M. (2021). Motivating business towards innovation: A panel data study using dynamic capability framework. *Technology in Society*, 65(March), 101581. <https://doi.org/10.1016/j.techsoc.2021.101581>
- Hart, S. L., & Dowell, G. (2011a). A natural-resource-based view of the firm: Fifteen years after. *Journal of Management*, 37(5), 1464–1479. <https://doi.org/10.1177/0149206310390219>
- Hart, S. L., & Dowell, G. (2011b). Invited editorial: A natural-resource-based view of the firm: Fifteen years after. *Journal of Management*, 37(5), 1464–1479.
- Hartley, J. (2014). Some thoughts on Likert-type scales. *International Journal of Clinical and Health Psychology*, 14(1).
- Hartmann, J., & Germain, R. (2015). Understanding the relationships of integration capabilities, ecological product design, and manufacturing performance. *Journal of Cleaner Production*, 92, 196–205. <https://doi.org/https://doi.org/10.1016/j.jclepro.2014.12.079>

- Hejrandoost, M. L., Fazelpour, F., & Saraei, A. (2022). A new method to overcome difficulties of measurements for energy and exergy auditing of municipal solid Waste-to-Energy plants. *Energy Conversion and Management*, 255, 115275.
- Herce, C., Biele, E., Martini, C., Salvio, M., & Toro, C. (2021). *Impact of Energy Monitoring and Management Systems on the Implementation and Planning of Energy Performance Improved Actions : An Empirical Analysis Based on Energy Audits in Italy*.
- Hitt, M. A., Xu, K., & Matz, C. (2015). Resource based theory in operations management research. *Journal of Operations Management*. <https://doi.org/10.1016/j.jom.2015.11.002>
- Hoc, L., Fong, N., & Law, R. (2014). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). Sage Publications. *European Journal of Tourism Research*, 6(2), 211–213.
- Hosseini, S. E., Wahid, M. A., & Aghili, N. (2013). The scenario of greenhouse gases reduction in Malaysia. *Renewable and Sustainable Energy Reviews*, 28, 400–409. <https://doi.org/https://doi.org/10.1016/j.rser.2013.08.045>
- Ibrahim, N. A., Wan Alwi, S. R., Manan, Z. A., Mustaffa, A. A., & Kidam, K. (2022). Risk matrix approach of extreme temperature and precipitation for renewable energy systems in Malaysia. *Energy*, 254, 124471. <https://doi.org/https://doi.org/10.1016/j.energy.2022.124471>
- Ilyas, S., Hu, Z., & Wiwattanakornwong, K. (2020). Unleashing the role of top management and government support in green supply chain management and sustainable development goals. *Environmental Science and Pollution Research*, 27(8), 8210–8223.
- Ippc. (2007). IPCC guidelines for national greenhouse gas inventories. *Reference Manual*, 3.
- Iqbal, M., Ma, J., Ahmad, N., Hussain, K., & Usmani, M. S. (2021). Promoting sustainable construction through energy-efficient technologies: an analysis of promotional strategies using interpretive structural modeling. *International Journal of Environmental Science and Technology*, 18(11), 3479–3502.
- Ismail, M. I., Yunus, N. A., Kaassim, A. Z. M., & Hashim, H. (2022). Pathways and challenges of solar thermal utilisation in the industry: ASEAN and Malaysia scenarios. *Sustainable Energy Technologies and Assessments*, 52, 102046.
- Janadari, M. P. N., Subramaniam, Ramalu, S., Wei, C. C., & Abdullah, O. Y. (2018). Evaluation of Measurment and Structural Model of the Reflective Model Constructs in PLS-SEM. *The Sixth (6th) International Symposium of South Eastern University of Sri Lanka, September, 187–194*. <http://www.seu.ac.lk/researchandpublications/symposium/6th/IntSym> 2016 proceeding final 2 (1) - Page 187-194.pdf



- Jannah, M., Fahlevi, M., Paulina, J., Nugroho, B. S., Purwanto, A., Subarkah, M. A., Kurniati, E., Wibowo, T. S., Kalbuana, K. N., & Cahyono, Y. (2020). Effect of ISO 9001, ISO 45001 and ISO 14000 toward financial performance of Indonesian manufacturing. *Systematic Reviews in Pharmacy*, *11*(10), 894–902.
- Jayashree, S., Reza, M. N. H., Malarvizhi, C. A. N., & Mohiuddin, M. (2021). Industry 4.0 implementation and Triple Bottom Line sustainability: An empirical study on small and medium manufacturing firms. *Heliyon*, *7*(8), e07753. <https://doi.org/10.1016/j.heliyon.2021.e07753>
- Jha, N. K., Jasti, N. V. K., Chaganti, P. K., Kota, S., & Vijayvargy, L. (2022). Validity and reliability of sustainable supply chain management frameworks in Indian smart manufacturing industries. *Management of Environmental Quality: An International Journal, ahead-of-print*.
- Ji, C., Hong, T., & Kim, H. (2022). Statistical analysis of greenhouse gas emissions of South Korean residential buildings. *Renewable and Sustainable Energy Reviews*, *156*, 111981.
- Jin, Y., Long, Y., Jin, S., Yang, Q., Chen, B., Li, Y., & Xu, L. (2021). An energy management maturity model for China: Linking ISO 50001:2018 and domestic practices. *Journal of Cleaner Production*, *290*, 125168. <https://doi.org/10.1016/j.jclepro.2020.125168>
- Joe, H., L. H. C., B. R. A., Loong, C. A. Y., Hair, J., Hollingsworth, C. L., Randolph, A. B., & Chong, A. Y. L. (2017). An updated and expanded assessment of PLS-SEM in information systems research. *Industrial Management & Data Systems*, *117*(3), 442–458. <https://doi.org/doi:10.1108/IMDS-04-2016-0130>
- Kabir, E., Kumar, P., Kumar, S., Adelodun, A. A., & Kim, K.-H. (2018). Solar energy: Potential and future prospects. *Renewable and Sustainable Energy Reviews*, *82*, 894–900.
- Kalbuana, N., Prasetyo, B., Asih, P., Arnas, Y., Simbolon, S. L., Abdusshomad, A., Kurnianto, B., Saputro, R., Sari, M. P., & Zandra, R. A. P. (2021). EARNINGS MANAGEMENT IS AFFECTED BY FIRM SIZE, LEVERAGE AND ROA: EVIDENCE FROM INDONESIA. *Academy of Strategic Management Journal*, *20*, 1–12.
- Kalkbrenner, M. T. (2021). A Practical Guide to Instrument Development and Score Validation in the Social Sciences: The Measure Approach. *Practical Assessment, Research and Evaluation*, *26*, 1–18.
- Kannan, D., Solanki, R., Kaul, A., & Jha, P. C. (2022). Barrier analysis for carbon regulatory environmental policies implementation in manufacturing supply chains to achieve zero carbon. *Journal of Cleaner Production*, *358*, 131910.
- Kannan, R., Boie, W., Kannan, & Boie. (2003). Energy management practices in SME—case study of a bakery in Germany. *Energy Conversion and Management*, *44*(6), 945–959. [https://doi.org/https://doi.org/10.1016/S0196-8904\(02\)00079-1](https://doi.org/https://doi.org/10.1016/S0196-8904(02)00079-1)

- Karytsas, S., & Choropanitis, I. (2017). Barriers against and actions towards renewable energy technologies diffusion: A Principal Component Analysis for residential ground source heat pump (GSHP) systems. *Renewable and Sustainable Energy Reviews*, 78(May), 252–271. <https://doi.org/10.1016/j.rser.2017.04.060>
- Kautsarina, Hidayanto, A. N., Anggorojati, B., Abidin, Z., & Phusavat, K. (2020). Data modeling positive security behavior implementation among smart device users in Indonesia: A partial least squares structural equation modeling approach (PLS-SEM). *Data in Brief*, 30, 105588. <https://doi.org/10.1016/j.dib.2020.105588>
- Keeney, S., Hassona, F., & McKenna, H. P. (2001). A critical review of the Delphi technique as a research methodology for nursing. *International Journal of Nursing Studies*, Vol. 38, 195–200.
- Kenari, N. K., & Farahmand, N. F. (2021). *Energy management and manufacturing strategies: the case of Iranian oil industry*. 15(6), 1199–1218. <https://doi.org/10.1108/IJESM-09-2020-0017>
- Ketchen, D. J. (2013). A Primer on Partial Least Squares Structural Equation Modeling. *Long Range Planning*, 46(1–2), 184–185. <https://doi.org/10.1016/j.lrp.2013.01.002>
- Khairulzan, Y., Halim, B., & Nasser, A. A. (2016). Using life cycle assessment for estimating environmental impacts and eco-costs from the metal waste in the construction industry. *Management of Environmental Quality: An International Journal*, 27(2), 227–244. <https://doi.org/doi:10.1108/MEQ-09-2014-0137>
- Khan, M. K., Abbas, F., Godil, D. I., Sharif, A., Ahmed, Z., & Anser, M. K. (2021). Moving towards sustainability: how do natural resources, financial development, and economic growth interact with the ecological footprint in Malaysia? A dynamic ARDL approach. *Environmental Science and Pollution Research*, 28(39), 55579–55591.
- Khan, S. A. R., Zhang, Y., & Nathaniel, S. (2020). Green supply chain performance and environmental sustainability: A panel study. *Logforum*, 16(1), 141–159. <https://doi.org/10.17270/J.LOG.2020.394>
- Khattak, S. I., Ahmad, M., Khan, Z. U., & Khan, A. (2020). Exploring the impact of innovation, renewable energy consumption, and income on CO2 emissions: new evidence from the BRICS economies. *Environmental Science and Pollution Research*, 27(12), 13866–13881.
- Khor, C. S., & Lalchand, G. (2014). A review on sustainable power generation in Malaysia to 2030: Historical perspective, current assessment, and future strategies. *Renewable and Sustainable Energy Reviews*, 29, 952–960. <https://doi.org/https://doi.org/10.1016/j.rser.2013.08.010>

- Khor, C. S., Lalchand, G., Faaij, A. P. C., Chua Tick Hui, O., Wahyuni, D., Ates, S. A., Durakbasa, N. M., Toth, G., Szigeti, C. C., Sutton, P. C., Anderson, S. J., Tuttle, B. T., Morse, L., Croasmun, J. T., Ostrom, L., Priem, R. L., Butler, J. E., Rapport, D. J., Hildén, M., ... Cote, R. P. L. J. M. S. P. G. M. W. R. (2018). Green progress and prospect in Malaysia. *Ecological Indicators*, *16*(1), 1–8. <https://doi.org/https://doi.org/10.1016/j.rser.2011.03.008>
- Kim, J. E. (2019). Sustainable energy transition in developing countries: the role of energy aid donors. *Climate Policy*, *19*(1), 1–16. <https://doi.org/10.1080/14693062.2018.1444576>
- Kirkpatrick, J. I. M., & Olbert, A. I. (2020). Modelling the effects of climate change on urban coastal-fluvial flooding. *Journal of Water and Climate Change*, *11*(S1), 270–288.
- Kiss-dobronyi, B. (2022). *International Journal of Production Economics Firm competitiveness : A general model and a manufacturing application Attila Chik a ebet Czak o. 243*. <https://doi.org/10.1016/j.ijpe.2021.108316>
- Kongbuamai, N., Bui, Q., & Nimsai, S. (2021). The effects of renewable and nonrenewable energy consumption on the ecological footprint: the role of environmental policy in BRICS countries. *Environmental Science and Pollution Research*, *28*(22), 27885–27899. <https://doi.org/10.1007/s11356-021-12551-3>
- Kumar, A., Cantor, D. E., & Grimm, C. M. (2019). The impact of a supplier's environmental management concerns on a buyer's environmental reputation: The moderating role of relationship criticality and firm size. *Transportation Research Part E: Logistics and Transportation Review*, *122*(December 2018), 448–462. <https://doi.org/10.1016/j.tre.2019.01.001>
- Kumar Sahu, S., & Narayanan, K. (2011). Total factor productivity and energy intensity in Indian manufacturing: A cross-sectional study. *International Journal of Energy Economics and Policy*, *1*(2), 47–58.
- Lahane, S., Kant, R., & Shankar, R. (2020). Circular supply chain management: A state-of-art review and future opportunities. *Journal of Cleaner Production*, *258*, 120859. <https://doi.org/10.1016/j.jclepro.2020.120859>
- Lakens, D. (2021). Sample Size Justification. *Unpublished*, 1–31. <https://psyarxiv.com/9d3yf/>
- Latan, H., Chiappetta Jabbour, C. J., Lopes de Sousa Jabbour, A. B., Wamba, S. F., & Shahbaz, M. (2018). Effects of environmental strategy, environmental uncertainty and top management's commitment on corporate environmental performance: The role of environmental management accounting. *Journal of Cleaner Production*, *180*, 297–306. <https://doi.org/https://doi.org/10.1016/j.jclepro.2018.01.106>
- Lawrence, A., Karlsson, M., & Thollander, P. (2018). Effects of firm characteristics and energy management for improving energy efficiency in the pulp and paper industry. *Energy*, *153*, 825–835. <https://doi.org/https://doi.org/10.1016/j.energy.2018.04.092>

- Lee, D., & Cheng, C.-C. (2016). Energy savings by energy management systems: A review. *Renewable and Sustainable Energy Reviews*, *56*, 760–777.
- Lei, J. (2021). Reforming the natural resource auditing system from the ecological civilization perspective. *Chinese Journal of Population, Resources and Environment*, November 2018. <https://doi.org/10.1016/j.cjpre.2019.01.001>
- Lenzner, T. (2014). Are Readability Formulas Valid Tools for Assessing Survey Question Difficulty? *Sociological Methods and Research*, *43*(4), 677–698. <https://doi.org/10.1177/0049124113513436>
- Lewis, S. (2015). Qualitative Inquiry and Research Design: Choosing Among Five Approaches. *Health Promotion Practice*, Vol. 16, No. (4), 473–475.
- Li, D. D., & Maskin, E. S. (2021). Government and economics: An emerging field of study. *Journal of Government and Economics*, *1*, 100005.
- Li, Y., Zhan, J., Zhang, F., Zhang, M., & Chen, D. (2017). The study on ecological sustainable development in Chengdu. *Physics and Chemistry of the Earth, Parts A/B/C*, *101*(Supplement C), 112–120. <https://doi.org/https://doi.org/10.1016/j.pce.2017.03.002>
- Liu, Y., Mili, L., Xu, Y., Zhao, J., Kamwa, I., Srinivasan, D., Mehrizi-sani, A., Arboleya, P., & Terzija, V. (2022). International Journal of Electrical Power and Energy Systems Guest editorial: Special issue on data-analytics for stability analysis, control, and situational awareness of power system with high-penetration of renewable energy. *International Journal of Electrical Power and Energy Systems*, *137*, 107773. <https://doi.org/10.1016/j.ijepes.2021.107773>
- Macharia, K. K., Gathiaka, J. K., & Ngui, D. (2022). Energy efficiency in the Kenyan manufacturing sector. *Energy Policy*, *161*(April 2021), 112715. <https://doi.org/10.1016/j.enpol.2021.112715>
- Mack, L. (2010). The Philosophical Underpinnings of Educational Research. *Polyglossia Vol. 19*, 5–12.
- Makarova, A. S., Jia, X., Kruchina, E. B., Kudryavtseva, E. I., & Kukushkin, I. G. (2019). Environmental performance assessment of the chemical industries involved in the Responsible Care®Program: Case study of the Russian Federation. *Journal of Cleaner Production*, *222*, 971–985. <https://doi.org/10.1016/j.jclepro.2019.02.218>
- Mancini, M. S., Galli, A., Coscieme, L., Niccolucci, V., Lin, D., Pulselli, F. M., Bastianoni, S., & Marchettini, N. (2018). Exploring ecosystem services assessment through Ecological Footprint accounting. *Ecosystem Services*, *30*, 228–235. <https://doi.org/https://doi.org/10.1016/j.ecoser.2018.01.010>
- Mani, V., Gunasekaran, A., & Delgado, C. (2018). Supply chain social sustainability: Standard adoption practices in Portuguese manufacturing firms. *International Journal of Production Economics*, *198*, 149–164.
- Mariza, M. (2013). Autoethnography as a research method: Advantages, limitations and criticisms. *Journal of Linguistics and Social Science*, Vol 27, Issue 3, 279–290.

- Martín-Gamboa, M., Dias, A. C., & Iribarren, D. (2022). Definition, assessment and prioritisation of strategies to mitigate social life-cycle impacts across the supply chain of bioelectricity: A case study in Portugal. *Renewable Energy*.
- Máša, V., Stehlík, P., Touš, M., & Vondra, M. (2018). Key pillars of successful energy saving projects in small and medium industrial enterprises. *Energy*, *158*, 293–304.
- McCusker, K., & Gunaydin. (2014). Research using qualitative, quantitative or mixed methods and choice based on the research. *Perfusion* 2015, Vol. 30(7), 537–542.
- McDougall, N., Wagner, B., & MacBryde, J. (2022). Leveraging competitiveness from sustainable operations: frameworks to understand the dynamic capabilities needed to realise NRBV supply chain strategies. *Supply Chain Management: An International Journal*, *27*(1), 12–29. <https://doi.org/10.1108/SCM-11-2018-0393>
- Medrano, N., & Olarte-pascual, C. (2021). *Environmental objectives and non-technological innovation in Spanish manufacturing SMEs*. 296. <https://doi.org/10.1016/j.jclepro.2021.126445>
- Menghi, R., Papetti, A., Germani, M., & Marconi, M. (2019). Energy efficiency of manufacturing systems: A review of energy assessment methods and tools. *Journal of Cleaner Production*, *240*, 118276.
- Mishra, P., & Yadav, M. (2021). “ Environmental capabilities , proactive environmental strategy and competitive advantage : A natural-resource-based view of firms operating in India .” *Journal of Cleaner Production*, *291*, 125249. <https://doi.org/10.1016/j.jclepro.2020.125249>
- Moghaddam, S. M., Nazari, M. R., & Soufizadeh, S. (2018). Integrating ecological impact indicators into economic restructuring decisions. *Ecological Indicators*, *89*, 327–335. <https://doi.org/https://doi.org/10.1016/j.ecolind.2018.01.045>
- Mohanty, M. (2012). New renewable energy sources, green energy development and climate change: Implications to Pacific Island countries. *Management of Environmental Quality: An International Journal*, *23*(3), 264–274. <https://doi.org/doi:10.1108/14777831211217468>
- Moktadir, M. A., Ali, S. M., Jabbour, C. J. C., Paul, A., Ahmed, S., Sultana, R., & Rahman, T. (2019). Key factors for energy-efficient supply chains: Implications for energy policy in emerging economies. *Energy*, *189*, 116129.
- Moya, D., Torres, R., & Stegen, S. (2016). Analysis of the Ecuadorian energy audit practices: A review of energy efficiency promotion. *Renewable and Sustainable Energy Reviews*, *62*, 289–296. <https://doi.org/10.1016/j.rser.2016.04.052>
- Mustafa, M., Sufian, A., & Kader, S. Z. S. A. (2019). Progression of Policies and Laws Towards Addressing Climate Change and Sustainability Issues: Recent Initiatives from Malaysia. *Human and Environmental Security in the Era of Global Risks*, 133–147. [https://doi.org/10.1007/978-3-319-92828-9\\_7](https://doi.org/10.1007/978-3-319-92828-9_7)
- Najaf, R., & Najaf, K. (2021). Political ties and corporate performance: why efficiency matters? *Journal of Business and Socio-Economic Development*.

- Nakhli, M. S., Shahbaz, M., Jebli, M. Ben, & Wang, S. (2022). Nexus between economic policy uncertainty, renewable & non-renewable energy and carbon emissions: Contextual evidence in carbon neutrality dream of USA. *Renewable Energy*, *185*, 75–85.
- Nason, R. S., & Wiklund, J. (2015). An Assessment of Resource-Based Theorizing on Firm Growth and Suggestions for the Future. *Journal of Management*, *44*(1), 32–60. <https://doi.org/10.1177/0149206315610635>
- Nassani, A. A., Aldakhil, A. M., & Zaman, K. (2021). Ecological footprints jeopardy for mineral resource extraction: Efficient use of energy, financial development and insurance services to conserve natural resources. *Resources Policy*, *74*, 102271.
- Ngan, S. L., How, B. S., Teng, S. Y., Promentilla, M. A. B., Yatim, P., Er, A. C., & Lam, H. L. (2019). Prioritization of sustainability indicators for promoting the circular economy: The case of developing countries. *Renewable and Sustainable Energy Reviews*, *111*, 314–331.
- Ngu, H. J., Lee, M. D., Shahril, M., & Osman, B. (2020). Review on current challenges and future opportunities in Malaysia sustainable manufacturing : Remanufacturing industries. *Journal of Cleaner Production*, *273*, 123071. <https://doi.org/10.1016/j.jclepro.2020.123071>
- Norasyiqin, S., Latif, A., Chiong, M. S., Rajoo, S., Takada, A., Chun, Y., Tahara, K., & Ikegami, Y. (2021). *The Trend and Status of Energy Resources and Greenhouse Gas Emissions in the Malaysia Power Generation Mix*. 1–26.
- Nurgazina, Z., Ullah, A., Ali, U., Koondhar, M. A., & Lu, Q. (2021). The impact of economic growth, energy consumption, trade openness, and financial development on carbon emissions: empirical evidence from Malaysia. *Environmental Science and Pollution Research*, *28*(42), 60195–60208. <https://doi.org/10.1007/s11356-021-14930-2>
- Ócsai, A. (2021). Comparative Analysis of Ecologically Conscious Business Models. In *Ecologically Conscious Organizations* (pp. 151–255). Springer.
- Oh, & et al. (2018). Energy policy and alternative energy in Malaysia: Issues and challenges for sustainable growth – An update. *Renewable and Sustainable Energy Reviews*, *81*(Part 2), 3021–3031. <https://doi.org/https://doi.org/10.1016/j.rser.2017.06.112>
- Olatomiwa, L., Mekhilef, S., Ismail, M. S., & Moghavvemi, M. (2016). Energy management strategies in hybrid renewable energy systems: A review. *Renewable and Sustainable Energy Reviews*, *62*, 821–835. <https://doi.org/https://doi.org/10.1016/j.rser.2016.05.040>
- Oosthuizen, J. (2016). *Investigating the effects of a green economy transition on the electricity sector in the Western Cape Province of South Africa: A system dynamics modelling approach*. Stellenbosch: Stellenbosch University.

- Panhwar, A. H., Ansari, S., & Shah, A. A. (2017). Post positivism resaerch. In *International Research Journal of Arts & Humanities (IRJAH)* (Vol. 45, pp. 253–260). <https://sujo-old.usindh.edu.pk/index.php/IRJAH/article/view/3371>
- Perdana, A., Lee, H. H., Koh, S., & Arisandi, D. (2022). Data analytics in small and mid-size enterprises: Enablers and inhibitors for business value and firm performance. *International Journal of Accounting Information Systems*, *44*, 100547.
- Petersen, K., & Gencel, C. (2013). Worldviews, Research Methods, and their Relationship to Validity in Empirical Software Engineering Research. *International Journal of Artificial Intelligence and Soft Computing*, *Vol. 4*, 259–278.
- Piselli, C., Colladon, A. F., Segneri, L., & Pisello, A. L. (2022). Evaluating and improving social awareness of energy communities through semantic network analysis of online news. *Renewable and Sustainable Energy Reviews*, *167*, 112792.
- Prashar, A. (2021). Eco-efficient production for industrial small and medium-sized enterprises through energy optimisation: framework and evaluation. *Production Planning and Control*, *32*(3), 198–212. <https://doi.org/10.1080/09537287.2020.1719714>
- Presser, S., & Blair, J. (1994). Survey Pretesting: Do Different Methods Produce Different Results? *Sociological Methodology*, *24*(May), 73. <https://doi.org/10.2307/270979>
- Prindle, W. R. (2010). *From shop floor to top floor: Best business practices in energy efficiency*. Pew Center on Global Climate Change.
- Przychodzen, J., & Przychodzen, W. (2015). Relationships between eco-innovation and financial performance – evidence from publicly traded companies in Poland and Hungary. *Journal of Cleaner Production*, *90*, 253–263. <https://doi.org/https://doi.org/10.1016/j.jclepro.2014.11.034>
- Qiu, R., Xu, J., Xie, H., Zeng, Z., & Lv, C. (2020). Carbon tax incentive policy towards air passenger transport carbon emissions reduction. *Transportation Research Part D: Transport and Environment*, *85*(July), 102441. <https://doi.org/10.1016/j.trd.2020.102441>
- Raihan, A., Begum, R. A., Nizam, M., Said, M., & Pereira, J. J. (2022). Dynamic impacts of energy use, agricultural land expansion, and deforestation on CO2 emissions in Malaysia. *Environmental and Ecological Statistics*, 1–31.
- Raihan, A., Begum, R. A., Said, M. N. M., & Pereira, J. J. (2022). Relationship between economic growth, renewable energy use, technological innovation, and carbon emission toward achieving Malaysia’s Paris agreement. *Environment Systems and Decisions*, 1–22.
- Raihan, A., Muhtasim, D. A., Pavel, M. I., Faruk, O., & Rahman, M. (2022). Dynamic Impacts of Economic Growth, Renewable Energy Use, Urbanization, and Tourism on Carbon Dioxide Emissions in Argentina. *Environmental Processes*, *9*(2), 1–29.

- Raihan, A., & Tuspekova, A. (2022). Toward a sustainable environment: Nexus between economic growth, renewable energy use, forested area, and carbon emissions in Malaysia. *Resources, Conservation & Recycling Advances*, 15, 200096. <https://doi.org/https://doi.org/10.1016/j.rcradv.2022.200096>
- Rashidi, N. A., Chai, Y. H., & Yusup, S. (2022). Biomass Energy in Malaysia: Current Scenario, Policies, and Implementation Challenges. In *Bioenergy Research*. Springer. <https://doi.org/10.1007/s12155-022-10392-7>
- Rasihah, R., Ahmed, A., Al-Amin, A. Q., & Chenayah, S. (2016). Climate change mitigation: comparative assessment of Malaysian and ASEAN scenarios. *Environ. Sci. Pollut. Res.*, 1–11.
- Ridzuan, N. H. A. M., Marwan, N. F., Khalid, N., Ali, M. H., & Tseng, M.-L. (2020). Effects of agriculture, renewable energy, and economic growth on carbon dioxide emissions: Evidence of the environmental Kuznets curve. *Resources, Conservation and Recycling*, 160, 104879.
- Rodrigues, J., Ruivo, P., & Oliveira, T. (2021). Mediation role of business value and strategy in firm performance of organizations using software-as-a-service enterprise applications. *Information & Management*, 58(1), 103289.
- Rogers, K. S. (2012). Exploring our ecological selves within learning organizations. *The Learning Organization*, 19(1), 28–37.
- Rohdin, P., Thollander, P., & Solding, P. (2007). Barriers to and drivers for energy efficiency in the Swedish foundry industry. *Energy Policy*, 35(1), 672–677. <https://doi.org/10.1016/j.enpol.2006.01.010>
- Rosati, F., & Faria, L. G. D. (2019). Addressing the SDGs in sustainability reports: The relationship with institutional factors. *Journal of Cleaner Production*, 215, 1312–1326.
- Ryan, C. (2020). Refereeing articles including SEM – what should referees look for? *Tourism Critiques: Practice and Theory*, 1(1), 47–61. <https://doi.org/10.1108/trc-03-2020-0002>
- Saberi, S., Kouhizadeh, M., Sarkis, J., & Shen, L. (2019). Blockchain technology and its relationships to sustainable supply chain management. *International Journal of Production Research*, 57(7), 2117–2135.
- Sadawi, A. Al, Madani, B., Saboor, S., Ndiaye, M., & Abu-Lebdeh, G. (2021). A comprehensive hierarchical blockchain system for carbon emission trading utilizing blockchain of things and smart contract. *Technological Forecasting and Social Change*, 173(August), 121124. <https://doi.org/10.1016/j.techfore.2021.121124>
- Sadhukhan, J., Martinez-Hernandez, E., Murphy, R. J., Ng, D. K. S., Hassim, M. H., Siew Ng, K., Yoke Kin, W., Jaye, I. F. M., Leung Pah Hang, M. Y., & Andiappan, V. (2018). Role of bioenergy, biorefinery and bioeconomy in sustainable development: Strategic pathways for Malaysia. *Renewable and Sustainable Energy Reviews*, 81(Part 2), 1966–1987. <https://doi.org/https://doi.org/10.1016/j.rser.2017.06.007>



- Sahebi, I. G., Mosayebi, A., Masoomi, B., & Marandi, F. (2022). Modeling the enablers for blockchain technology adoption in renewable energy supply chain. *Technology in Society*, 68, 101871.
- Samad, S., Nilashi, M., Almulihi, A., Alrizq, M., Alghamdi, A., Mohd, S., Ahmadi, H., & Azhar, S. N. F. S. (2021). Green Supply Chain Management practices and impact on firm performance: The moderating effect of collaborative capability. *Technology in Society*, 67, 101766.
- Sammen, S. S., Mohammed, T. A., Ghazali, A. H., Sidek, L. M., Shahid, S., Abba, S. I., Malik, A., & Al-Ansari, N. (2022). Assessment of climate change impact on probable maximum floods in a tropical catchment. *Theoretical and Applied Climatology*, 0123456789. <https://doi.org/10.1007/s00704-022-03925-9>
- San, O. T., Latif, B., & Di Vaio, A. (2022). GEO and sustainable performance: the moderating role of GTD and environmental consciousness. *Journal of Intellectual Capital*, 23(7), 38–67.
- Sarkar, B., Omair, M., & Choi, S.-B. (2018). A Multi-Objective Optimization of Energy, Economic, and Carbon Emission in a Production Model under Sustainable Supply Chain Management. In *Applied Sciences* (Vol. 8, Issue 10). <https://doi.org/10.3390/app8101744>
- Savale, V. (2012). The Relationship Between Root Mean Square Error of Approximation and Model Misspecification in Confirmatory Factor Analysis Models. *Educational and Psychological Measurement* 72(6), 910–932.
- Schubert, T., Breitschopf, B., & Plötz, P. (2021). Energy efficiency and the direct and indirect effects of energy audits and implementation support programmes in Germany. *Energy Policy*, 157(August), 112486. <https://doi.org/10.1016/j.enpol.2021.112486>
- Schulze, M., Nehler, H., Ottosson, M., & Thollander, P. (2016). Energy management in industry – a systematic review of previous findings and an integrative conceptual framework. *Journal of Cleaner Production*, 112, 3692–3708. <https://doi.org/https://doi.org/10.1016/j.jclepro.2015.06.060>
- Seclen-Luna, J. P., Opazo-Basáez, M., Narvaiza, L., & Fernández, P. J. M. (2020). Assessing the effects of human capital composition, innovation portfolio and size on manufacturing firm performance. *Competitiveness Review: An International Business Journal*.
- Seetharaman, A., Sandanaraj, L. L., Moorthy, M. K., & Saravanan, A. S. (2016). Enterprise framework for renewable energy. *Renewable and Sustainable Energy Reviews*, 54, 1368–1381. <https://doi.org/https://doi.org/10.1016/j.rser.2015.10.127>
- Sekaran, U., & Bougie, R. (2013). *Research Methods for Business: A Skill Building Approach*. New Jersey: John Wiley and Sons. Inc.
- Sekaran, U., & Bougie, R. (2019). *Research methods for business: A skill building approach*. john wiley & sons.

- Shadman, S., Hanafiah, M. M., Chin, C. M., Yap, E. H., & Sakundarini, N. (2021). Conceptualising the Sustainable Energy Security Dimensions of Malaysia: A Thematic Analysis through Stakeholder Engagement to Draw Policy Implications. In *Sustainability* (Vol. 13, Issue 21). <https://doi.org/10.3390/su132112027>
- Shaikh, P. H., Nor, N. B. M., Sahito, A. A., Nallagownden, P., Elamvazuthi, I., & Shaikh, M. S. (2017). Building energy for sustainable development in Malaysia: A review. *Renewable and Sustainable Energy Reviews*, 75(November 2016), 1392–1403. <https://doi.org/10.1016/j.rser.2016.11.128>
- Sharafati, A., & Pezeshki, E. (2020). A strategy to assess the uncertainty of a climate change impact on extreme hydrological events in the semi-arid Dehbar catchment in Iran. *Theoretical and Applied Climatology*, 139(1–2), 389–402. <https://doi.org/10.1007/s00704-019-02979-6>
- Sharma, S., & Ghoshal, S. K. (2015). Hydrogen the future transportation fuel: From production to applications. *Renewable and Sustainable Energy Reviews*, 43, 1151–1158.
- Shrouf, F., & Miragliotta, G. (2015). Energy management based on Internet of Things: practices and framework for adoption in production management. *Journal of Cleaner Production*, 100(Supplement C), 235–246. <https://doi.org/https://doi.org/10.1016/j.jclepro.2015.03.055>
- Shukor, H., Jalil, R., & Shoparwe, N. F. (2022). *Bioconversion of Malaysia Renewable Energy Resources to Biobutanol BT - Renewable Energy from Bio-resources in Malaysia* (H. Shukor, M. Mohd Zaini Makhtar, & A. Z. Yaser (eds.); pp. 117–146). Springer Singapore. [https://doi.org/10.1007/978-981-16-9314-4\\_6](https://doi.org/10.1007/978-981-16-9314-4_6)
- Singh, R., Wang, X., Mendoza, J. C., & Ackom, E. K. (2015). Electricity (in) accessibility to the urban poor in developing countries. *Wiley Interdisciplinary Reviews: Energy and Environment*, 4(4), 339–353.
- Sisaye, S. (2012). An ecological analysis of four competing approaches to sustainability development. *World Journal of Entrepreneurship, Management and Sustainable Development*.
- Sivill, L., Manninen, J., Hippinen, I., & Ahtila, P. (2013). Success factors of energy management in energy-intensive industries: Development priority of energy performance measurement. *International Journal of Energy Research*, 37(8), 936–951. <https://doi.org/10.1002/er.2898>
- Siwar, C., Alam, M., Murad, M. W., Al-Amin, A. Q., Al-Mofleh, A., Taib, S., Mujeebu, M. A., Salah, W., Dubey, R., Gunasekaran, A., Childe, S. J., Blome, C., Papadopoulos, T., Mustafa, M., Sufian, A., Kader, S. Z. S. A., Sarantakos, S., Energy Commission, M., Energy Commission Malaysia, ... Lei, J. (2014). Energy technology perspectives. *Small Business Economics*, 19(1), 29–39. <https://doi.org/10.1007/BF01074314>

- Siwar, C., Alam, M., Murad, W., & Al-Amin, A. Q. (2009). A Review of the Linkages between Climate Change, Agricultural Sustainability and Poverty in Malaysia. *International Review of Business Research Papers (ISSN 1832-9543)*, 5(6), 309–321. <https://doi.org/10.31219/osf.io/28vwc>
- Smith, K. M., Wilson, S., & Hassall, M. E. (2022). Barriers and drivers for industrial energy management: The frontline perspective. *Journal of Cleaner Production*, 335(January), 130320. <https://doi.org/10.1016/j.jclepro.2021.130320>
- Sola, A. V. H., & Mota, C. M. M. (2020). Influencing factors on energy management in industries. *Journal of Cleaner Production*, 248. <https://doi.org/10.1016/j.jclepro.2019.119263>
- Somjai, S., Fongtanakit, R., & Laosillapacharoen, K. (2020). Impact of environmental commitment, environmental management accounting and green innovation on firm performance: An empirical investigation. *International Journal of Energy Economics and Policy*, 10(3), 204–210. <https://doi.org/10.32479/ijeep.9174>
- Sovacool, B. K., & Bulan, L. C. (2012). Energy security and hydropower development in Malaysia: The drivers and challenges facing the Sarawak Corridor of Renewable Energy (SCORE). *Renewable Energy*, 40(1), 113–129.
- Stenqvist, C., Nilsson, L. J., Ericsson, K., & Modig, G. (2011). Energy management in Swedish pulp and paper industry – the daily grind that matters. *10Th Eceee Summer Study-Energy Efficiency First: The Foundation of a Low-Carbon Society*, 767–776.
- Stone, D. H. (1993). Design a questionnaire. *British Medical Journal*, 307(6914), 1264–1266. <https://doi.org/10.1136/bmj.307.6914.1264>
- Stoughton Anne, L. J. (2012). The driving forces of sustainability. *Journal of Organizational Change Management*, 25(4), 501–517. <https://doi.org/doi:10.1108/09534811211239191>
- Sucic, B., Lah, P., & Visocnik, B. P. (2017). An education and training program for energy managers in Slovenia—Current status, lessons learned and future challenges. *Journal of Cleaner Production*, 142, 3360–3369.
- Suki, N. M., Suki, N. M., Sharif, A., Afshan, S., & Jermisittiparsert, K. (2022). The role of technology innovation and renewable energy in reducing environmental degradation in Malaysia: A step towards sustainable environment. *Renewable Energy*, 182, 245–253.
- Sun, X., Xiong, S., Zhu, X., Zhu, X., Li, Y., & Li, B. L. (2015). A new indices system for evaluating ecological-economic-social performances of wetland restorations and its application to Taihu Lake Basin, China. *Ecological Modelling*, 295, 216–226. <https://doi.org/https://doi.org/10.1016/j.ecolmodel.2014.10.008>
- Suzana, F., Chachuli, M., Ahmad, N., Alias, M., & Hisham, N. (2021). Transition of renewable energy policies in Malaysia: Benchmarking with data envelopment analysis. *Renewable and Sustainable Energy Reviews*, 150(June), 111456. <https://doi.org/10.1016/j.rser.2021.111456>

- Tabari, H. (2020). Climate change impact on flood and extreme precipitation increases with water availability. *Scientific Reports*, *10*(1), 1–10. <https://doi.org/10.1038/s41598-020-70816-2>
- Tam, J. P. K., & Fernando, Y. (2018). Ecological Performance as a New Metric to Measure Green Supply Chain Practices. In *Encyclopedia of Information Science and Technology, Fourth Edition* (pp. 5357–5366). IGI Global.
- Taylor, P. (2010). Energy Technology Perspectives. *International Energy Agency*.
- The World Bank. (2000). *Integrating Quantitative and Qualitative Research in development projects*. The World bank.
- Thollander, P., & Dotzauer, E. (2010). An energy efficiency program for Swedish industrial small- and medium-sized enterprises. *Journal of Cleaner Production*, *18*(13), 1339–1346. <https://doi.org/10.1016/j.jclepro.2010.04.020>
- Turesky, E. F., & Connell, P. (2010). Off the rails: Understanding the derailment of a lean manufacturing initiative. *Organisation Management Journal*, *7*(2), 110–132. <https://doi.org/10.1057/omj.2010.14>
- Turner, A. N., Kline, D., Norris, A., Phillips, W. G., Root, E., Wakefield, J., Li, Z., Lemeshow, S., Spahnie, M., & Luff, A. (2022). Prevalence of current and past COVID-19 in Ohio adults. *Annals of Epidemiology*, *67*, 50–60.
- Uddin, G. A., Salahuddin, M., Alam, K., & Gow, J. (2017). Ecological footprint and real income: Panel data evidence from the 27 highest emitting countries. *Ecological Indicators*, *77*, 166–175. <https://doi.org/10.1016/j.ecolind.2017.01.003>
- Umar, M., Farooq, K., Yusliza, M. Y., & Haq, H. M. Z. (2022). Industry 4.0, Internal Green Supply Chain Practices, and the Firm's Sustainable Performance: Evidence From Emerging Economies. In *Integrating Blockchain Technology Into the Circular Economy* (pp. 1–14). IGI Global.
- UNFCCC. (2015). *Malaysia Submits its Climate Action Plan Ahead of 2015 Paris Agreement*. United Nations Framework Convention on Climate Change. <http://newsroom.unfccc.int/unfccc-newsroom/malaysia-submits-its-climate-action-plan-ahead-of-2015-paris-agreement>
- Uzunca, B. (2018). A Competence-Based View of Industry Evolution: The Impact of Submarket Convergence on Incumbent– Entrant Dynamics. *Academy of Management Journal*, *61*(2), 738–768.
- Van Teijlingen, E. R., & Hundley, V. (2001). *The importance of pilot studies*.
- Vance, L., Heckl, I., Bertok, B., Cabezas, H., & Friedler, F. (2015). Designing sustainable energy supply chains by the P-graph method for minimal cost, environmental burden, energy resources input. *Journal of Cleaner Production*, *94*, 144–154. <https://doi.org/10.1016/j.jclepro.2015.02.011>

- Varsei, M., Soosay, C., Fahimnia, B., & Sarkis, J. (2014). Framing sustainability performance of supply chains with multidimensional indicators. *Supply Chain Management: An International Journal*, 19(3), 242–257.
- Vitousek, S., Barnard, P. L., Fletcher, C. H., Frazer, N., Erikson, L., & Storlazzi, C. D. (2017). Doubling of coastal flooding frequency within decades due to sea-level rise. *Scientific Reports*, 7(1), 1–9.
- Waheed, R., Chang, D., Sarwar, S., & Chen, W. (2018). Forest, agriculture, renewable energy, and CO2 emission. *Journal of Cleaner Production*, 172, 4231–4238.
- Wahyuni, D. (2012). *The research design maze: Understanding paradigms, cases, methods and methodologies*.
- Wang, K., Vredenburg, H., Wang, T., & Feng, L. (2019). Financial return and energy return on investment analysis of oil sands, shale oil and shale gas operations. *Journal of Cleaner Production*, 223, 826–836. <https://doi.org/10.1016/j.jclepro.2019.03.039>
- Wasko, C., Nathan, R., & Peel, M. C. (2020). Changes in Antecedent Soil Moisture Modulate Flood Seasonality in a Changing Climate. *Water Resources Research*, 56(3), e2019WR026300. <https://doi.org/https://doi.org/10.1029/2019WR026300>
- Wee, H.-M., Yang, W.-H., Chou, C.-W., & Padilan, M. V. (2012). Renewable energy supply chains, performance, application barriers, and strategies for further development. *Renewable and Sustainable Energy Reviews*, 16(8), 5451–5465. <https://doi.org/https://doi.org/10.1016/j.rser.2012.06.006>
- Wehner, J., Taghavi, N., & Deilami, N. (2022). *Logistics service providers ' energy efficiency initiatives for environmental sustainability*. 33(5), 1–26. <https://doi.org/10.1108/IJLM-10-2019-0270>
- Weijters, B., Millet, K., & Cabooter, E. (2021). Extremity in horizontal and vertical Likert scale format responses. Some evidence on how visual distance between response categories influences extreme responding. *International Journal of Research in Marketing*, 38(1), 85–103. <https://doi.org/10.1016/j.ijresmar.2020.04.002>
- Wen, Y. (2021). China's industrial revolution: A new perspective. *China Economic Review*, 69, 101671.
- Whittaker, M. (1980). No Title. *Sch. Sci. Rev.*, 61(null), 556. <http://www.sciencedirect.com/science/article/pii/S1364032117312844>
- Wilbanks, T. J. (1994). “Sustainable development” in geographic perspective. *Annals of the Association of American Geographers*, 84(4), 541–556.
- Wohlfarth, K., Klobasa, M., & Gutknecht, R. (2020). Demand response in the service sector—Theoretical, technical and practical potentials. *Applied Energy*, 258, 114089.
- Wong, F. W. M. H., Foley, A., Del Rio, D. F., Rooney, D., Shariff, S., Dolfi, A., & Srinivasan, G. (2022). Public perception of transitioning to a low-carbon nation: a Malaysian scenario. *Clean Technologies and Environmental Policy*, 1–16.

- Xie, M., Ding, L., Xia, Y., Guo, J., Pan, J., & Wang, H. (2021). Does artificial intelligence affect the pattern of skill demand? Evidence from Chinese manufacturing firms. *Economic Modelling*, *96*, 295–309.
- Yang, M., Wang, E., & Hou, Y. (2021). The relationship between manufacturing growth and CO<sub>2</sub> emissions : Does renewable energy consumption matter ? *Energy*, *232*, 121032. <https://doi.org/10.1016/j.energy.2021.121032>
- Yee, C. H., Al-Mulali, U., & Ling, G. M. (2022). Intention towards renewable energy investments in Malaysia: extending theory of planned behaviour. *Environmental Science and Pollution Research*, *29*(1), 1021–1036. <https://doi.org/10.1007/s11356-021-15737-x>
- Yoon, H., & Sauri, D. (2019). ‘No more thirst, cold, or darkness!’–Social movements, households, and the coproduction of knowledge on water and energy vulnerability in Barcelona, Spain. *Energy Research & Social Science*, *58*, 101276.
- Young, A., Espinoza, F., Dodds, C., Rogers, K., & Giacoppo, R. (2021). Adapting an Online Survey Platform to Permit Translanguaging. *Field Methods*, 1–17. <https://doi.org/10.1177/1525822X21993966>
- Yusliza, M.-Y., Norazmi, N. A., Jabbour, C. J. C., Fernando, Y., Fawehinmi, O., & Seles, B. M. R. P. (2019). Top management commitment, corporate social responsibility and green human resource management: A Malaysian study. *Benchmarking: An International Journal*.
- Zaekhan, Z., Nachrowi, N. D., Hartono, D., & Soetjipto, W. (2022). What drives energy consumption in Indonesia’s manufacturing industry? An analysis of firm-level characteristics. *International Journal of Energy Sector Management*, ahead-of-p(ahead-of-print). <https://doi.org/10.1108/ijesm-05-2021-0015>
- Zameer, H., Wang, Y., & Yasmeen, H. (2020). Reinforcing green competitive advantage through green production , creativity and green brand image : Implications for cleaner production in China. *Journal of Cleaner Production*, *247*, 119119. <https://doi.org/10.1016/j.jclepro.2019.119119>
- Zang, S., Wang, H., & Zhou, J. (2022). Impact of eco-embeddedness and strategic flexibility on innovation performance of non-core firms: The perspective of ecological legitimacy. *Journal of Innovation & Knowledge*, *7*(4), 100266.
- Zhang, & Guan. (2018). The time-varying impacts of government incentives on innovation. *Technological Forecasting and Social Change*, *135*, 132–144. <https://doi.org/https://doi.org/10.1016/j.techfore.2018.04.012>
- Zhang, N., Zhang, D., Zuo, J., Miller, T. R., Duan, H., & Schiller, G. (2022). Potential for CO<sub>2</sub> mitigation and economic benefits from accelerated carbonation of construction and demolition waste. *Renewable and Sustainable Energy Reviews*, *169*, 112920.
- Zhang, S., Wang, Z., & Zhao, X. (2019). Effects of proactive environmental strategy on environmental performance : Mediation and moderation analyses. *Journal of Cleaner Production*, *235*, 1438–1449. <https://doi.org/10.1016/j.jclepro.2019.06.220>

- Zhang, Y., Wang, J., Hu, F., & Wang, Y. (2017). Comparison of evaluation standards for green building in China, Britain, United States. *Renewable and Sustainable Energy Reviews*, 68, 262–271.
- Zhao, X., Lynch, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research*, 37(2), 197–206. <https://doi.org/10.1086/651257>
- Zhu, Sarkis, & Lai. (2013). *Institutional-based antecedents and performance outcomes of internal and external green supply chain management practices*. *J. Purchasing Supply Manage.* 106–117.